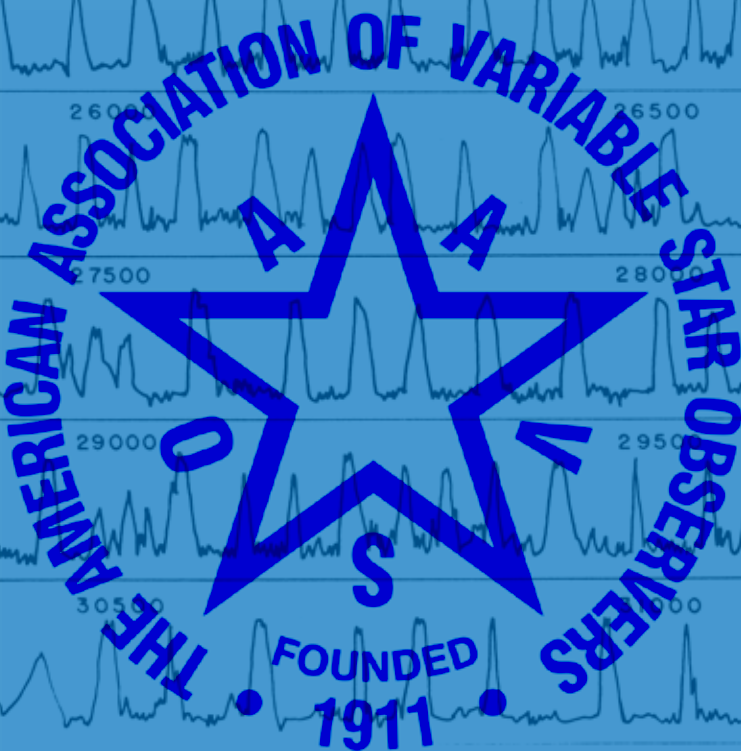


AAVSO



The American Association of Variable Star Observers



Annual Report 2016-2017

The American Association of Variable Star Observers

AAVSO

Annual Report
2016–2017



The American Association of Variable Star Observers
49 Bay State Road
Cambridge, MA 02138-1203
USA

Telephone: 617-354-0484

Fax: 617-354-0665

email: aavso@aavso.org

website: <https://www.aavso.org>

Annual Report Website:

<https://www.aavso.org/annual-report>

On the cover...

At the 2017 AAVSO Annual Meeting.(clockwise from upper left) Knicole Colon, Koji Mukai, Dennis Conti, Kristine Larsen, Joey Rodriguez; Rachid El Hamri, Andy Block, Jane Glanzer, Erin Aadland, Jamin Welch, Stella Kafka; and (clockwise from upper left) Joey Rodriguez, Knicole Colon, Koji Mukai, Frans-Josef "Josch" Hamsch, Chandler Barnes.

Picture credits

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1. About the AAVSO



Participants in the AAVSO's 106th Annual Meeting, 2017

AAVSO Vision

Discovering the Universe through variable stars.

The AAVSO's Mission

The AAVSO is an international non-profit organization of variable star observers whose mission is to enable anyone, anywhere, to participate in scientific discovery through variable star astronomy. We accomplish our mission by carrying out the following activities:

- observation and analysis of variable stars
- collecting and archiving observations for worldwide access
- forging strong collaborations between amateur and professional astronomers
- promoting scientific research, education, and public outreach using variable star data.

About the AAVSO

The American Association of Variable Star Observers (AAVSO) is a non-profit worldwide scientific and educational organization of amateur and professional astronomers who are interested in stars that change in brightness—variable stars.

The AAVSO was founded in 1911 to coordinate variable star observations—made largely by amateur astronomers—for Harvard College Observatory. The AAVSO was incorporated in the Commonwealth of Massachusetts in 1918 as a non-profit scientific and educational organization. Today, as an independent, private research organization headquartered in Cambridge, Massachusetts, with active participants in 108 countries, and an archive of over 35 million variable star observations, it is the world's largest association of variable star observers.

1. About the AAVSO

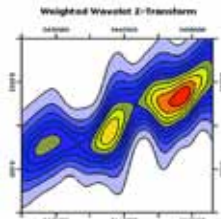
Membership in the AAVSO is open to anyone—professionals, amateurs, and educators alike—interested in variable stars and in contributing to the support of valuable research. Professional astronomers have neither the time nor the telescopes needed to gather data on the brightness changes of thousands of variables, and amateurs make a real and useful contribution to science by observing variable stars and submitting their observations to the AAVSO International Database.

What We Do

The AAVSO coordinates, evaluates, compiles, processes, publishes, and disseminates variable star observations to the astronomical community throughout the world.

Observers send their data to Headquarters, where they are checked, processed, and added to the AAVSO International Database. The AAVSO and its observers frequently provide the professional community with archival data, intensive monitoring of interesting variable stars, and target-of-opportunity event notification for coordinated observing campaigns and satellite observations.

AAVSO publications provide the astronomical community with valuable information. The type of published information is diverse, and includes *The Journal of the AAVSO*, a peer-reviewed collection of scientific papers focused on variable stars, the *Manual for Visual Observing*, now available in fifteen languages, the *AAVSO CCD Observing Manual* (five languages), the *AAVSO DSLR Observing Manual* (five languages), the *Photoelectric Photometry Observer's Guide*, the *AAVSO Solar Observing Guide* (four languages), the quarterly *AAVSO Newsletter*, the *AAVSO Bulletin*, the *Eclipsing Binary and RR Lyrae Ephemerides*, and the *AAVSO Annual Report*.



Additionally, the AAVSO is actively involved in education and outreach. We have several programs designed to assist with disseminating information to educators and the public.

The AAVSO has an active Mentor Program that is available to any observer requesting personal instruction in observing techniques and methods.

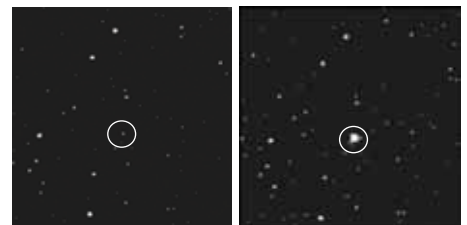
Our Presentation Library offers free POWERPOINT™ presentations on variable stars, observing techniques, and other astronomical topics.

Variable Star Astronomy (VSA) is a flexible set of hands-on educational materials, activities, and investigations, based on the AAVSO's unique electronic database of variable star measurements.

Members and observers have a unique opportunity to present and exchange ideas at the AAVSO meetings. The AAVSO organizes two meetings a year, one in October-November and one in April-July. The October-November meeting is the official AAVSO annual meeting that is usually held at or near the AAVSO Headquarters in Cambridge, Massachusetts. The April-July meeting is held outside of the state of Massachusetts with the intention of attracting more members and observers to attend. Everyone interested in the AAVSO and its activities is invited and encouraged to participate in these exciting events.

What Are Variable Stars?

Variable stars are stars that change in brightness. The brightness changes of these stars can range from a thousandth of a magnitude to as much as twenty magnitudes over periods of a fraction of a second to years, depending on the type of variable star. Over 475,000 variable stars are known and catalogued, and many thousands more are suspected to be variable.



The variable star U Geminorum in its faint state (left) and its bright state (right)

There are a number of reasons why variable stars change their brightness. Pulsating variables, for example, swell and shrink due to internal forces. An eclipsing binary will dim when it is eclipsed by a faint companion, and then brighten when the occulting star moves out of the way. Some variable stars are actually extremely close pairs of stars, exchanging mass as one star strips the atmosphere from the other.

The different causes of light variation in variable stars provide the impetus for classifying the stars into different categories. Variable stars are classified as either intrinsic, wherein variability is caused by physical changes such as pulsation or eruption in the star or stellar system, or extrinsic, wherein variability is caused by the eclipse of one star by another, the transit of an extrasolar planet, or by the effects of stellar rotation.

Why Observe Variable Stars?

Variable stars need to be systematically observed over decades in order to determine their long-time behavior. Professional astronomers have neither the available time nor the unlimited telescope access needed to gather data on the brightness changes of thousands of variable stars. Thus, it is amateur astronomers utilizing visual, photographic, photoelectric, and CCD techniques who are making a real and highly useful contribution to science by observing variable stars and submitting their observations to the AAVSO International Database. These important data are needed to analyze variable star

1. About the AAVSO

behavior, to schedule satellite observations of certain stars, to correlate data from satellite and ground-based observations, and to make computerized theoretical models of variable stars possible.

Research on variable stars is important because it provides information about stellar properties, such as mass, radius, luminosity, temperature, internal and external structure, composition, and evolution. Some of this information would be difficult or impossible to obtain any other way. In many cases, it is the nature of the variability that provides the clues to the answers. This information can then be used to understand other stars.

Variable stars continue to play a crucial role in our understanding of the universe. Cepheid variables have played a major part in determining distances to far-away galaxies and determining the age of the Universe. Mira variables give us a glimpse into the future evolution of our own star, the Sun. Accretion disks in cataclysmic variables help us to understand larger scale disk behavior, such as the activity inside active galaxies with super-massive black holes. Supernovae have led us to the surprising realization that the expansion of the Universe is accelerating. Even the search for extra-terrestrial life is illuminated by variable stars. Transiting extrasolar planets provide clues into the processes of planetary formation, and the very stuff of life as we know it comes from the hearts of stars that explode in the final stages of their evolution.

The AAVSO International Database

The AAVSO International Database has over 35 million variable star observations going back over one hundred years. It is the largest and most comprehensive digital variable star database in the world. Over 1,000,000 new variable star brightness measurements are added to the database every year by over 800 observers from all over the world.

Quality

The AAVSO International Database is not only the largest but also the highest quality variable star database available to researchers. The AAVSO and its technical staff spend more time and resources on database maintenance and quality control than any other organization of its kind.

Quality control begins before the observation is even made. Extensive training materials are sent to new AAVSO observers and a large section of the AAVSO website is designed specifically for observing techniques. We also have a thriving group of volunteers devoted to revising and developing new sequences for variable stars. The AAVSO holds two meetings per year where members come together to discuss their observing strategies,

compare results, and much more. Workshops are routinely held at these meetings, bringing the best professionals in the field in contact with the observers. Since 2000, workshops have been held on CCD imaging, Eclipsing Binary star observing, GRB afterglow hunting, data mining, data analysis, and spectroscopy. The AAVSO also has an active mentoring program for new observers.

We have data entry error checks at every stage in the process. Our on-line data entry tool WebObs runs error checking routines which automatically identify the most common data entry errors. In addition, we frequently review observations using both human scrutiny and automated programs to look for misidentifications, typos, and any other errors. The best check, however, is the observers themselves who check their own submitted data by using the many tools the AAVSO makes available: Light Curve Generator, WebObs Search, and our Zapper application which lets volunteers highlight questionable observations and bring them to the attention of AAVSO staff. All revisions to the database are themselves tracked, and no observation is ever marked discrepant without thorough checking. Observations requested to be deleted by the observer or discovered to be a duplicate are removed to a separate data table but are not physically deleted.

Observers

The AAVSO International Database would not exist without the dedication, tireless effort, and enthusiasm of thousands of variable star observers. Our observers come from all over the world. Over two-thirds of AAVSO observers contributing data come from outside of the United States.

Thanks to this broad network of observers we have coverage across most time zones and latitudes regardless of weather or other regional disruptions.

To make it easier for the widely-scattered AAVSO members and observers to gather together in person, the AAVSO meeting held every April-July takes place in different parts of the United States or, as often as possible, in different countries.

The AAVSO receives observations from members of other variable star observing associations around the world for inclusion in the AAVSO International Database and dissemination to the astronomical community worldwide. These observations are sent regularly by the group leader/representative or directly by the group members themselves. The AAVSO values



Mary Glennon, AAVSO member-observer since 1999

1. About the AAVSO

these fruitful, mutually beneficial collaborations, and truly appreciates the ongoing efforts of everyone involved in working together for the benefit of the astronomical community.

Access

Observations from the AAVSO International Database are available to anyone at anytime, a free resource for the global scientific community. For raw observations, simply fill out our online request form. For access to light curves, use our Light Curve Generator which works in all browsers (you do not need JAVA or any special plug-ins), and for really quick access to recent data, use the QuickLook utility on our website. Our online systems are instantly updated every time data are submitted to the AAVSO.

Observing Variable Stars

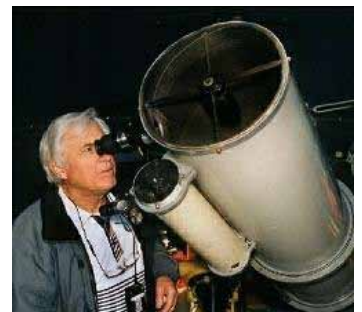
Astronomy is a unique science that cannot be studied in a typical laboratory setting here on Earth. Instead, astronomers turn their attention and telescopes to the sky in order to study their subjects. Since professional astronomers often do not have the telescope time needed to follow a particular star or group of stars, the dedication of amateur astronomers is often an invaluable means of collecting information. Nowhere is this more true than in the field of variable star astronomy. Since 1911, thousands of amateur astronomers from all over the world and from all backgrounds have contributed observations, one at a time, to make up the over 35 million data points housed in the AAVSO International Database!

Anyone can be a variable star observer. All you really need to begin observing are:

- your unaided eyes, a pair of binoculars, or a telescope
- some variable star charts to help you navigate your way through the sky
- some basic instructions
- a little patience

For those interested in observing activity on our closest star, the Sun, or a particular type of variable, such as the Eclipsing Binary or RR Lyrae type stars, or if hunting for novae, supernovae, or optical counterparts to energetic Gamma-Ray Bursts strikes your fancy, we have observing programs designed to help satisfy your appetite.

The AAVSO Mentor Program is available to all member observers to assist newcomers in the methods and techniques of visual variable star observation, as well as CCD, PEP, and DSLR observation.



Msgr. Ron Royer, AAVSO member observer since 1953

Services to Astronomy

The AAVSO provides a wide range of services to the astronomical community. AAVSO International Database data are disseminated extensively to astronomers around the world, upon request, and are freely available from the AAVSO website. AAVSO data and services have been used, referenced, and acknowledged in hundreds of professional astronomical publications.



Mario Motta, M.D., former AAVSO President, and an AAVSO member-observer since 1985, at his 32-inch telescope in Gloucester, Mass.

Services to Astronomers

AAVSO services are sought by astronomers for the following purposes:

- real-time, up-to-date information on unusual stellar activity
- scheduling of variable star observing programs coordinating earth-based large telescopes and instruments aboard satellites
- simultaneous optical observations of program stars and immediate notification of their activity during earth-based or satellite observing programs
- correlation of AAVSO optical data with spectroscopic, photometric, and polarimetric multi-wavelength data
- collaborative statistical analysis of stellar behavior using long-term AAVSO data

Collaboration between the AAVSO and professional astronomers for real-time information or simultaneous optical observations has enabled the successful execution of hundreds of observing programs using satellites such as:

- Hubble Space Telescope
- Chandra X-Ray Observatory
- Spitzer Space Telescope
- XMM-Newton X-Ray Observatory
- Herschel Space Observatory
- Extreme Ultraviolet Explorer
- High Energy Astronomical Observatories 1 and 2
- International Ultraviolet Explorer
- Roentgen Satellite
- European X-Ray Observatory Satellite
- High Precision Parallax Collecting Satellite (HIPPARCOS)



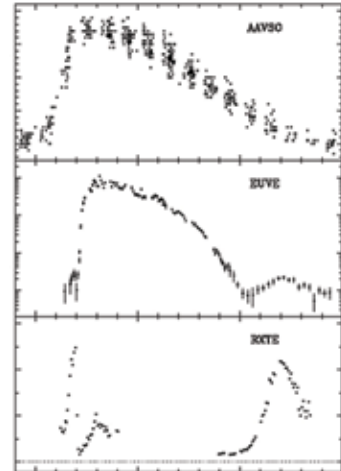
AAVSO services have been used by researchers affiliated with such satellites as Chandra, XMM, RXTE, FUSE, HST, Spitzer, and many more

1. About the AAVSO

A significant number of rare events have been observed with these satellites as a result of timely notification by the AAVSO.

In recent years, the SWIFT satellite has been sending real-time notification to ground-based observers in the AAVSO High-Energy Network to alert them of Gamma-Ray Bursts (GRBs). Several GRB optical afterglows have been detected by AAVSO observers. In this way, AAVSO observers are contributing to cutting-edge, high-energy astrophysics.

With the outburst detected by AAVSO Observers, simultaneous AAVSO visual, EUVE, and RXTE observations of SS Cygni were triggered, providing astronomers with important information about the behavior of dwarf novae (from Wheatley et al. 2003, MNRAS, 345, 49)

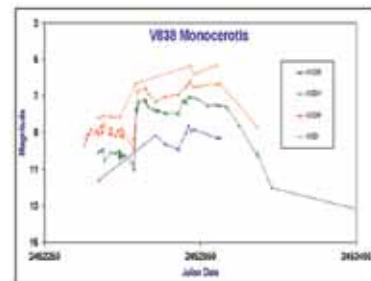


Services to Observers and Members

The AAVSO enables variable star observers to contribute vitally to variable star astronomy by accepting their observations, incorporating them into the AAVSO International Database, publishing them, and making them available to research astronomers. Incorporating an observer's observations into the AAVSO archives means that future researchers will have access to those observations, so the observer is contributing to the science of the future as well as the present.

The AAVSO coordinates observing campaigns between professional and amateur astronomers, in which observations from amateur astronomers play an important role in correlating observations obtained with special instruments at earth-based observatories or aboard satellites.

On request, the AAVSO will help set up an appropriate observing program for an individual, an astronomy club, an elementary school, a high school, college, and so forth. In this way observers, students, and faculty are able to make the best use of their resources to do valuable science. The AAVSO can also assist in teaching observing techniques and in suggesting stars to be included in a program through the AAVSO Mentor Program.



Education and Outreach

The AAVSO believes that Education and Outreach are important to our mission:

- to attract, train, and retain new variable star observers and members of all ages
- to increase awareness, understanding, and appreciation of variable star astronomy and variable star observing among amateur and professional astronomers, educators, students, and the general public
- to improve science education and literacy through the unique power of variable stars and variable star observing to motivate students young and old.

Projects, Programs, and Activities

The AAVSO Mentor Program connects experienced observers with new observers to assist them in observing, recording, and reporting observations of variable stars to the AAVSO International Database.



The AAVSO has much experience in hosting successful educational lectures such as the series of High-Energy Astrophysics Workshops for Amateur Astronomers

Our Presentation Library contains POWERPOINT™ presentations on variable stars, observing techniques, and other astronomical topics. These are available free to the public to use in making your own presentations.

Variable Star Astronomy (VSA) is an AAVSO educational project, originally developed as *Hands-On Astrophysics (HOA)* with funds from the National Science Foundation. It is a flexible set of hands-on educational materials, activities, and investigations based on the AAVSO's unique electronic database of variable star measurements. Students will be able to experience the excitement of doing real science with real data! By carrying out all aspects of the research process, they can develop and integrate skills in science, math, computing, and other areas. VSA has been converted to a web-based format and is available via the AAVSO website (<https://www.aavso.org/education/vsa>).



Gary Poyner, AAVSO member-observer since 1991, with his 14-inch telescope

1. About the AAVSO

VStar is the Java software that accompanies the activities for VSA. Developed by volunteer David Benn as part of the AAVSO's Citizen Sky project, which had funding from the National Science Foundation, to replace the HOA DOS software, multi-platform VStar has evolved into a very powerful yet easy-to-use variable star data visualization and analysis tool. Data for a star can be read from the AAVSO database, from a text file of your own creation, or from other databases via a plug-in.



On January 28, 2010, AAVSO member-observers Barbara Harris (left) and Shawn Dvorak (right) detected a rare outburst of the recurrent nova U Scorpii, which set in motion satellite observations by the Hubble Space Telescope, Swift gamma-ray satellite, and the Spitzer Space Telescope.



Glenn Chaple, AAVSO member-observer since 1980



Bill Goff, an AAVSO observer since 1981. His telescope is a Planewave 20" CDK with an Apogee U9 camera.



Chris Stephan, AAVSO member-observer since 1975



2. The Year in Review

Introduction

Each year the AAVSO holds two meetings of the membership and four meetings of the Council. The Spring meeting of the Association is held outside of Massachusetts typically during April–June and the Annual meeting of the Association is usually held in Massachusetts during October–November. The Council meets in person prior to each membership meeting and electronically between meetings.

Spring and Annual Council meetings are attended in person by the entire Council, if at all possible. The Winter and Summer Council e-meetings are usually attended in person by Council members living near Headquarters. At all meetings, those unable to attend in person participate via internet meeting software (GoToMeeting) which allows everyone to observe who is in attendance at any moment. All votes are taken via roll call and recorded as such.

In 2017, the 106th Spring Meeting was a joint meeting with the Society for Astronomical Sciences (SAS). It was held on June 16–17, 2017, at the Ontario Airport Inn in Ontario, California, with the Spring Council meeting taking place there on June 14–15. The 106th Annual Meeting was held November 2–4, 2017, at Vanderbilt University in Nashville, Tennessee, with the Council meeting taking place there on November 2. The Winter Council e-Meeting was held on March 3, 2017, and the Summer Council e-Meeting was held on September 5.

106th AAVSO Spring Membership Meeting

The 106th Spring Membership Meeting of the AAVSO was held Saturday, June 17, 2017, at the Ontario Airport Inn, Ontario, California. The meeting was called to order by President Kristine Larsen at 8:00 am.

- Kristine welcomed the group.
- Secretary Gary Walker read the Minutes from the last (Annual) meeting.
- Bill Goff gave the Treasurer's Report. Dues of nearly \$70K received; Operations and contributions \$59K; Temporarily restricted \$8K; Grants \$121K, half from past years

(APASS, novae, ATAT, etc.). Total receipts \$253K. Withdraw of \$364K at this point so far. Disbursements \$308K, Building \$14K, General operations \$21K, Grant expense \$87K, and contractors \$50K. Total disbursements \$608K for 8 months. TIFF balance was \$6.5M, which is 65% invested in equities. Graystone balance was \$6.3M. Graystone, also a non-profit, is invested 40% in US equities, 23% in International equities, 17% in Alternate investments, and the remainder in other sectors (Bonds, Corporate Bonds, Cash, etc.). The total Investment funds are \$12.8M. Questions about investments from attendees answered.

- Director Stella Kafka mentioned the members and friends who left us this year: Arthur Upgren, Gerd-Lutz Schott, Allen Heasley, Peter Collins, Vera Rubin. We stood for a moment of silence.

- Stella introduced the Council and thanked them for their efforts. She thanked Bill Goff for four years as treasurer. Bob Stephens will be assuming his duties. The Councilors stood for a moment of recognition. Stella mentioned that AAVSO is a non-harassment non-discriminatory environment. Her Director's report included the following main points:

- Members total 1,000 through May. A little down from the past two years. 66% from US. 50 countries represented.
- 32% of observers are from the US. UK 9%, Spain 7%, etc.
- 33,162,392 variable star observations in the AAVSO International Database (AID) as of June 2017.



Attendees at the 2017 AAVSO Spring Meeting

- Downloads of data/webpages: USA, Brazil Japan, UK, Ethiopia, etc., 15, 8, 6, 4, 3%...
- 100 publications using AAVSO resources published so far this year (270 last year for entire year). She mentioned Russian students publishing on VSX. Also, Carlos Morales Socorro, a teacher from Gran Canaria, Spain, had his 62 math students use variable stars to “learn and apply statistics and analysis math concepts”; they submitted two new variable stars to VSX. Other AAVSO involvement with students included the International Science Olympiad, in which the US team won Gold and Silver medals and two Honorable Mentions, and the work of Caroline Oden at Phillips Academy. We provide materials and let the teachers reach out. Through this work we are training observers of the future.
- Stella mentioned the CHOICE courses. Mentioned the training manuals, translated into many languages by volunteers. 10-star tutorial now available in Arabic. Also PEP and solar observing manuals are now available.
- Refresh of the Observing Sections: Accreting Stellar Remnants—Cataclysmic Variables, Eclipsing Variables, Exoplanets, High Energy Network, Long Period Variables, Short Period Pulsating Variables, Solar, Young Stellar Objects.
- New Light Curve Generator released; suggestion made to Stella that we do a CHOICE course on LCG-2.
- Find a Member tool released, updated by volunteer Phil Manno.
- AAVSO Target Tool (ATAT) released—Development supported by Jenő Sokoloski through her Research Corporation for Science Advancement grant for \$50K. To use it, sign up (register), put into it the location of your observatory, and it tells you what is observable, filter by star type, band.
- Stella made an appeal for donations.
- Future Meetings: Nov 2–4 at Vanderbilt. Stellar Transits: from Eclipsing Binaries to Exoplanets.
- Stella cited Janet A. Mattei: “The observers are the heart of the AAVSO.”
- Stella gave an all-encompassing “Thank You.”

Question: Dick Stanton—How do you handle repeated observations, i.e. time series? It is all right to submit them to the AID.

- George Silvis, Transform Generator author, described the campaign underway this year to encourage observers to transform their data. There is a prize of \$500. Seven people made the cut, and Shawn Dvorak won the prize.
- Upcoming meeting, 6–8 July 2018, joint meeting with British Astronomical Association (BAA) at Warwick University, Coventry, UK. Friday, council meeting; Saturday,

2. The Year in Review

plenary session; Sunday, joint variable star session, AAVSO membership meeting. Attendees will stay in dorms.

- Kristine declared the meeting closed at 9:35 a.m..

There was no awards ceremony this year at the membership meeting. Observer Awards will be announced at the Annual Meeting.

106th AAVSO Annual Membership Meeting

The 106th Annual Membership Meeting of the AAVSO was held Saturday, November 4, 2017, at Vanderbilt University, Nashville, Tennessee. The meeting was called to order by President Kristine Larsen at 9:00 a.m.

- Secretary Gary Walker read the minutes from the last meeting.
- Bob Stephens gave the Treasurer's Report. Our Total assets are \$14.9M; Broken down as follows: Investments/Endowment = \$13.3M, \$300K cash, fixed assets = \$1.32M; Liabilities \$66K, Temporary Restricted Funds for purpose = \$209K, \$3.3M is Permanently restricted principal but allows income to be spent. A Question of %equities/fixed income was asked by Dave Cowell. Secretary answered via email after the meeting.
- Stella mentioned the members and friends who left us this year: Brenda Branchett, Peter Bus, Peter Collins, Robert Garrison, Allen Heasley, Joachim Hübscher, David Mittelman, Arthur Pearlmutter, Vera Rubin, Gerd-Lutz Schott, Helen Stephansky Abbott, Melvyn Douglas Taylor, Arthur Upgren, and Charles Allen Whitney. We stood for a moment of silence.
- Stella gave the Director's Report. Highlights were:
 - Stella acknowledged the Staff: Dr. Bert Pablo, Elizabeth O. Waagen, Sara J. Beck, Sebastian A. Otero, Kathy Spirer, Owen Tooke, Dr. Michael Saladyga, Gloria Ortiz Cruz, Scott Idem (AAS), Cody Anderson (EvereableGroup).
 - Stella reminded us of the AAVSO Mission.
 - We have 1,100 members, observers in 52 countries, 35 Million observations in the AAVSO International Database (AID).
 - Campaigns mentioned were Red Dots, FO Aqr, ASAS-SN-16b, T CrB—may be due for eruption based on historical light curve and Brad Schaefer's list of overdue outbursts.

- Progress at HQ
 - VSX—contains half a million objects, added FAQ page, updated documentation on how to update entries in VSX.
 - CHOICE courses—3 new ones, 10 for the year.
 - Training more observers with additional translated manuals—CCD Manual now in five languages, Safe Solar Observing Manual versions in French and Italian in progress.
 - Observing Sections rejuvenated, now eight active Sections, all pages brought into AAVSO from Google, etc. Dr. Gregory Sivakoff now Section Leader for Accreting Stellar Remnants-Cataclysmic Variables.
 - CHart Error Tracking (CHET) tool updated.
 - Light Curve Generator version 2 (LCG-2) released.
 - Find a Member tool improved.
 - AAVSO Target Tool (ATAT) released.
 - AAVSO Newsletter restructured.



Attendees at the 2017 AAVSO Annual Meeting

2. The Year in Review

At the 2017 AAVSO Annual Meeting



(Clockwise from upper left) Joey Rodriguez, Knicole Colon, Koji Mukai, Frans-Josef "Josch" Hamsch, Chandler Barnes



(L-R) Knicole Colon, Koji Mukai, Dennis Conti, Kristine Larsen, Joey Rodriguez



(L-R) Bill Stein, R. Kent Honeycutt, Stella Kafka, Arlo Landolt



(L-R) Rachid El Hamri(?), Andy Block, Jane Glanzer, Erin Aadland, Jamin Welch, Stella Kafka



(L-R) Gordon Myers, Ken Menzies, Richard Sabo, Richard Glassner, Frans-Josef "Josch" Hamsch, Stella Kafka

- Stella asked “How can AAVSO serve the members?”
- Kristine announced the results of Council elections. She thanked Richard Post for his service and suggested that he be active on the Investment Committee. Bill Stein, Arlo Landolt, Joyce Guzik, and Michael Cook were elected or re-elected to Council.
- Awards
 - Stella awarded George A. Silvis the first Director’s Award in her term.
 - Stella, Kristine, and Elizabeth acknowledged our observers with Variable Star and Solar Observer Awards. Those in attendance received their certificates; other observers will be sent their certificates by postal mail. [Lists of recipients may be found elsewhere in this Annual Report.] A Solar Observer Award (Sunspots, 5,500 level) was posthumously awarded to Brenda Branchett.
 - AAVSO Special Award to George East for Solar Eclipse photo competition.
 - AAVSO Special Awards to Chandler Barnes, Dan Burger, Kenneth Li, Jennifer Sokoloski, Keivan Stassun for creating/supporting AAVSO Target Tool (ATAT, observing planner).
 - AAVSO Special Award to Phil Manno for Member Search Tool, and CHET update.
 - Digitizer Awards announced for Stuart Morris and Noah Goldman.
 - 50-year (or longer) membership pin announced for Dr. Jay Miller. 25-year (or longer) membership pins announced for Drs. Koji Mukai (who was present to receive his pin), George Gliba, Kevin Krisciunas, and Bradley E. Schaefer.
 - Keivan Stassun gave the keynote talk: “This is the sound of a star.”
- The membership meeting was adjourned before noon.

Note: The AAVSO Merit Award and the William Tyler Olcott Distinguished Service Award were presented at the Banquet Saturday evening to William Goff and Mario E. Motta, M.D., Respectively.

2. The Year in Review

Papers Presented; Deceased Members, Observers, Colleagues; Awards

Papers Presented at the Joint Meeting of the Society for Astronomical Sciences and the American Association of Variable Star Observers (AAVSO 106th Spring Meeting), Held in Ontario, California, June 16–17, 2017

"OV Bootis: Forty Nights of World-Wide Photometry"

Joseph Patterson, Enrique de Miguel, Douglas Barret, Stephen Brincat, James Boardman Jr., Denis Buczynski, Tut Campbell, David Cejudo, Lew Cook, Michael J. Cook, Donald Collins, Walt Cooney, Franky Dubois, Shawn Dvorak, Jules P. Halpern, Anthony J. Kroes, Damien Lemay, Domenico Licchelli, Dylan Mankel, Matt Marshall, Rudolf Novak, Arto Oksanen, George Roberts, Jim Seargeant, Huei Sears, Austin Silcox, Douglas Slauson, Geoff Stone, J. R. Thorstensen, Joe Ulowetz, Tonny Vanmunster, John Wallgren, Matt Wood

"An Ongoing Program for Monitoring the Moon for Meteoroid Impacts"

Brian Cudnik, Seth Saganti, Fazal Ali, Salman Ali, Trevannie Beharie, Brittany Anugwom

"Taxonomy Discrimination of the Tina Asteroid Family via Photometric Color Indices"

Mattia A. Galiazzo, Werner W. Zeilinger, Giovanni Carraro, Dagmara Oszkiewicz

"Observations of the Star Cor Caroli at the Apple Valley Workshop 2016"

Reed Estrada, Sidney Boyd, Chris Estrada, Cody Evans, Hannah Rhoades, Mark Rhoades, Trevor Rhoades

"Exoplanet Observing: from Art to Science"

Dennis M. Conti, Jack Gleeson

"Multiwavelength Observations of the Eclipsing Binary NSV 3438 between January 2013 and March 2016"

Carter M. Becker

"New Observations and Analysis of ζ Phoenicis"

Coen van Antwerpen, Tex Moon

"WD1145+017"

Mario Motta

continued on next page

papers and posters, cont.

"Spectrophotometry of Symbiotic Stars"

David Boyd

"How to Use Astronomical Spectroscopy to Turn the Famous Yellow Sodium Doublet Bands into a Stellar Speedometer and Thermometer"

Joshua Christian, Matthew King, John W. Kenney III

"Modeling Systematic Differences In Photometry by Different Observers"

John C. Martin

"How Faint Can You Go?"

Arne Henden

"Shoestring Budget Radio Astronomy"

John E. Hoot

"Using All-Sky Imaging to Improve Telescope Scheduling"

Gary M. Cole

"A Community-Centered Astronomy Research Program"

Pat Boyce, Grady Boyce

"Engaging Teenagers in Astronomy Using the Lens of Next Generation Science Standards and Common Core State Standards"

Sean Gillette, Debbie Wolf, Jeremiah Harrison

"An Overview of Ten Years of Student Research and JDSO Publications"

Rachel Freed, Michael Fitzgerald, Russell Genet, Brendan Davidson

"Use of the AAVSO's International Variable Star Index (VSX) in an Undergraduate Astronomy Course Capstone Project"

Kristine Larsen

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2. The Year in Review

papers and posters, cont.

"Student Scientific Research within Communities-of-Practice"

Russell Genet, James Armstrong, Philip Blanko, Grady Boyce, Pat Boyce, Mark Brewer, Robert Buchheim, Jae Calanog, Diana Castaneda, Rebecca Chamberlin, R. Kent Clark, Dwight Collins, Dennis Conti, Sebastien Cormier, Michael Fitzgerald, Chris Estrada, Reed Estrada, Rachel Freed, Edward Gomez, Paul Hardersen, Richard Harshaw, Jolyon Johnson, Stella Kafka, John Kenney, Kakkala Mohanan, John Ridgely, David Rowe, Mark Silliman, Irena Stojimirovic, Kalee Tock, Douglas Walker

"The SPIRIT Telescope Initiative: Six Years On"

Paul Luckas

"Techniques of Photometry and Astrometry with APASS, Gaia, and Pan-STARRs Results"

Wayne Green

"Exploring the Unknown: Detection of Fast Variability of Starlight"

Richard H. Stanton

"A Wide Band SpectroPolarimeter"

John Menke

"A Slitless Spectrograph That Provides Reference Marks (revised 2017)"

Tom Buchanan

"Astronomical Instrumentation Systems Quality Management Planning: AISQMP"

Jesse Goldbaum

"Scintillation Reduction using Conjugate-Plane Imaging"

Gary A. Vander Haagen

Deceased Members, Observers, Colleagues, and Friends

Members and Observers

Collins, Peter L.	Flagstaff, Arizona
Heasley, Allen S.	Aurora, Colorado
Schott, Gerd-Lutz	Wesel, Germany
Uppgren Jr., Arthur R.	Middletown, Connecticut

Colleagues and Friends

Vera Rubin

AAVSO Observer Awards for 2015–2016

The AAVSO Observer Awards usually presented at the Spring Meeting were instead presented at the Annual Meeting.

2. The Year in Review

Papers Presented at the 106th Annual Meeting of the AAVSO, Held in Nashville, Tennessee; November 2–4, 2017

"Transits, Spots, and Eclipses: The Sun's Role in Pedagogy and Outreach"
Kristine Larsen

"Chasing Exoplanets from NASA's K2 and TESS Missions"
Knicole Colon

"From YY Boo (eclipsing binary) via J1407 (ringed companion) to WD 1145+017
(white dwarf with debris disk)"
Franz-Josef (Josch) Hamsch

"Period Variation in BW Vulpeculae"
David E. Cowall, A. P. Odell

"Nova eruptions from radio to gamma-rays - with AAVSO data in the middle"
Koji Mukai, Stella Kafka, Laura Chomiuk, Ray Li, Tom Finzell, Justin Linford,
Jeno Sokoloski, Tommy Nelson, Michael Rupen, Amy Mioduszewski,
Jennifer Weston

"The Vega Project, Part I"
Tom Calderwood, Jim Kay

"Looking for Zebras When There Are Only Horses"
Dennis M. Conti

"BV observations of the eclipsing binary XZ Andromedae at the ECU Observatory"
Marco Ciocca

"Discovery of KPS-1b, a Transiting Hot-Jupiter, with an Amateur Telescope Setup"
Artem Burdanov, Vadim Krushinsky, Eugene Sokov, Paul Benni

"AAVSO Target Tool: A Web-Based Service for Tracking Variable Star Observations"
Dan Burger, Keivan G. Stassun, Chandler Barnes, Sara Beck, Stella Kavka, Kenneth Li

"Python for Variable Star Astronomy"
Matt Craig

continued on next page

papers and posters, cont.

"The Great PDS 110 Eclipse: Back to the Drawing Board"

Joseph Rodriguez

"The Royal Road, Redux: Eclipses and Transits in the Era of Gaia and TESS"

Keivan G. Stassun

"The Exciting World of Binary Stars: Not Just Eclipses Anymore"

Bert Pablo

"Searching for Variable Stars in the SDSS Calibration Fields"

J. Allyn Smith, Melissa Butner, Douglas Tucker, Sahar Allam

"A Century of Light: Insights into Boyajian's Star with Archival Data"

Michael Lund

"Observations of Transiting Exoplanet Candidates Using BYU Facilities"

Michael D. Joner, Eric G. Hintz, Denise C. Stephens

"A Search for Variable Stars in Ruprecht 134" (poster)

Rachid El Hamri, Mel Blake

"Searching for variable stars in the field of Dolidze 35" (poster)

Jamin Welch, J. Allyn Smith

"Calculating Galactic Distances Through Supernova Light Curve Analysis" (poster)

Jane Glanzer

"Variable Stars in the Field of TrES-3b" (poster)

Erin Aadland

"Detecting Moving Sources In Astronomical Images" (poster)

Andy Block

2. The Year in Review

Deceased Members, Observers, Colleagues, and Friends

Members and Observers

Branchett, Brenda

Bus, E. Peter

Garrison, Robert F.

Pearlmutter, Arthur

Stephansky Abbott, Helen M.

Taylor, Melvyn Douglas

Whitney, Charles Allen

Deltona, Florida

Groningen, The Netherlands

Aurora, Illinois

Worcester, Massachusetts

Wrentham, Massachusetts

Wakefield, W. Yorkshire, England

Newton, Massachusetts

Colleagues and Friends

Hübscher, Joachim

Mittelman, David

Germany

Dover, Massachusetts

AAVSO Observer Awards for 2015–2016 (presented or announced at the 106th Annual Meeting, Nashville, Tennessee, November 2–4, 2017)

These awards for 2015–2016 were presented at the 106th Annual Meeting instead of the 106th Spring Meeting in Ontario, California, June 16–17, where they traditionally would have been presented.

<i>Award/recipient</i>	<i>Affiliation**</i>	<i>Country</i>	<i>Interval</i>	<i>Total</i>
Over 250,000 Visual Observations*				
Gary Poyner	20	Great Britain	1990–2016	251,759
Over 200,000 Visual Observations*				
Paul Vedrenne	01	France	1978–2016	201,880
Over 100,000 Visual Observations*				
Attila Kosa–Kiss	01	Romania	1976–2016	101,134
Over 50,000 Visual Observations*				
Csaba Hadhazi	03	Hungary	1990–2016	51,680
Guy M. Hurst	01	Great Britain	1974–2016	50,439
Over 25,000 Visual Observations*				
Janos Bakos	03	Hungary	2007–2016	25,886
Jose Rodrigues Ribeiro		Portugal	2000–2016	25,321
Michel Dumont	01	France	1983–2016	25,271
Ana Paula Correia		Portugal	2000–2016	25,256
Over 10,000 Visual Observations*				
David L. Blane	10	South Africa	1978–2016	10,591
Peter Reinhard	24	Austria	1979–2016	10,327
Emilio Colombo	18	Italy	1970–2016	10,138
Over 5,000 Visual Observations*				
Xavier Domingo Martinez	15	Spain	2015–2016	7,983
Lee Maisler		USA	1991–2016	5,751
William P. Clarke		USA	1988–2016	5,213
Over 1,000 Visual Observations*				
Ray E. Tomlin		USA	2006–2016	2,760
Andrey Maslennikov		Ukraine	2016–2016	2,212

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2. The Year in Review

Observer Awards, cont.

<i>Award/recipient</i>	<i>Affiliation**</i>	<i>Country</i>	<i>Interval</i>	<i>Total</i>
Yana Pavlenko		Ukraine	2015–2016	2,102
Frank Dempsey	27	Canada	1987–2016	1,480
Andrey Vasilev		Ukraine	2016–2016	1,324
Mauro Rana		USA	2015–2016	1,224
Nikolai Buchholz		Germany	2015–2016	1,198
Dave Smales		Great Britain	2013–2016	1,133
Edward Sawyer		Canada	2014–2016	1,108
Ronald A. King		USA	2010–2016	1,042
Bartosz Salwiczek		Poland	2014–2016	1,029
Mark S. De Jong	27	Canada	2008–2016	1,014
Lewis P. Cason		USA	1998–2016	1,010
Varvara Prodanets		Ukraine	2014–2016	1,002
Over 100 Visual Observations*				
Tom Bryant		USA	2016–2016	665
Yulia Kunitsa		Ukraine	2016–2016	628
Ralf Schoenfeld	02	Germany	2015–2016	574
Michal Kwieciak		Poland	2016–2016	501
Alberto Cabello Sanchez		Spain	2016–2016	441
Christina Lugova		Ukraine	2016–2016	408
Pablo Fernandez Blanco		Spain	2016–2016	404
Angelina Shmagun		Ukraine	2016–2016	372
Alexsandr E. Morozov		Russia	2015–2016	266
Zoltan Sonkoly	03	Hungary	2014–2016	207
Alexander Zverev		Russia	2016–2016	201
William M. Pittendreigh		USA	2016–2016	173
John Carl Martin		USA	2013–2016	169
Nuno Costa		Portugal	2004–2016	166
Richard Glassner		USA	2015–2016	145
Terry David Atwood		USA	2016–2016	136
Rob Donner		USA	2014–2016	131
Ferenc Tamasko	03	Hungary	2016–2016	131
Fabio Feijo		Brazil	2014–2016	114
Yury A. Melnikov		Austria	2015–2016	113
Philippe Danthine		Belgium	2016–2016	111
Robert Jacques Lawless		France	2009–2016	107

continued on next page

Observer Awards, cont.

<i>Award/recipient</i>	<i>Affiliation**</i>	<i>Country</i>	<i>Interval</i>	<i>Total</i>
Massimo Cappellini		Italy	2015–2016	103
Martin Kearns	06	Spain	2015–2016	102
Juliana Gomes Pontes	27	Canada	2015–2016	101
Over 1.6 million CCD Observations*				
Franz–Josef Hambsch	05	Belgium	2002–2016	1,651,936
Over 700,000 CCD Observations*				
Robert A. James		USA	1953–2016	706,925
Over 400,000 CCD Observations*				
Teofilo Arranz		Spain	2005–2016	471,909
Gerard Samolyk		USA	1975–2016	462,590
James L. Jones		USA	2002–2016	417,739
Over 200,000 CCD Observations*				
Vance Petriew	27	Canada	2001–2016	290,301
Kenneth Thomas Menzies		USA	1968–2016	274,247
Lewis (Lew) Cook		USA	1974–2016	265,743
Richard Sabo		USA	2006–2016	265,668
William L. Stein		USA	2008–2016	237,389
Ian Miller	20	Great Britain	2007–2016	210,311
Joseph Howard Ulowetz		USA	2010–2016	209,027
Over 100,000 CCD Observations*				
Gordon Myers		USA	2007–2016	181,469
Roger Derek Pickard	20	Great Britain	2003–2016	150,016
Peter John Starr		Australia	2006–2016	111,719
Peter Robert Nelson		Australia	1990–2016	109,807
Geoffrey Stone		USA	2016–2016	104,258
Over 50,000 CCD Observations*				
James R. Foster		USA	2003–2016	81,497
Gary Walker		USA	1994–2016	72,174
Douglas E. Barrett		France	2007–2016	61,897
Michael J. Cook		Canada	2010–2016	50,151

continued on next page

2. The Year in Review

Observer Awards, cont.

<i>Award/recipient</i>	<i>Affiliation**</i>	<i>Country</i>	<i>Interval</i>	<i>Total</i>
Over 10,000 CCD Observations*				
Tomas L. Gomez	06	Spain	1985–2016	28,922
Edward J. Michaels		USA	1970–2016	18,924
Tamas Tordai	03	Hungary	1986–2016	17,875
Barbara Gail Harris		USA	2002–2016	16,964
Velimir Popov		Bulgaria	2013–2016	14,015
Stephen M. Brincat		Malta	1984–2016	12,164
Simon James Lowther	14	New Zealand	2016–2016	11,631
Emery Erdelyi		USA	2007–2016	10,334
Francisco C. S. Alfarp		Spain	2012–2016	10,143
Over 1,000 CCD Observations*				
Steve James Johnston	20	Great Britain	2014–2016	9,286
John Ritzel		USA	2015–2016	7,190
David Eric Cowall		USA	1993–2016	6,483
Eric Dose		USA	2016–2016	5,677
Clive Beech	20	Great Britain	2007–2016	3,894
Walter R. Cooney		USA	2011–2016	3,551
David Young		USA	2006–2016	3,265
Brad Phillip Vietje		USA	2015–2016	3,016
Maxim Kititsa	09	Ukraine	2000–2016	2,735
Fatemeh Bahrani		Iran	2016–2016	2,014
Emilio Primucci		Argentina	2015–2016	1,959
Adolfo Darriba Martinez		Spain	1993–2016	1,821
Mahdi Kord Zangeneh		Iran	2016–2016	1,638
Nathan A. Krumm		USA	2014–2016	1,565
Alexander Purves		USA	2015–2016	1,359
Rolf Werder		Germany	2016–2016	1,196
Daniel James Coulter		USA	2016–2016	1,180
Alejandra Arranz Lazaro		Spain	2014–2016	1,156
Alberto C. Sadun		USA	2009–2016	1,153
Whit Ludington		USA	2015–2016	1,137
Martin Fowler	20	Great Britain	2016–2016	1,126
Jose Luis Martin		Spain	2014–2016	1,044

continued on next page

Observer Awards, cont.

<i>Award/recipient</i>	<i>Affiliation**</i>	<i>Country</i>	<i>Interval</i>	<i>Total</i>
Over 10,000 PEP Observations*				
Terry Trevor Moon		Australia	2016–2016	10,225
Over 5,000 PEP Observations*				
Gerald Persha		USA	2013–2016	7,066
Over 2,500 PEP Observations*				
James H. Fox		USA	1999–2016	2,639
Over 100 PEP Observations*				
Paul William Kneipp		USA	1970–2016	459
Frank Melillo		USA	1998–2016	289
James Michael Kay		USA	2013–2016	270
Ken Sikes		USA	2016–2016	131
Carl Richard Knight	20	New Zealand	2009–2016	104
Over 10,000 DSLR Observations*				
Neil Butterworth	29	Australia	2002–2016	28,651
Over 1,000 DSLR Observations*				
Bob Manske		USA	1987–2016	8,153
Des Loughney	20	Great Britain	2005–2016	4,538
Antonio Brunelli		Italy	2016–2016	1,669
Roger Pieri		France	2009–2016	1,591
Ronald L. Fournier		USA	1995–2016	1,334
Christophe Marlot		France	2015–2016	1,152
Oliver Christopher Lopez		Venezuela	2016–2016	1,110
Aniruddh Narayan Deshpande		India	2013–2016	1,090
Jean-Louis Penninckx		France	2015–2016	1,052
Over 500 DSLR Observations*				
Nikolay Mishevskiy		Ukraine	2015–2016	975
Jyrki T. J. Porio	17	Finland	2015–2016	966
Ivan Sergey		Belarus	2003–2016	512

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2. The Year in Review

Observer Awards, cont.

<i>Award/recipient</i>	<i>Affiliation**</i>	<i>Country</i>	<i>Interval</i>	<i>Total</i>
Over 100 DSLR Observations*				
Ian S. Megson	20	Great Britain	2015–2016	280
Barbara Gail Harris		USA	2002–2016	249
Hauke Hammerl	02	Germany	2016–2016	193
Giuseppe Conzo		Italy	2016–2016	111
Luigi Pirozzi		Italy	2001–2016	111
Shishir Satish Deshmukh		India	2015–2016	104
Stephen R. L. Futcher		Great Britain	2016–2016	103

* Years include total AAVSO observing interval (not only PEP/CCD observing).
Total includes only visual or PEP/CCD observations, depending on award.

A number preceding a name indicates observer is also affiliated with the group below:

- 01 Association Française des Observateurs d'Étoiles Variables (AFOEV)
- 02 Bundesdeutsche Arbeitsgemeinschaft für Veränderliche Sterne e.V. (BAV) (Germany)
- 03 Magyar Csillagászati Egyesület, Valtócsillag Szakcsoport (Hungary)
- 05 Vereniging Voor Sterrenkunde, Werkgroep Veranderlijke Sterren (Belgium)
- 06 Madrid Astronomical Association M1 (Spain)
- 09 Ukraine Astronomical Group, Variable Star Section
- 10 Astronomical Society of Southern Africa, Variable Star Section
- 14 Royal Astronomical Society of New Zealand, Variable Star Section
- 17 URSA Astronomical Association, Variable Star Section (Finland)
- 18 Unione Astrofili Italiani (Italy)
- 20 British Astronomical Association, Variable Star Section
- 24 Astronomischer Jugendclub (Austria)
- 27 Royal Astronomical Society of Canada
- 29 Variable Stars South (New Zealand)

AAVSO Observer Awards for 2016–2017 (presented or announced at the 106th Annual Meeting, Nashville, Tennessee, November 2–4, 2017)

These awards, which are for 2016–2017, were presented here instead of at the 107th Spring Meeting in Coventry, England, in July 2018, where they traditionally would have been presented.

<i>Award/recipient</i>	<i>Affiliation**</i>	<i>Country</i>	<i>Interval</i>	<i>Total</i>
Over 250,000 Visual Observations*				
Rod Stubbings	14	Australia	1997–2017	257,576
Over 175,000 Visual Observations*				
Peter Williams	29	Australia	1989–2017	175,188
Over 125,000 Visual Observations*				
Eddy Muyliaert	05	Belgium	1986–2017	137,678
Over 100,000 Visual Observations*				
Jose Ripero Osorio	06	Spain	1978–2017	100,937
Over 75,000 Visual Observations*				
Andrew Pearce		Australia	1990–2017	88,768
Over 25,000 Visual Observations*				
George Vithoukas		Greece	1999–2017	25,692
Matyas Csukas		Romania	1987–2017	25,112
Over 10,000 Visual Observations*				
Xavier Domingo Martinez		Spain	2015–2017	13,070
Chris P. Maloney	15	USA	2012–2017	10,777
Larry Shotter		USA	1981–2017	10,290
Over 5,000 Visual Observations*				
Jon F. M. Brandie		China	2011–2017	6,153
Patrick Grocaut		France	2015–2017	6,090
Adriano A. Silva Barros	13	Brazil	1996–2017	5,423
Pierre Jacquet	01	France	1992–2017	5,341
Paolo Siliprandi	18	Italy	2005–2017	5,267
Eltjo K. Wubbena	04	Netherlands	2000–2017	5,187
John G. O'Neill		USA	1993–2017	5,021

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2. The Year in Review

Observer Awards, cont.

<i>Award/recipient</i>	<i>Affiliation**</i>	<i>Country</i>	<i>Interval</i>	<i>Total</i>
Over 1,000 Visual Observations*				
Roger D. Pickard	20	Great Britain	2003–2017	4,053
Gregory P. Banialis		USA	1993–2017	3,981
Hans Betlem		Netherlands	2007–2017	2,799
Robert Januszewski	20	Great Britain	2005–2017	2,578
Damian Jakubek		Poland	2011–2017	2,052
Egor Maleev		Ukraine	2014–2017	1,633
Bjorn Karlsson	19	Sweden	2017–2017	1,478
Yulia Kunitsa		Ukraine	2016–2017	1,275
James Whinfrey		Great Britain	2011–2017	1,236
Andras Uhrin	03	Hungary	1992–2017	1,209
Christina Lugova		Ukraine	2016–2017	1,196
Ralf Schoenfeld	02	Germany	2015–2017	1,136
Alicia Capetillo Blanco		Spain	2006–2017	1,055
Bernd Schwarz	02	Germany	2013–2017	1,029
Patrick J. Garey		USA	1975–2017	1,018
Robert G. MacPhail		Canada	2012–2017	1,015
Andrey S. Semenyuta		Kazakhstan	2017–2017	1,010
Over 100 Visual Observations*				
Michel Deconinck		France	2014–2017	813
Ugo Tagliaferri		Italy	2006–2017	812
Steven L. Koontz		USA	2016–2017	670
Artur Wargin		Poland	2007–2017	609
Mark A. Davis		USA	1988–2017	519
Karl-Gustav Andersson	19	Sweden	2003–2017	516
Kacper W. Wierzchos		USA	2016–2017	314
Yekaterina Tsvetkova		Ukraine	2017–2017	275
Robert Dudas	03	Hungary	2016–2017	231
Jan Kvapil		Sweden	2014–2017	159
James Bove		USA	2016–2017	153
Bernard Merand		France	2016–2017	120
Csilla Tepliczky	03	Hungary	2007–2017	116
Jeff Oaster		USA	2016–2017	111
Kristina Burton		USA	2017–2017	104
Michel Dellepère		USA	2016–2017	101

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Observer Awards, cont.

<i>Award/recipient</i>	<i>Affiliation**</i>	<i>Country</i>	<i>Interval</i>	<i>Total</i>
Tamas Komaromi	03	Hungary	2014–2017	100
Over 1.7 million CCD Observations*				
Franz–Josef Hambsch	05	Belgium	2002–2017	1,784,875
Over 700,000 CCD Observations*				
Shawn Dvorak		USA	1981–2017	708,483
Over 500,000 CCD Observations*				
Teofilo Arranz		Spain	2005–2017	577,189
Gerard Samolyk		USA	1975–2017	544,834
Over 300,000 CCD Observations*				
Lewis (Lew) Cook		USA	1974–2017	346,561
David Cejudo Fernandez		Spain	2010–2017	345,719
Geoffrey Stone		USA	2016–2017	323,142
Kenneth Thomas Menzies		USA	1968–2017	321,900
Vance Petriew	27	Canada	2001–2017	313,709
Richard Sabo		USA	2006–2017	301,018
Over 200,000 CCD Observations*				
Gordon Myers		USA	2007–2017	296,226
Arto Oksanen	17	Finland	2001–2017	204,656
Over 100,000 CCD Observations*				
James R. Foster		USA	2003–2017	129,002
Alain Bruno	01	France	1981–2017	107,567
Jeremy Shears	20	Great Britain	2004–2017	106,556
Over 50,000 CCD Observations*				
James Bruce McMath		USA	1992–2017	64,230
Tamas Tordai	03	Hungary	1986–2017	52,176
Over 10,000 CCD Observations*				
Franky Dubois	05	Belgium	2014–2017	35,884
Nikolay Mishevskiy		Ukraine	2015–2017	30,985

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2. The Year in Review

Observer Awards, cont.

<i>Award/recipient</i>	<i>Affiliation**</i>	<i>Country</i>	<i>Interval</i>	<i>Total</i>
Frans D. J. Nieuwenhout	04	Netherlands	1999–2017	23,729
Eric Dose		USA	2016–2017	20,240
David Eric Cowall		USA	1993–2017	15,521
Damien Lemay	27	Canada	1973–2017	15,122
Anthony Kroes		USA	2004–2017	14,998
David S. Conner	20	Great Britain	2009–2017	14,352
Kevin Hills		Great Britain	2012–2017	12,592
Steve James Johnston	20	Great Britain	2014–2017	10,811
Michael A. Nicholas		USA	2001–2017	10,657
John Ritzel		USA	2015–2017	10,472
Wolfgang Vollmann		Austria	1976–2017	10,267
Mark J. Munkacsy		USA	1997–2017	10,230
Over 1,000 CCD Observations*				
Jim Seargeant		USA	2015–2017	7,821
Tom Polakis		USA	2017–2017	7,465
Pablo Lewin		USA	2017–2017	7,239
Francois M. Teyssier		France	2006–2017	6,713
Alessandro Marchini	18	Italy	2006–2017	5,418
Riccardo Papini	18	Italy	1992–2017	4,902
David W. G. Smith		20Great Britain	2017–2017	4,448
Michelle Dadighat		USA	2014–2017	4,302
Bram Goossens	05	Belgium	2017–2017	3,388
John Edward Hall		USA	2009–2017	3,251
Ulisse Quadri	18	Italy	2016–2017	2,982
Stoian Andrei–Marian Romania			2013–2017	2,851
Clifford Kotnik		USA	2016–2017	2,740
Greg Gordon Bolt	31	Australia	2017–2017	2,693
Franklin R. Guenther		USA	2013–2017	2,583
Ivaldo Cervini		Switzerland	2017–2017	2,346
Marc Deldem	01	France	2011–2017	2,235
Geoff B. Chaplin	20	Great Britain	2015–2017	2,014
Robert A. Stiller		USA	2017–2017	1,848
Emil J. L. Pellett		USA	2017–2017	1,624
Bernard Candela	01	France	1978–2017	1,528
Andre Debackere		France	2016–2017	1,468

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Observer Awards, cont.

<i>Award/recipient</i>	<i>Affiliation**</i>	<i>Country</i>	<i>Interval</i>	<i>Total</i>
Carl Richard Knight	20	New Zealand	2009–2017	1,449
Gianluca Rossi		Italy	2001–2017	1,423
John H. Mallett	20	Great Britain	2010–2017	1,371
Paul Luckas		Australia	2017–2017	1,360
Charles H. Cynamon		USA	2017–2017	1,328
Jean–Francois Hamel		Canada	2016–2017	1,291
Craig Young		New Zealand	2017–2017	1,275
Luis Francisco Perez		Spain	2012–2017	1,272
James Arnold		USA	1956–2017	1,223
David J. Dowhos		Canada	2006–2017	1,147
Lukasz Socha		Poland	2017–2017	1,007
Over 7,500 PEP Observations*				
Gerald Persha		USA	2013–2017	9,124
Over 100 PEP Observations*				
Erwin Van Ballegoij	04	Netherlands	1984–2017	112
Over 1,000 DSLR Observations*				
Jyrki T. J. Porio	17	Finland	2015–2017	2,931
Thanasis F. Papadimitriou		Greece	2012–2017	2,548
Over 500 DSLR Observations*				
Martin Sblewski		Germany	2015–2017	786
Sandor Hadhaz	03	Hungary	1983–2017	664
Wolfgang Vollmann		Austria	1976–2017	631
Dietmar Boehme	02	Germany	1972–2017	628
Over 100 DSLR Observations*				
David L. Blane	10	South Africa	1978–2017	492
Stephen C. Schiff		USA	1960–2017	406
Derek Christ		Germany	2017–2017	398
Jean–Francois Gout		USA	2017–2017	364
Raymond Kneip		Luxembourg	2013–2017	363
Gabriel Murawski		Poland	2013–2017	305
Jean–Michel Rayon	01	France	2016–2017	257

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2. The Year in Review

Observer Awards, cont.

<i>Award/recipient</i>	<i>Affiliation**</i>	<i>Country</i>	<i>Interval</i>	<i>Total</i>
Steve C. Boerner		USA	2017–2017	252
Ethan Jacob Brown		USA	2017–2017	128
Marian Legutko		Poland	2000–2017	103

* Years include total AAVSO observing interval (not only PEP/CCD observing).
Total includes only visual or PEP/CCD observations, depending on award.

A number preceding a name indicates observer is also affiliated with the group below:

- 01 Association Française des Observateurs d'Étoiles Variables (AFOEV)
- 02 Bundesdeutsche Arbeitsgemeinschaft für Veränderliche Sterne e.V. (BAV) (Germany)
- 03 Magyar Csillagászati Egyesület, Valtózcillag Szakcsoport (Hungary)
- 04 Koninklijke Nederlandse Vereniging Voor Weer-en Sterrenkunde, Werkgroep
Veranderlijke Sterren (Netherlands)
- 05 Vereniging Voor Sterrenkunde, Werkgroep Veranderlijke Sterren (Belgium)
- 06 Madrid Astronomical Association M1 (Spain)
- 10 Astronomical Society of Southern Africa, Variable Star Section
- 13 Rede de Astronomia Observacional (Brazil)
- 14 Royal Astronomical Society of New Zealand, Variable Star Section
- 15 Agrupacion Astronomica de Sabadell (Spain)
- 17 URSA Astronomical Association, Variable Star Section (Finland)
- 18 Unione Astrofili Italiani (Italy)
- 19 Svensk Amator Astronomisk Förening, Variabelsektionen (Sweden)
- 20 British Astronomical Association, Variable Star Section
- 27 Royal Astronomical Society of Canada
- 29 Variable Stars South (New Zealand)
- 31 Center for Backyard Astronomy

AAVSO Merit Award Recipient (presented at the 106th Annual Meeting, Nashville, Tennessee, November 4, 2017)

William Goff was awarded the 48th AAVSO Merit Award for “his important visual variable star observations made in service to the AAVSO chart sequences program, his dedicated service as a local steward of the Clinton B. Ford Observatory on Mt. Peltier, his careful oversight of and assistance to the Association through serving as its Treasurer, and his significant contribution of over 186,000 CCD variable star observations to the AAVSO International Database, especially those made in response to *AAVSO Alert Notices*.”

AAVSO William Tyler Olcott Award Recipient (presented at the 106th Annual Meeting, Nashville, Tennessee, November 4, 2017)

Mario E. Motta received the William Tyler Olcott Distinguished Service Award “for his tireless work at the local through national level to protect our precious night skies from the ravages of light pollution, thereby guaranteeing the future of variable star observing; his decades of service to amateur telescope making, public outreach, and education through his work with the Amateur Telescope Makers of Boston, the Springfield Telescope Makers, the International Dark-Sky Association, and the AAVSO; and his leadership within the AAVSO.”

AAVSO Director’s Award Recipient (presented at the 106th Annual Meeting, Nashville, Tennessee, November 4, 2017)

George A. Silvis received the AAVSO Director’s Award in recognition of his “hard work at AAVSO Headquarters, major contributions to the AAVSO’s software and database infrastructure (including supporting and enhancing VPhot), and his continuous involvement with various key AAVSO projects (including leading the Eggen card project and the annual Transformation campaign). We celebrate his dedication to the AAVSO, we are thankful for his energy, expertise, and enthusiasm, and we present him with the 2017 Director’s award as a token of our gratitude for his commitment and dedication.”

2. The Year in Review

AAVSO Solar Observer Awards (presented or announced at the 106th Annual Meeting of the AAVSO, Held in Nashville, Tennessee; November 2–4, 2017)

Sunspot Observers

100 observations

Marcelino Vázquez Muñoz Neil Simmons

500 observations

Robert Little Mat Raymonde
Juan Antonio Moreno Quesada

1,000 observations

Santanu Basu Mark Harris
Fredirico Luiz Funari

1,500 observations

Kandilli Observatory John McCammon

2,000 observations

Jan Alvestad Brian Gordon-States

2,500 observations

Jose Alberto Berdejo Kim Hay

3,000 observations

Michael Boschat

3,500 observations

Javier Ruiz Fernandez Etsuiku Mochizuki

4,000 observations

John Kaplan A. Gonzalo Vargas

4,500 observations

Tom Fleming Miyoshi Suzuki

5,000 observations

Gema Araujo Brenda Branchett

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Solar Observer Awards, cont.

5,500 observations

Brenda Branchett

SID Reports

Frank Adamson

Radovan Mrllák

AAVSO Membership Awards (announced at the 106th Annual Meeting, Nashville, Tennessee, November 4, 2017)

50 or more Years

Jay H. Miller	Maryland
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25–49 Years

George W. Gliba	Maryland
Kevin Krisciunas	Texas
Koji Mukai	Maryland
Bradley E. Schaefer	Louisiana

AAVSO Special Recognition Award Recipients (presented at the 106th Annual Meeting, Nashville, Tennessee, November 4, 2017)

Special recognition awards were made to:

Donn R. Starkey “for his work in coordinating the AAVSO mentor program between 2015 and 2017 and for his role as a mentor to many variable star observers.”

Chandler Barnes “for his valuable volunteer contributions to the AAVSO through his work on developing the AAVSO Target Tool (ATAT), which is an essential and customizable resource used by variable star observers in planning their observing programs and supporting variable star research.”

Dan Burger “for his valuable volunteer contributions to the AAVSO through his work on developing the AAVSO Target Tool (ATAT), which is an essential and customizable resource used by variable star observers in planning their observing programs and supporting variable star research.”

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2. The Year in Review

Special Recognition Awards, cont.

Kenneth Li “for his valuable volunteer contributions to the AAVSO through his work on developing the AAVSO Target Tool (ATAT), which is an essential and customizable resource used by variable star observers in planning their observing programs and supporting variable star research.”

Phil Manno “for his invaluable volunteer contributions to the AAVSO through his work on creating the AAVSO Member Search tool and on re-writing and improving the CHart Error Tracking tool (CHET), both of which are widely used by AAVSO members and observers.”

Jennifer (Jeno) Sokoloski “for her valuable volunteer contributions to the AAVSO through her work on developing the AAVSO Target Tool (ATAT), which is an essential and customizable resource used by variable star observers in planning their observing programs and supporting variable star research.”

Keivan Stassun “for his valuable volunteer contributions to the AAVSO through his work on developing the AAVSO Target Tool (ATAT), which is an essential and customizable resource used by variable star observers in planning their observing programs and supporting variable star research.”

The AAVSO extends its congratulations to:

George H. East “for his spectacular photographic montage of the Total Solar Eclipse of August 21, 2017, which was the winning entry in the AAVSO Solar Eclipse photograph competition.”

AAVSO Digitizer Awards (presented at the 106th Annual Meeting, Nashville, Tennessee, November 4, 2017)

Noah Goldman	10,000 historical variable star observations
Stuart Morris	10,000 historical variable star and solar observations

The full text of citations, and more information about other awards made over the years, can be found on the AAVSO's Awards and Honors page at <https://www.aavso.org/honors-and-awards>

New Members 2017

	Amarasinghe, Varna, Australia		Cori, William, Peru
	Andersen, Steven, Minnesota		Cornelis, Dirk, Belgium
	Anderson, Richard, Maryland		Craft, David, New Mexico
	Anglada-Escude, Guillem, United Kingdom	S	Crocker, Deb, Alabama
	Arena, Claudio, Italy		Crutcher, David, Michigan
	Ashcraft, Arnold, New Jersey		Cynamon, Charles, Maryland
	Bamford, Jessica, Massachusetts		Darrow, Charles, Massachusetts
	Barbieri, Lorenzo, Italy		Dechaine, Greg, New Jersey
	Bell, Jeremy, Pennsylvania		Deldem, Marc, France
	Beltzer Sweeney, Alexander, California		Devine, Brendan, Illinois
J	Bergeron, Serge, Canada		Dilulio, Ronald, Texas
	Bertesteanu, Daniel, Romania		Doyle, Courtney, Wyoming
	Bibe, Victor, Argentina		Duranko, Gary, New Hampshire
	Blackham, Kate, United Kingdom		Edens, Thomas, North Carolina
J	Blake, Adam, Arizona		Edmonds, Robert, United Kingdom
	Boerner, Steve, Missouri		Elsayed, Ahmed, Egypt
	Boltz, Scott, California		English, Darlene, Canada
J	Bourgeois, Jean, Belgium		Evans, Daniel, United Kingdom
	Brehl, David, California		Evans, Phil, New Zealand
	Bria, Rocco, Connecticut		Fare, Ian, Canada
	Büttner-Jacobs, Otto, Germany		Felder, Geoff, United Kingdom
	Carlson, Jim, Massachusetts		Fitzsimmons, Tom, California
	Castillo, Rafael, Spain		Fowler, Martin, United Kingdom
	Cervini, Ivaldo, Switzerland		Funai, John, Hawaii
	Chapin, Peter, Vermont		Gebhart, Jeff, Tennessee
	Chasin, Mike, California		Gettys, Jim, Massachusetts
	Cheek, Roger, New York		Ghimire, Mothi, Kentucky
	Clarke, Leo, United Kingdom		Gibier Pascoli, Frank, France
	Clem, James, Pennsylvania		Glen, Stuart, Canada
	Coffano, Alessandro, Italy		Gong, Timothy, New Jersey
	Coin, James, North Carolina		Goossens, Bram, Belgium
	Conrad, Gregory, New Mexico		Gorney, David, Arizona
	Coon, William, Massachusetts		Gout, Jean-Francois, Arizona
	Coppejans, Deanne, Illinois		Gregory, Chase, Texas
			Grundfast, Jacqueline, New York
			Grzyb, Miles, Connecticut

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2. The Year in Review

new members, cont.

	Hamar, Martin, Connecticut		Lott, Marie, Georgia
	Harmon, Robert, Ohio		Luckas, Paul, Australia
J	Heaton, Harold, Massachusetts		Maitland, Shane, Canada
	Hegde, Ganesh, India		Matsuo, Nicolas, Massachusetts
	Henrichs, Huib, Netherlands		May, Ronald, Ohio
	Heslar, Michael, Florida		Mazuela, Rodrigo, Chile
	Hissong, Jason, Ohio		Meredith, Kate, Wisconsin
	Hoffman, James, New York		Meza, Felipe, Costa Rica
	Hotka, Michael, Colorado		Moura, Carlos, Brazil
	Howard, Timothy, New Mexico		Mullen, Ed, Florida
J	Huffman, Gary, Alabama	J	Napier, Bob, Rhode Island
	Hutchins, Stuart, Colorado		Neubauer, Jeffrey, Arizona
	Ibryamov, Sunay, Bulgaria	J	Neugarten, Andrew, Missouri
	Inglis, Paul, United Kingdom		Nielsen, Hans, Denmark
	Ingram, David, Washington		O'Halloran, Brian, United Kingdom
	Jackson, Amy, Texas		O'Neal, John, North Carolina
	Jacovich, Taylor, Connecticut		Oesper, David, Wisconsin
	Jammeh, Kemo, Kentucky		Oliveira, Antonio, Brazil
	Jurdana-Sepic, Rajka, Croatia		Oravec, Charles, California
	Kasoff, Jeffrey, Kansas		Osborne, Andy, Georgia
	Kellett, Leo, New York		Packard, Colin, Florida
	Kelly, John, Nevada		Padilla Filho, Antonio, Brazil
	Keown, Robert, Pennsylvania		Papadimitriou, Thanasis, Greece
	Kern, Jamie, Massachusetts		Parker, Alex, Massachusetts
J	Kertesz, Csaba, Finland		Parker, David, United Kingdom
	Kervella, Pierre, France		Pellett, Emil, Wisconsin
	Kim, Somi, Republic of Korea		Pickett, Brian, Australia
	Klapatch, Ken, Wyoming		Popescu, Cristian, Romania
	Kuilenburg, Johan, Netherlands		Preiser, Nicole, Vermont
	Lalla, Douglas, Alaska		Purucker, Hans-Georg, Germany
	Lavender, Jay, Canada		Rallo, Jorge, Spain
	Lawrence, Stephen, New York		Rayon, Jean-Michel, France
	Lemarchand, Patrice, France		Rocchetto, Marco, United Kingdom
	Levi, Alejandro, California		Rosano, Jorge, Germany
	Lewis, Phillip, unknown state US		Ruthroff, John, Indiana
	Lichtenberger, Michael, California		Saunders, John, New York
	Linsley, Keyes, Massachusetts		Sautner, John, Canada

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new members, cont.

Schwendeman, Erik, Virginia	Toop, Robert, Massachusetts
Shapira, Israel, California	Tran, Henry, Massachusetts
Spratt, Sean, California	Trottier, Howard, Canada
Sproul, Carol, Pennsylvania	Trudel, Robert, Connecticut
Sproul, Mark, Pennsylvania	Tubbs, James, Idaho
St. Amand, Adam, Massachusetts	Tucker, Roy, unknown state US
Steenkamp, Andre, Denmark	Turner, Garrison, Kentucky
Suarez, Nestor, Argentina	Udani, Kanaiyalal (Ken),
Suntzeff, Nicholas, Texas	New Jersey
Tabacco, Fulvio, Italy	Utt, Eric, Connecticut
Thakur, Aishwarya,	Wallace, Jon, Maine
United Kingdom	West, Mary Lou, New Jersey
Thomas, Nigel,	Whelan, David, Texas
United Kingdom	Whipple, Parkes, Utah
Thompson-Renzi, Michael,	J Wierzchos, Kacper, Florida
Massachusetts	Willmitch, Thomas, Illinois
Timar, Andras, Hungary	Wingham, Geoffrey, New Zealand
Tobin, Ryan, Indiana	Wood, Matt, Texas
Tock, Kalee, California	Wood, James, California
Tonkin, Nick, United Kingdom	

J = Junior membership
S = Sustaining membership

Annual Report of the Director for Fiscal Year 2016–2017

Stella Kafka, Director

AAVSO progress report—AID—the core of our program

A year in review

Overall, this year we saw the outcome of projects initiated in 2016, producing new tools for our community, our observers, and our volunteers, and we made progress on legacy projects which will lead to new services for our observers. We developed and provided new training material including new CHOICE courses and manuals, and continued to post articles of interest on our web pages and social media, reaching our community worldwide.

This year, we also welcomed at HQ our new staff Astronomer, Dr. Bert Pablo. Dr. Pablo comes to us from the BRITe Constellation collaboration team, with excellent programming and database skills, and a rigorous research program focused on bright stars. In particular, his scientific work is on Heartbeat stars. Dr. Pablo started his tenure at the AAVSO in July 2018.

On the operational side of the organization, we initiated and completed a review of all HR services and looked into our accounting record-keeping policies and procedures. With the help of the Fundraising Committee, we changed the format of our annual campaign, securing contributions from observers worldwide. For the first time, we also rented out part of our building, bringing income supporting our operations.

Finally, we continued to work closely with volunteers who are responsible for many aspects of the AAVSO's portfolio—from software and IT infrastructure, to courses and charts/sequences and finances. As the AAVSO's multiple services have needs that cannot be covered by HQ staff alone (especially since we do not have all the expertise onboard), we will continue to engage our community and ask for your help for various aspects of the organization.

Our science program—observer support and training

The AAVSO International Variable Star Index VSX

This year, work on VSX was focused on establishing best practices both for identifying (and flagging) suspected duplicate entries in VSX and for new stars submitted by observers.



With the influx of new variable star data catalogues from modern surveys (which will become more intense in the upcoming years) we also needed to revise our policies of dealing with uncertainties within various catalogues imported into VSX. This need became necessary after recognizing the magnitude of uncertainties in star positions within catalogues and source confusion in crowded fields—stars of interest with close companions and objects embedded in star clusters or which are towards the galactic center. Such uncertainties result in duplicate records of the same variable star in VSX, which lead to confusion. Various flags were discussed among members of the VSX team (Patrick Wils, Chris Watson, and Sebastián Otero), and a new workflow to flag (and hide) objects for which information is unreliable has been established. Consequently, more than 4,000 stars were identified as duplicates and removed from the existing live catalogue.

Furthermore, contributions from individual users doubled in number in 2017 (in comparison with previous years), regarding revisions and new submissions. 2017 ended up being the year with the highest number of new objects resulting from professional surveys since VSX's launch. At present, VSX has 475,227 entries of variable objects.

To facilitate our interactions with volunteers who submit information on newly discovered objects, we updated our “guidelines” page to include new policies for stars with incomplete submissions and clarify information on new discoveries. A link to those guidelines can be found here: <https://www.aavso.org/vsx/index.php?view=about.notice#policy>

We also initiated (and completed) a Frequently Asked Questions (FAQ) page, primarily aiming at providing information on submissions of new variable stars. It can be found here: <https://www.aavso.org/vsx/index.php?view=about.faq>

We hope that those two resources will accommodate questions by the increasing number of volunteers who discover and submit new variables, and help clarify questions asked by members of our community.

New CHart Error Tool (CHET)

The CHET tool was designed for the community to submit errors or other issues found in the AAVSO charts to the Charts and Sequences Team. CHET has been underperforming, making its use difficult, so volunteer Phil Manno designed and completed a new version of the tool. After development tests, this new software was released to the community.

A snapshot appears in Figure 1. The new CHET can be found at: <https://www.aavso.org/apps/chet/>



Figure 1. Snapshot from the improved CHET.

2. The Year in Review

New generation Light Curve Generator (LCG-2)

This tool was created by our volunteer Francis Hemsher in the summer/fall of 2016 to replace the old Light Curve Generator (LCG). The LCG is meant to present a snapshot light curve of a star of interest, to indicate what types of data are available within a time period defined by a user. After rigorous testing, the updated version was released to the AAVSO community in spring 2017. In addition to displaying light curves of interest, the LCG-2 enables users to select data subsets, define parameters of the plot (axes/dates), select filters, zoom in and out of portions of the light curve, see who observed the specific target, and select an individual observer's data. The LCG-2 is also able to connect with external databases and display their data alongside the AAVSO light curves. After release, we worked with Mr. Hemsher to accommodate community member comments, in order to improve the tool and its functionality. The old version is still operating—it can be found under the tab “Data” and “Data access” on our web page. A snapshot of the LCG-2 appears in Figure 2.

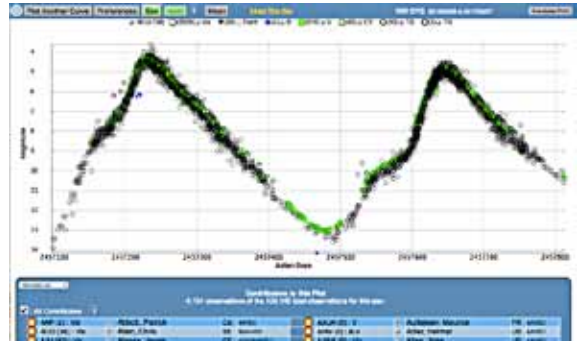


Figure 2. Snapshot of the new Light Curve Generator.

Enhancing our Find a Member tool

By membership request, we worked with volunteer Phil Manno on a new release of the Find Members/observers tool. The new version allows identifying and communicating with members and observers based on their unique observer code in addition to finding members/observers based on their location. All communications continue taking place through our AAVSO web pages, without releasing an individual's personal information. The tool was released in Spring 2017 and can be accessed at: <https://www.aavso.org/apps/member/search/>

AAVSO Target Tool (ATAT)

This is a new tool developed with professional developer time donated by Dr. Keivan Statssun (Vanderbilt University) and funds secured by Dr. Jenő Sokolowski for HQ staff engagement. The purpose of this tool is to facilitate our observers' planning of their observing program based on targets that are in need of observations. Work on the tool started in 2016, when we focused on development of various aspects of the software, user interface, and incorporating information that observers would need. In 2017, we focused on testing, engaging a group of volunteers from our observer community who had the opportunity to provide feedback and help us improve

the functionality of the tool. ATAT was deployed in June 2017. Features of the tool include target information from VSX, requested observing cadence, filter and mode of observing, information on when a target was last observed (based on data submitted to the AID), a flag indicating whether more data are required for observations, whether a target is related to an alert or campaign, and whether specific targets are visible from an observer's geographical location. Figure 3 presents a snapshot of the tool, with some of the key features explained in the caption.

Star Name	RA (J2000.0)	Dec (J2000.0)	Constellation	Var. Type	Min Mag	Max Mag	Period (d)	Observing Cadence (d)	Observing Section	Filter/Mode	Last Observed	High Priority	Notes
WW Cat	00 ^h 11 ^m 24 ^s	-11 [°] 28' 43"	Cet	UGZ	15.8 V	10.4 V	0.17578	5.0	CV	All	0 4 months ago		
LS And	00 ^h 32 ^m 10 ^s	+41 [°] 58' 11"	And	UGW2	20.2 B	11.7 B		5.0	CV	All	0 4 days ago		
EG And	00 ^h 44 ^m 33 ^s	+40 [°] 40' 45"	And	ZAND+ E	7.8 V	6.97 V	482.57	10.0	CV	All	0 1 month ago		
GX Cat	00 ^h 49 ^m 01 ^s	+56 [°] 52' 43"	Cas	UGSU	18.5 V	13.3 V	0.08902	5.0	CV	All	0 4 days ago		
RX And	01 ^h 04 ^m 35 ^s	+41 [°] 17' 57"	And	UGZ	14.8 V	10.3 V	0.309893	5.0	CV	All	0 8 hours ago		
HT Cat	01 ^h 10 ^m 12 ^s	+60 [°] 04' 36"	Cas	UGSU+ E	19.32 V	12.6 V	0.0736472031	5.0	CV	All	0 2 days ago		
FI ---	01 ^h 11 ^m 53 ^s	+35 [°] 17' 24"	And	UGSS	19.3 V	12.9 V		5.0	CV	All	0 1 day ago		

Figure 3. Snapshot of the new AAVSO Target Tool (ATAT). The tool was realized with support from funding secured from the Research Corporation for Science Advancement by former AAVSO president Jenó Sokolowski. The developers team is led by Keivan Stassun (Vanderbilt University) and consists of Dan Burger, Chandler Barnes, and Kenneth Li (Vanderbilt University). Targets and their defined cadence were selected with the help of our observing section leaders John Percy, Gary Billings, Dennis Conti, Andrew Pearce, Michael Poxon, Gerry Samolyk, and Frank Schorr.

AAVSO Developer Announcements

We resurrected the “AAVSO Developer Announcements” email alerts (which was in place, but was never used) in order to advise users/developers of pending and/or proposed changes to AAVSO software (software products, databases, or APIs). Email notices are sent to those who subscribe to the relevant email list via My account/Email Settings/ Developer Announcements. Developer Announcements are also linked to the Software Development forum thread, aiming to direct developers to forum topics of interest.

2. The Year in Review

Other initiatives

- After discussions with the science team, we concluded that three different pages (each one for alerts, campaigns, and special notices) needed to be consolidated into one. A new Alerts page has been created and announced to the community through *AAVSO Communications* and appropriate forums and *AAVSO Alert Notices*. It can be found at: <https://www.aavso.org/aavso-alert-notice-for-observing-campaigns-and-discoveries>.

- In spring 2017, the Programs Committee identified our newsletter as a product that was increasing in length without providing new information to our members. A new proposal with new suggested content sections was created by HQ staff, and was presented to the Programs Committee for discussion. Under the new format, the new newsletter is focused on new material of interest to our members, with readers being directed to the AAVSO web pages for content that can be found online. The new newsletter format was applied in July 2017.

Observer training

New Solar observing information and manual

With the help of volunteers (Frank Dempsey, Jessica Johnson, and Kristine Larsen), a new web page with information on the Great American Solar Eclipse (August 2017) was created, dedicated to safe solar observing. The web page incorporated material from sister associations (e.g. AAS, AL) for solar eclipse viewing, and relevant videos, and can be found here: <https://www.aavso.org/solar-eclipse-2017>

Our volunteers also helped produce a new solar observing manual, for safe solar observing. It can be used as an introduction guide for new observers or reference for seasoned ones. The manual was released to the community in the spring (2017), and has already been translated into French by volunteer Bernard Candela. Both resources, the solar resource web page and solar manual, are being translated into Spanish, and will be available to southern hemisphere observers for the upcoming 2019 and 2020 total solar eclipses.

Translations of our manuals

We continue working with volunteers worldwide to translate our manuals in various languages, reaching observers worldwide. This year, the visual manual was translated into German (thanks to Ilka Petermann) and Russian (thanks to Kolya Samus); the total number of languages that are available now is 15. The CCD manual was translated into

Polish (by Roman Korczyk, Łukasz Socha, Dominik Gronkiewicz, and Adam Popowicz) and into French by Manon Bouchard and Jean-Bruno Desrosiers from France and Pierre Cheyssac, Jean-Claude Mario, Jean-Bernard Pioppa, and Florian Signoret from Canada. Furthermore, our 10-star tutorial was translated into Arabic thanks to Rani Ahmed. To date, our CCD manuals and our 10-star tutorial are each available in five languages.

AAVSO observing sections

We worked closely with AAVSO Observing Section leaders to move all observing section pages to AAVSO-branded (and owned) web pages (from personal google web pages) and update the relevant page information with up-to-date material on stars of interest. We also worked with Observing Section leaders to define and finalize target lists for each observing section (those targets are included in ATAT). Material for the new Cataclysmic Variable observing section has been provided by Dr. Greg Sivakoff; the observing section was announced at the Spring meeting.

CHOICE courses

The 2017 CHOICE courses program introduced a new course on Exoplanet observations taught by Dennis Conti. This course was received with enthusiasm by the community (as demonstrated by positive comments). Although the number of course participants is usually limited to 25, we increased the limit to 42 (because of high demand). In addition to forum discussions, this course used short YouTube videos for instruction of data acquisition techniques and software used for data reduction (AstroimageJ). We hope this new course structure can be adopted by other instructors, as it has received positive reviews by participants. The exoplanet CHOICE course has been offered twice so far, in February and in October 2017.

Other new CHOICE courses offered in 2017 are “Photoelectric Photometry (PEP) in the 21st Century” and “Analyzing Data with VStar”. This new training material, along with old courses, aims at improving our observers’ skills, introducing new observing modes and software to those who are interested in structured instruction of material. They are based on our manuals.

Overall, the courses offered in 2017 are:

- Exoplanet Observing (new)—offered twice by Dennis Conti
- Variable Star Classification & Light Curves—by Blake Crosby
- CCD Photometry (Part 1)—by Ed Wiley
- CCD Photometry (Part 2)—by Phil Sullivan

2. The Year in Review

Developing a Visual Observing Program—by Michael Cook
Photometry Using VPhot—offered twice by Ken Menzies
How To Use VStar—by JoDee Baker-Maloney
Photoelectric Photometry (PEP) in the 21st Century (new)—by Jim Kay
Analyzing Data with VStar (new)—by Brad Walter
DSLR Photometry—by Barbara Harris

Transform campaign

In spring 2017, the Programs Committee worked with volunteer George Silvis to launch the 2017 Data Transform campaign. This year, the campaign included a \$500 USD raffle prize for a qualified winner, with the relevant funds provided by volunteers Bill Stein and Tom Calderwood. To be eligible for the raffle, an observer needed to: 1) report B and V band transform coefficients, along with the method used to determine them, to a dedicated forum; and 2) submit transformed B and V magnitude pairs of ten stars to the AID. Twenty observers responded to the Transform Campaign by the May 31 (2017) deadline; the winner, Shawn Dvorak (DKS), was announced at the Spring AAVSO meeting.

Technical Operations

As of fall 2016, we have engaged the AAS webmaster to curate our web page needs, and in fall 2015 we contracted EvenerableGroup (Cody Anderson) to take over our IT needs. Both groups work remotely and are primarily responsible for the continuous and secure function of our computers, online presence, and IT. We are relying on volunteers for software upgrades and new software projects.

Software sustainability and maintenance has been a recurrent topic of discussion at HQ and within the Programs Committee in 2017, and various areas of vulnerability in our systems have been identified. Having to maintain software that was created decades ago with the technology of that time and is outdated or incompatible with current operating systems is a big challenge. We are generating most of our new software tools in Django, which is the language of most of our modern (post-2005) applications. However, the lack of understanding of how those applications are connected to our Drupal web page is a serious vulnerability of our infrastructure. When one of those applications is not functioning, we cannot easily diagnose the problem, nor can we securely fix it. Furthermore, both Drupal and Django are very specialized languages, so identifying volunteers who are well versed in either and are willing to help with either troubleshooting software, or maintaining old software and creating new, has become a notable problem.

In early 2017, with the help of our AAS contractors, we established a development server which should mirror our live web pages and would allow for software development and testing by volunteers. We have been using the help of volunteer George Silvis to manage this server, and our volunteer programmers' code-testing on it. Challenges to this direction include the fact that the Django version on the development server is newer than the one we currently have on our live server, resulting in updated software functioning on the dev server experiencing errors and not working when installed. This has delayed tools such as VSD and CHET being released to the community earlier, and is hindering future work.

With the help of volunteers George Silvis and Tom Calderwood, we have initiated a series of projects to assess, update, and standardize our software processes and servers and ensure sustainability of existing software by establishing requirements for programmers and proper software documentation procedures. We are also migrating our computers to Amazon World Cloud (AWC) instances, which will prevent further computer crashes. Some of the first steps towards this direction have already taken place, and are reported here. Within the next three years, both Drupal and Django will need to be upgraded to new versions, as their current versions will no longer be supported. We will have to carefully plan this migration to ensure that key functionalities of our web page (such as data uploads and searches) remain active, while ensuring minimum down time of our servers. Some of the steps we are currently taking towards organizing our live and development servers aim at addressing this migration. This is a project that was planned in 2017; its execution will take a major part of 2018, as we anticipate challenges with the complexities of both our web page and its connection with our databases and software.

Annual fundraising campaign (May 1–August 31, 2017)

This year, the Fundraising Committee has taken over the design and creation of most material of the 2017 annual campaign, with AAVSO HQ responsible for logistics and execution. The theme of the annual campaign was "Supporting Citizen Astronomy" and the target was to raise \$40,000 in unrestricted funds. Initial matching funds of \$15,000 through individual donations were secured by the Chair of the Fundraising Committee, Kevin Marvel. The campaign was launched on May 1 through our web page, *AAVSO Communications*, and AAVSO forums. As part of the campaign, for the first time, we reached non-members of the AAVSO community via email requesting financial support: more than 6,000 members, observers, friends, and visitors to our website received electronic communication requesting support for the AAVSO's operation. Thank-you letters for donations were mailed to all donors under my signature. We were gratified by the response to this campaign; 37% of donations came from first-time donors this year, indicating that our community values the AAVSO's work. We greatly appreciated

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this support, as it enables us to continue our work and provide improved training and services worldwide.

As part of the campaign, and with the support of 2nd VP Kevin Marvel, a baseball cap with a “Citizen Astronomer Promoter” (CAP) engraving was offered to all who donated at the \$250 level and above. CAP participants were 32% of our overall campaign donors this year. On August 10, we reached our fundraising goal.

Personal Engagements

In 2017, I gave the following presentations:

February 3 Dexter Southfield High School—seminar on careers in astronomy for the “Girls in STEM” club.

April 10–14 Toronto, Canada; talk at the Durham Region Astronomical Society—“Variable Stars and their Stories”

May 4 Cape Cod Astronomical Society—“Discussing the Elusive SNeIa progenitors”

May 11 Phillips Academy—“Variable Stars: the Good, the Bad and the Explosive”

June 18–21 Robotic Telescope Student Research Seminar and Education (RTSRE; San Diego, California)—“The AAVSO as a resource for research”

June 19–20 Student research seminar workshop (San Diego, California)—“The AAVSO program—overview”

June 21 San Diego Astronomical Association—“Variable Stars and their stories”

July 20 Hartness House workshop—“Challenges in Exoplanet Exploration”

August 6–11 BRITE Constellation Symposium—“Two years of BRITE/AAVSO collaboration: summary and perspectives”

September 13–16 LSU (Baton Rouge, Louisiana); visit and colloquium—“AAVSO as a resource for research”

September 17–19 TAMU (College Station, Texas); visit and colloquium—“AAVSO as a resource for Research”

October 14 AstroAssembly; Skyscrapers (Rhode Island)—“The AAVSO Program: How to contribute to cutting-edge science”

October 16 RASC Edmonton (Edmonton, Canada)—“Observing Variable Stars with the AAVSO”

October 17 University of Alberta Physics (Edmonton, Canada)—“The AAVSO Program: A Resource for Variable Object Research”

October 21 Remote presentation at the Hellenic symposium of amateur astronomy—“The AAVSO Program: How to contribute to cutting-edge science”

November 13 IAU S339: Southern Horizons in Time-domain Astronomy (Stellenbosch, South Africa); Conference public talk—“Citizen Astronomy in the era of large surveys”

November 22 SAAS Cape Town; talk—“Observing Variable Stars with the AAVSO”

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AAVSO Observer Totals

Table 1. AAVSO Observer Totals 2016–2017 by Country

Table 2. AAVSO Observer Totals 2016–2017 by State or Territory

Table 3. AAVSO Observers, 2016–2017

Table 4. Observation statistics for fiscal year 2016–2017

Table 1. AAVSO Observer Totals 2016–2017 by Country.*

Country	No. Observers	No. Obs.	Country	No. Observers	No. Obs.	Country	No. Observers	No. Obs.
Argentina	10	1669	Hungary	40	47218	Romania	5	4599
Australia	26	58277	India	3	1103	Russian Federation	16	1286
Austria	5	2456	Iran	1	1	Serbia	1	828
Belarus	2	119	Ireland	4	67	Slovakia	4	2196
Belgium	20	234493	Italy	39	11907	Slovenia	2	109
Bermuda	1	164	Japan	3	1484	South Africa	3	604
Bolivia	1	73	Kazakhstan	1	144	Spain	54	205970
Brazil	20	2314	Luxembourg	1	355	Sweden	12	12724
Bulgaria	3	3510	Malta	1	11894	Switzerland	6	3622
Canada	35	62954	Mexico	1	249	Taiwan	1	145
China	3	2125	Morocco	1	3	Turkey	3	19
Croatia	1	8	Netherlands	10	2309	Ukraine	13	28246
Cyprus	3	12456	New Zealand	11	7247	United Kingdom	61	162988
Denmark	9	1483	Norway	2	222	United States	276	1162972
Ecuador	1	5	Pakistan	1	20	Uruguay	1	1
Finland	13	18735	Philippines	1	495	Venezuela	1	26
France	45	86379	Poland	26	14122			
Germany	46	27570	Portugal	4	7254			
Greece	6	3903	Republic of Korea	1	5	TOTAL	860	2211127

Table 2. AAVSO Observer Totals 2016–2017 USA by State or Territory.*

Country	No. Observers	No. Obs.	Country	No. Observers	No. Obs.	Country	No. Observers	No. Obs.
Alabama	4	77	Maine	4	227	Oregon	5	45350
Arizona	18	12747	Maryland	8	13294	Pennsylvania	6	1875
Arkansas	5	11474	Massachusetts	15	61018	Rhode Island	1	4898
California	23	476929	Michigan	20	9825	South Carolina	4	239
Colorado	9	5810	Minnesota	4	912	Texas	19	8535
Connecticut	6	122	Missouri	6	885	Utah	2	87
Delaware	1	12	Montana	1	35082	Vermont	4	2846
Florida	10	141007	Nebraska	1	42	Virginia	10	2495
Georgia	6	5414	Nevada	1	158	Washington	4	89
Hawaii	1	671	New Hampshire	7	12822	West Virginia	2	1864
Illinois	11	71780	New Jersey	3	2264	Wisconsin	7	115876
Indiana	9	42583	New Mexico	8	45560	Wyoming	3	1138
Iowa	2	62	New York	9	6410	unknown	1	2
Kansas	2	143	North Carolina	1	17848			
Kentucky	1	1192	Ohio	8	975	TOTAL	276	1162972
Louisiana	1	88	Oklahoma	3	245			

* Totals reflect observations made during fiscal 2016–2017 and do not include historical data (data preceding fiscal 2016–2017) submitted during fiscal 2016–2017.

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Table 3. AAVSO Observers, 2016–2017*

<i>Code</i>	<i>Org.</i>	<i>Name</i>	<i>No. Obs.</i>	<i>Code</i>	<i>Org.</i>	<i>Name</i>	<i>No. Obs.</i>
AAP		P. Abbott, Canada	144	BYF		H. Betlem, Netherlands	629
AAN	02	A. Abe, Germany	15	BADA		A. Bielawny, Poland	1
APGA	20	P. Abel, United Kingdom	15	BRIA		R. Biernikowicz, Poland	178
AGUA		G. Abramson, Argentina	3	BBI	05	B. Billiaert, Belgium	35
ACN	13	C. Adib, Brazil	155	BGW		G. Billings, Canada	174
AHM		H. Adler, Massachusetts	18	BXT	08	T. Bjerkgaard, Norway	211
ASA		S. Aguirre, Mexico	249	BXU		J. Bjoerklund, Denmark	2
ARL		R. Alencar Caldas, Brazil	6	BJOI		J. Black, New Zealand	25
AFSA		F. Alfarop, Spain	5264	BRAC		R. Black, Oklahoma	62
ACO	20	C. Allen, Sweden	1292	BMGA	29	M. Blackford, Australia	71
AJV	15	J. Alonso, Spain	614	BKAD		K. Blackham, United Kingdom	118
AKV		K. Alton, New Jersey	2258	BKL		J. Blackwell, New Hampshire	26
ACRA		C. Ament, New Jersey	4	BADB		A. Blake, Arizona	23
AAX	36	A. Amorim, Brazil	1136	BVZ		J. Blanco Gonzalez, Spain	3
ASTA		S. Andrei-Marian, Romania	2847	BLD	10	D. Blane, South Africa	583
ATAA		T. Anne, Australia	169	BWZ		E. Blown, New Zealand	208
AROA		R. Apitzsch, Germany	33	BJAA		J. Boardman, Wisconsin	16978
AKO		K. Apostolidis, Greece	1	BOH	02	D. Boehme, Germany	227
ANAA		N. Araujo, Brazil	1	BSCC		S. Boerner, Missouri	123
ACLA	18	C. Arena, Italy	699	BHQ	29	T. Bohlsen, Australia	553
ARJ		J. Arnold, Texas	447	BGGA	31	G. Bolt, Australia	2693
ATE		T. Arranz, Spain	105568	BPAF		P. Bonifacio, Argentina	5
AALB		A. Arranz Lázaro, Spain	137	BRJ		J. Bortle, New York	2449
APAA	27	P. Ashmore, Canada	52	BDLA		D. Boulet, Delaware	12
AUMA		U. Asim, Pakistan	20	BMU	04	R. Bouma, Netherlands	27
AAUA		M. Audejean, France	956	BJMC		J. Bourgeois, Belgium	5
ADI	02	D. Augart, Germany	224	BHUA		H. Boussier, France	6
ARX		R. Axelsen, Australia	38	BJAH		J. Bove, Connecticut	70
AMID		M. Aznar Carbo, Spain	73	BDG	20	D. Boyd, United Kingdom	9457
BPAB		P. Bacci, Italy	99	BMK		M. Bradbury, Indiana	71
BOZ	03	B. Bago, Hungary	1900	BRAF		R. Braga, Italy	1
BFO	03	J. Bakos, Hungary	2631	BJFA		J. Brandie, China	2102
BFU		F. Baldanza, Italy	27	BNW	02	W. Braune, Germany	25
BALJ	14	A. Baldwin, New Zealand	84	BQC	01	J. Breard, France	9
BGEB		G. Ballan, Argentina	1	BTB		T. Bretl, Minnesota	52
BDAD		D. Bamberger, Germany	38	BHA	02	H. Bretschneider, Germany	533
BGZ		G. Banialis, Illinois	980	BRCM	20	C. Briden, United Kingdom	6
BSBB		S. Baranowski, Poland	9	BQE	27	E. Briggs, New York	2
BLOC	18	L. Barbieri, Italy	642	BSM		S. Brincat, Malta	11894
BJOD		J. Barentine, Arizona	1	BJFB		J. Briol, Minnesota	794
BMAI		M. Barlazzi, Italy	258	BLUA		L. Brooks, Virginia	322
BSR	18	S. Baroni, Italy	66	BANG		A. Brunelli, Italy	12
BPO		D. Barrett, France	28488	BOA	01	A. Bruno, France	9168
BARM	20	M. Barrett, United Kingdom	323	BYQ		T. Bryant, Maryland	109
BSAA		S. Basu, India	1	BISA	16	I. Bryukhanov, Belarus	4
BBA		B. Beaman, Illinois	2834	BHAF		H. Bu, China	20
BWX	27	A. Beaton, Canada	58	BVIB		V. Buchenko, Ukraine	3
BSJ		S. Beck, Massachusetts	1	BNBA		N. Buchholz, Germany	448
BDQ		A. Bedard, Washington	48	BDGA		D. Buczynski, United Kingdom	281
BCP	20	C. Beech, United Kingdom	741	BKRC		K. Burton, Massachusetts	38
BANL		A. Belotsky, Russian Federation	12	BIW	29	N. Butterworth, Australia	2015
BZX		A. Beltran, Bolivia	73	CALC		A. Cabello Sánchez, Spain	106
PNQ		R. Benavides Palencia, Spain	6	CPU	13	P. Cacella, Brazil	3
BHS		H. Bengtsson, Sweden	576	CTOA		T. Calderwood, Oregon	69
BDJB	34	D. Benn, Australia	69	CFJA		F. Caleya Salamanca, Spain	9
BTY		T. Benner, Pennsylvania	401	CCB		C. Calia, Connecticut	12
BPAD		P. Benni, Massachusetts	7134	CCZ		C. Calis, Turkey	10
BEB		R. Berg, Indiana	59	CMN		R. Cameron, Australia	11
BSEC	27	S. Bergeron, Canada	220	CMP		R. Campbell, Florida	1757

Table 3. AAVSO Observers, 2016–2017, cont.*

<i>Code</i>	<i>Org.</i>	<i>Name</i>	<i>No. Obs.</i>	<i>Code</i>	<i>Org.</i>	<i>Name</i>	<i>No. Obs.</i>
CFRA		F. Campos, Spain	1400	DMIA		M. Dadighat, California	4127
CEA	01	B. Candela, France	1326	DAH	08	H. Dahle, Norway	11
CQP		A. Capetillo Blanco, Spain	121	DPHA		P. Danthine, Belgium	190
CMAE		M. Cappellini, Italy	55	DAM		A. Darriba Martinez, Spain	1142
CADA	36	A. Cardoso, Brazil	2	DAJ		J. Davis, Maryland	47
CW		W. Carini, New York	4	DMA		M. Davis, South Carolina	54
CALB		A. Carreno, Spain	139	DHEB	19	H. De Angelis, Sweden	36
CROA	14	R. Carstens, New Zealand	226	DJX	27	M. De Jong, Canada	105
CNKA		N. Carter, Iowa	1	DDAC		D. De Mata, Argentina	5
CLQ		L. Cason, South Carolina	45	DPP		P. De Ponthière, Belgium	5592
CLAC		L. Cassignard, France	13	SWQ	13	W. De Souza, Brazil	31
CJE	01	J. Castellani, France	835	DANF		A. Debackère, France	649
CRAB		R. Castillo, Spain	301	DJEF		J. Dechoz, France	71
CWO		W. Castro, Florida	5	DMIB		M. Deconinck, France	393
CDZ		D. Cejudo Fernandez, Spain	63910	DDAA		D. Dedrickson, Oregon	221
CIVA		I. Cervini, Switzerland	2346	DLM	01	M. Deldem, France	2230
CNT		D. Chantiles, California	183	DMID		M. Dellepere, Florida	83
CGZ	20	G. Chaplin, United Kingdom	1298	DFR	27	F. Dempsey, Canada	36
CCY		C. Chiselbrook, Georgia	1726	DDE		D. Denisenko, Russian Federation	420
CDEE		D. Christ, Germany	398	DAT		A. Derdzikowski, Poland	595
CMF	02	M. Chudy, Germany	354	DNO		O. Deren, Poland	612
CMAA		M. Ciocca, Kentucky	1192	DAND		A. Deshpande, India	943
CLK		W. Clark, Missouri	1	DJED		J. Desrosiers, Canada	671
CWJA		W. Clark, United Kingdom	1	DPK		P. Detterline, Pennsylvania	19
CWP		W. Clarke, Arizona	1504	DPA	05	A. Diepvens, Belgium	75
CPE		P. Closas, Spain	485	DXAA	15	X. Domingo Martinez, Spain	5953
CPP		P. Coker, Colorado	107	DSN		S. Donnell, Colorado	188
CDK		D. Collins, North Carolina	17848	DROD		R. Donner, New York	157
COL		P. Collins, Arizona	6	DJUA		J. Dos Santos, Argentina	71
CME	18	E. Colombo, Italy	479	DERA		E. Dose, New Mexico	14037
CTIA		T. Colombo, Italy	250	DDJ		D. Dowhos, Canada	251
CDSA	20	D. Conner, United Kingdom	4477	DRCA	20	R. Dryden, United Kingdom	221
CGRD		G. Conrad, New Mexico	1	DSE		S. Du, Alabama	2
CEMB	01	E. Conseil, France	13	DUBF	05	F. Dubois, Belgium	13658
COO		L. Cook, California	79179	DPV	09	P. Dubovsky, Slovakia	982
CMJA		M. Cook, Canada	16484	DRTA	03	R. Dudas, Hungary	59
CK		S. Cook, Arizona	507	DROB		R. Dudley, Vermont	6
CPI	18	P. Corelli, Italy	2	DFS	05	S. Dufoer, Belgium	718
CLZ		L. Corp, France	9803	DVLA		V. Dumitrescu, Romania	7
CAI		A. Correia, Portugal	3574	DMO	01	M. Dumont, France	939
CNQ		N. Costa, Portugal	64	DGTA		G. Duranko, New Hampshire	21
CMM		M. Costello, California	308	DMPA		M. Durkin, New York	48
CKLA		K. Cotar, Slovenia	73	DFEA		F. Dutton, Michigan	7
COV		V. Coulehan, New York	63	DKS		S. Dvorak, Florida	133286
CJUB	01	J. Couloigner, France	16	DJAE		J. Dygos, Poland	53
CDJA		D. Coulter, Michigan	2467	DJAC		J. Dziurko, Poland	14
CWD		D. Cowall, Maryland	8957	DMAC	06	M. Díaz, Spain	36
CLEA		L. Crary, Florida	8	ELIA		L. Eager, Florida	1
CTX		T. Crawford, Oregon	93	ELYA		L. Easley, Texas	148
CMY		M. Crook, United Kingdom	52	EANA		A. Egea, Spain	26
CBLA		B. Crosby, South Carolina	138	EHEA		H. Eggenstein, Germany	164
CDAD		D. Crowson, Missouri	488	EMA		M. Eichenberger, Switzerland	11
CVIB		V. Csallóközi, Hungary	10	EKOA		K. Emmanouilidis, Greece	2
CDVA	03	D. Csillag, Hungary	1	EJAA		J. Emming, Michigan	442
CSM	03	M. Csukas, Romania	112	EDAB	27	D. English, Canada	79
CKB		B. Cudnik, Texas	3474	EPE	01	P. Enskonatus, Germany	116
CCHD		C. Cynamon, Maryland	1328	EPIA		P. Ercoli, Italy	6
CSZ	03	S. Cziniel, Hungary	5	EJO	03	J. Erdei, Hungary	901
DCMA		C. Da Silva, Brazil	4	EEY		E. Erdelyi, California	580

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Table 3. AAVSO Observers, 2016–2017, cont.*

<i>Code</i>	<i>Org.</i>	<i>Name</i>	<i>No. Obs.</i>	<i>Code</i>	<i>Org.</i>	<i>Name</i>	<i>No. Obs.</i>
EMIB		M. Erdmann, Germany	24	GGX	01	G. Guzman, France	283
ELTA	06	L. Espasa, Spain	36	HCS	03	C. Hadhazi, Hungary	1666
EKIA		K. Ethan, unknown	2	HDH	03	S. Hadhazi, Hungary	844
ESTB	18	S. Euganea, Italy	119	HTY		T. Hager, Connecticut	2
ERW	14	R. Evans, New Zealand	121	HIVB		I. Hajdinjak, Croatia	8
FRGA		R. Farfán, Spain	83	HKB		B. Hakes, Illinois	328
FDAA		D. Favaro, Italy	267	HJW		J. Hall, Colorado	2534
FSAB	03	S. Fazekas, Hungary	20	HMIC		M. Hamalainen, Finland	1
FFAD		F. Feijo, Brazil	84	HMB	05	F. Hamsch, Belgium	139406
FPAA		P. Fernandez Blanco, Spain	92	HJEA		J. Hamel, Canada	1041
FSTC		S. Ferratfiat, France	101	HJRA		J. Hamilton, Michigan	6
FMAC		M. Filipek, Poland	16	HBB		B. Harris, Florida	5519
FCDA		C. Firmino, Brazil	3	HMQ		M. Harris, Georgia	1
FSJ	01	J. Fis, France	9	HKM		K. Hartmann, Connecticut	13
FDGA		D. Flood, Massachusetts	3	HHU	05	H. Hautecler, Belgium	3
FDA	03	A. Fodor, Hungary	161	HAB		R. Hays, Illinois	432
FSE		S. Foglia, Italy	1	HQA		A. Henden, New Hampshire	507
FJQ		J. Foster, California	45734	HCW		C. Hergenrother, Arizona	3
FRL		R. Fournier, Ohio	551	HMV		M. Hessom, California	64
FDU		D. Fowler, Ohio	89	HXT	20	T. Heywood, United Kingdom	5075
FXJ		J. Fox, New Mexico	181	HKEB		K. Hills, United Kingdom	5572
FLOA	18	L. Franco, Italy	55	HDHA		D. Hinsel, Virginia	120
FGJA		G. Frey, Arizona	30	HFF		T. Hoffelder, Maine	1
FGIA	18	G. Frustaci, Italy	10	HGUA	19	G. Holmberg, Sweden	2099
FMG		G. Fugman, Nebraska	42	HKAB	19	K. Holmquist, Sweden	12
FRTA		R. Fuller, Texas	31	HOO	04	G. Hoogeveen, Netherlands	30
FSRA		S. Futchter, United Kingdom	146	HJG		J. Horne, California	23
GMQA	20	M. Gainsford, United Kingdom	634	HJZ		J. Horne, Nevada	158
GGM		G. Gallo, Italy	6	HMIA		M. Hotka, Colorado	228
GFDB	06	F. Garcia, Spain	405	HSP	14	S. Hovell, New Zealand	3134
GAA		P. Garey, Illinois	171	HRBA		R. Howard, California	3
GJP		J. Garlitz, Oregon	4	HOA		A. Howell, Florida	4
GALB		A. Garofide, Romania	101	HSTF		S. Hoyler, Germany	6
GKI		K. Geary, Ireland	30	HJA		J. Hudson, California	95
GMD		M. Geldorp, Canada	4	HGAC		G. Huffman, Alabama	1
GSA		S. Giambruno, California	20	HUR	20	G. Hurst, United Kingdom	1769
GGU	04	G. Gilein, Netherlands	469	HUZ		R. Huziak, Canada	30
GSAC		S. Gilmore, Michigan	13	IAT		A. Ielo, Italy	8
GSEB		S. Girard, Oklahoma	182	IPEA		P. Ilas, Slovakia	12
GRIB		R. Glassner, Missouri	72	ILE	03	E. Illes, Hungary	38
GATH		A. Glazier, Ireland	4	ILUA		L. Izzo, Italy	9
GZN		A. Glez-Herrera, Spain	6894	JAMA		A. Jackson, Texas	7
GLG		G. Gliba, Maryland	199	JPM	10	P. Jacobs, South Africa	6
GFB	31	W. Goff, California	1665	JJB	11	J. Jacobsen, Denmark	9
GED		E. Goncalves, Brazil	8	JMA		M. Jacquesson, France	47
GCJ		J. González Carballo, Spain	1085	JTP	01	P. Jacquet, France	496
GBRB	05	B. Goossens, Belgium	3388	JDAA		D. Jakubek, Poland	1382
GDJA		D. Gorney, Arizona	92	JM		R. James, New Mexico	16884
GJED		J. Gout, Arizona	499	JZO	03	Z. Jankovics, Hungary	5
GKA		K. Graham, Illinois	5494	JRBA	34	R. Jenkins, Australia	1603
GPE		.. Grainger Observatory, New Hampshire	2	JSI		S. Jenner, United Kingdom	6
GFS	20	K. Griffiths, United Kingdom	86	JYUA		Y. Jia, Michigan	219
GVD	16	V. Grigorenko, Russian Federation	15	JGE	06	G. Jimenez Lopez, Spain	44
GALD	03	A. Grosz, Hungary	8	JEDA		E. Johnson, South Carolina	2
GCO		C. Gualdoni, Italy	2331	JSJA	20	S. Johnston, United Kingdom	1317
GFRB		F. Guenther, Maryland	356	JJI		J. Jones, Oregon	44963
GKZ	03	K. Gulyas, Hungary	1	JMAB		M. Jones, Indiana	7
GARB		A. Gutcher, United Kingdom	1	JPG		P. Jordanov, Bulgaria	138
GPIA		P. Guzik, Poland	1	JJNA		J. Jose, Spain	5

Table 3. AAVSO Observers, 2016–2017, cont.*

<i>Code</i>	<i>Org.</i>	<i>Name</i>	<i>No. Obs.</i>	<i>Code</i>	<i>Org.</i>	<i>Name</i>	<i>No. Obs.</i>
JLZ	03	L. Juhasz, Hungary	326	LYAC		Y. Lairgi, Morocco	3
KKS		S. Kafka, Massachusetts	10	LPB		P. Lake, Australia	6
KLN		J. Kalen, Maryland	5	LPAB		P. Lampens-Vancauteran, Belgium	67
KB		W. Kaminski, New Mexico	42	LDJ	27	D. Lane, Canada	4528
KTU		T. Kantola, Finland	11842	LTO	02	T. Lange, Germany	6
KMO		M. Kardasis, Greece	3	LKR		K. Larsen, Connecticut	19
KSF		S. Karge, Germany	8	LJAE	27	J. Lavender, Canada	3
KBJB	19	B. Karlsson, Sweden	1561	LZT		T. Lazuka, Illinois	876
KTHA	19	T. Karlsson, Sweden	2484	LPAD		P. Le Guen, France	9
KAD	03	A. Karpati, Hungary	459	LJW	01	J. Lechopier, France	28
KEI		E. Kato, Australia	156	LMT		M. Legutko, Poland	274
KJMB		J. Kay, Vermont	4	LCLA		C. Lemaire, Germany	6065
KMQ	06	M. Kearns, Spain	2	LPD	01	P. Lemarchand, France	20
KHEA		H. Kerner, Germany	54	LMA	27	D. Lemay, Canada	10333
KCSB	03	C. Kertesz, Finland	189	LVY		D. Levy, Arizona	65
KSZ	03	S. Keszthelyi, Hungary	199	LPAC		P. Lewin, California	7514
KMR	20	M. Kidger, United Kingdom	515	LFEA		F. Limón Martínez, Spain	516
KHAB	17	H. Kiiskinen, Finland	69	LLAA	11	L. Lindhard, Denmark	1
KTHC	20	T. Killestein, United Kingdom	87	LEDB		E. Lindkvist, Sweden	30
KRAA		R. King, Virginia	69	LMK		M. Linnolt, Hawaii	671
KPEA	03	P. Kiss, Hungary	1	LCO		C. Littlefield, Indiana	19911
KMM	09	M. Kititsa, Ukraine	910	LGB	18	G. Locatelli, Italy	145
KPC		P. Klages, United Kingdom	5	LGV		G. Lopatynski, California	51
KKJ	03	K. Klajnik, Hungary	1	LJEB		J. Lopez, France	446
KKAA		K. Klindt-Jensen, Denmark	513	LOCA		O. Lopez, Venezuela	26
KRAB		R. Kneip, Luxembourg	355	LVAC		A. Lopez Villanueva, France	13
KPL		P. Kneipp, Louisiana	88	LCLC	18	C. Lopresti, Italy	905
KCD	20	C. Knight, New Zealand	1216	LRD		D. Loring, Utah	84
KGT		G. Knight, Maine	21	LMTA		M. Lott, Georgia	60
KSP		S. Knight, Maine	162	LDS	20	D. Loughney, United Kingdom	267
KOC	03	A. Kocsis, Hungary	13	LSJB	14	S. Lowther, New Zealand	733
KLO		L. Kocsmaros, Serbia	828	LBG		G. Lubcke, Wisconsin	1438
KHL		M. Kohl, Switzerland	1163	LPAE		P. Luckas, Australia	228
KTAA	03	T. Komaromi, Hungary	6	LCHD		C. Lugova, Ukraine	807
KMA		M. Komorous, Canada	1199	LBRB		B. Luke, Michigan	541
KGED		G. Konstantopoulos, Cyprus	9	MDW		W. MacDonald, Canada	1981
KKU		K. Kookaram, Iran	1	MRGA		R. MacPhail, Canada	229
KSLA		S. Koontz, Texas	618	MATA	03	A. Madai, Hungary	21
KOS	03	A. Kosa-Kiss, Romania	1532	MZOA	03	Z. Magyarics, Austria	57
KCLA		C. Kotnik, Colorado	1999	MQA		A. Maidik, Ukraine	3721
KAF	03	A. Kovacs, Slovakia	328	MDAV		D. Majors, California	16
KFK		F. Krafka, Texas	37	MII	03	L. Majzik, Hungary	3
KJGB		J. Kras, Netherlands	5	MVO	17	V. Makela, Finland	292
KWO	02	W. Kriebel, Germany	1318	MMMC		M. Malcherek, Poland	10
KIS	02	G. Krisch, Germany	268	MEGA		E. Maleev, Ukraine	773
KRO		B. Krobusek, New York	12	MJHN	20	J. Mallett, United Kingdom	1463
KA		A. Kroes, Wisconsin	14282	MCPA		C. Maloney, Arkansas	1960
KNAA		N. Krumm, California	1511	MDYA		D. Mankel, Michigan	44
KTZ		T. Krzyt, Poland	859	MBJA		B. Mansdahl, Sweden	1
KBA		B. Kubiak, Poland	1418	MAND		A. Mantero, Italy	68
KUC	01	S. Kuchto, France	971	MXI	18	A. Marchini, Italy	250
KYUA		Y. Kunitsa, Ukraine	676	MJOE		J. Marco, Spain	167
KSQ		S. Kuznetsov, Russian Federation	19	MFB	18	F. Mariuzza, Italy	4
KJAF		J. Kvapil, Sweden	6	MCHB		C. Marlot, France	219
KMIC		M. Kwiciak, Poland	25	MANG		A. Marrero, Spain	466
LCR	15	C. Labordena, Spain	727	MMN	18	M. Martignoni, Italy	20
LNOA		N. Lachat, Switzerland	25	MANH		A. Maslennikov, Ukraine	77
LHS		H. Lacombe, Canada	28	MBS		B. Massey, California	62
LSA	17	S. Lahtinen, Finland	18	MTH		H. Matsuyama, Japan	1278

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Table 3. AAVSO Observers, 2016–2017, cont.*

Code	Org.	Name	No. Obs.	Code	Org.	Name	No. Obs.
MDMS	20	D. Matthews, United Kingdom	107	OMIC		M. O'Connell, Ireland	11
MPR		P. Maurer, Germany	128	OCX		L. O'Connor, Massachusetts	67
MLUA		L. Maurin, France	1	OCN		S. O'Connor, Bermuda	164
MMPA		M. McBride, Canada	12	ODEA		D. O'Keefe, Ireland	22
MJHA		J. McCammon, Colorado	62	ONJ		J. O'Neill, Massachusetts	1135
MCOA		C. McCann, Arkansas	58	OJEA		J. Ooster, Pennsylvania	40
MJAI		J. McClun, New Jersey	2	OAS		A. Odasso, Italy	2
MDP	27	P. McDonald, Canada	1600	OYE		Y. Ogmen, Cyprus	12445
MCOB		C. McKenzie, Canada	33	OJMA	17	J. Ojanpera, Finland	12
MKK		K. McKeown, Minnesota	4	OAR	17	A. Oksanen, Finland	5473
MJB		J. McMath, Arkansas	8240	OPR		P. Ossowski, Poland	43
MAMD		A. McNaughton, Utah	3	OSE		S. Otero, Argentina	5
MMAE		M. McNeely, Indiana	13	OJJ		J. Ott, Colorado	663
MEAJ	20	J. Meacham, New Zealand	9	OCR	05	C. Otten, Belgium	73
MPJM	20	P. Meadows, United Kingdom	26	OEH		E. Ozturk, Turkey	5
MSD		D. Means, Arizona	23	PLA		A. Padilla Filho, Brazil	718
MED		K. Medway, United Kingdom	2393	PSD		S. Padovan, Spain	1494
MYAA		Y. Melnikov, Austria	51	PTFA		T. Papadimitriou, Greece	2510
MHI		H. Menali, Massachusetts	37	PMAJ		M. Papapoulias, Greece	17
MZK		K. Menzies, Massachusetts	47652	PCC	18	R. Papini, Italy	3
MBEA		B. Merand, France	46	PPS	03	S. Papp, Hungary	1991
MDEN		D. Merrill, California	2	PDAE		D. Parker, United Kingdom	6
MCHC		C. Michael, Massachusetts	1	PJJ	15	J. Pastor, Spain	55
MHL		E. Michaels, Texas	2192	PTT		R. Paterson, United Kingdom	670
MIW	20	I. Miller, United Kingdom	7490	PGRA		G. Patrick, France	1737
MMGA		M. Miller, Texas	100	PEX		A. Pearce, Australia	16179
MMEA		M. Millward, Australia	9	PRCA		R. Pearce, United Kingdom	721
MNIC		N. Mishevskiy, Ukraine	19722	PEI	11	E. Pedersen, Denmark	869
MOBM	20	M. Moberley, United Kingdom	155	PVTA	11	V. Pedersen, Denmark	26
MRV		R. Modic, Ohio	2	PEG	01	C. Peguet, France	1756
MHH		J. Moehlmann, Pennsylvania	745	PWD		W. Pellerin, Texas	347
MOD		D. Mohrbacher, Ohio	73	PEJA		E. Pellett, Wisconsin	1624
MPV	03	P. Molnar, Hungary	4	PPRA		P. Pendergraft, Alabama	60
MVLA		V. Monakhov, Russian Federation	1	PJED		J. Penninckx, France	188
MISA		I. Monks, United Kingdom	74	PAE		A. Pereira, Portugal	41
MMAR		M. Montroull, Argentina	1	PRVA		R. Pereira, Brazil	21
MMAO		M. Morales Aimar, Spain	237	PCX	15	C. Perello, Spain	9
MCAF		C. Morales Socorro, Spain	435	PJVA		J. Perez, Spain	2
MEV	01	E. Morelle, France	17475	PLFA		L. Perez, Spain	67
MAEA		A. Morozov, Russian Federation	50	PEJ	01	J. Perrard, France	77
MOW		W. Morrison, Canada	5300	PWL		W. Perry, Arizona	28
MPS	27	P. Mozel, Canada	102	PGD		G. Persha, Michigan	2101
MMH		M. Muciek, Poland	525	PVA	27	V. Petriew, Canada	15100
MULP	20	P. Mulligan, United Kingdom	172	PANC		A. Pfeifer, Wyoming	38
MMU		M. Munkacsy, Rhode Island	4898	PRJA		R. Piacenti, Brazil	1
MGAB		G. Murawski, Poland	3193	PXR	20	R. Pickard, United Kingdom	21919
MUY	05	E. Muylaert, Belgium	16036	PROC		R. Pieri, France	1216
MGW		G. Myers, California	115124	PRUA		R. Pinizzotto, Maine	43
NDQ	01	D. Naillon, France	47	PIJ	03	J. Piriti, Hungary	444
NRNA		R. Naves, Spain	1399	PPL		P. Plante, Ohio	209
NLX		P. Nelson, Australia	14303	PAW	29	A. Plummer, Australia	3240
NAL		A. Nemes, Hungary	116	AST	12	R. Podesta, Argentina	21
NJO	02	J. Neumann, Germany	2048	PTOB		T. Polakis, Arizona	7465
NPHA		P. Nguyen, Michigan	321	PJGA	27	J. Pontes, Canada	1
NMI		M. Nicholas, Arizona	2382	PVEA		V. Popov, Bulgaria	3371
NOT	02	O. Nickel, Germany	941	PJOF		J. Poppele, Minnesota	62
NJL	01	J. Nicolas, France	12	PJTA	17	J. Porio, Finland	569
NCH		C. Norris, Texas	116	PSMA		S. Porter, Illinois	23
NAO		A. Novichonok, Russian Federation	39	PRV		R. Potter, Michigan	38

Table 3. AAVSO Observers, 2016–2017, cont.*

<i>Code</i>	<i>Org.</i>	<i>Name</i>	<i>No. Obs.</i>	<i>Code</i>	<i>Org.</i>	<i>Name</i>	<i>No. Obs.</i>
PWR		R. Powaski, Ohio	6	SBAH		B. Salwiczek, Poland	497
POX		M. Poxon, United Kingdom	630	SAH		G. Samolyk, Wisconsin	77575
PYG	20	G. Poyner, United Kingdom	10344	DSS	06	A. San Segundo Delgado, Spain	35
PBAB		B. Presler-Marshall, Georgia	442	SFGA		F. Sanchez Urquijo, Ecuador	5
PEMB		E. Primucci, Argentina	1555	SHWB		H. Sanggwon, Republic of Korea	5
PLSA	20	L. Proctor, United Kingdom	4	SSIM		S. Santini, Italy	418
PGB		G. Profita, Italy	46	SVIB	03	V. Sarka, Hungary	9
PALA		A. Prokofyev, Cyprus	2	SALD		A. Savchuk, Ukraine	4
PMB		M. Prokosch, Texas	22	SEDB		E. Sawyer, Canada	355
PDQ	01	D. Proust, France	56	SMAI		M. Sblewski, Germany	328
PUJ	06	F. Pujol-Clapes, Spain	638	SDAV		D. Scanlan, United Kingdom	489
PARA		A. Purroy, Spain	18	SFS		S. Schiff, Virginia	822
PHG		H. Purucker, Germany	6	SRBR		R. Schippers, Netherlands	600
PALE		A. Purves, Maryland	2293	SPK	01	P. Schmeer, Germany	4
PMAK		M. Pyatnytskyy, Ukraine	4	SRAB	02	R. Schoenfeld, Germany	471
QULA	18	U. Quadri, Italy	2799	SFRA		F. Schorr, Georgia	3120
QCTA		C. Quandt, Germany	14	SYU	02	M. Schubert, Germany	1087
QCHA		C. Quesada, Arizona	1	SBEA	02	B. Schwarz, Germany	319
RKE	02	K. Raetz, Germany	331	SDM		E. Schwendeman, Virginia	258
RGJA		G. Raineault, Canada	15	SJEA	01	J. Sciolla, France	566
RJOC		J. Rallo, Spain	209	SJTS	20	J. Screech, United Kingdom	61321
RMAF		M. Rana, Virginia	817	SDPB		D. Scriven, Michigan	413
RRUB		R. Rasmussen, Denmark	2	SJIA		J. Seargeant, New Mexico	7488
RMAH		M. Rathi, Virginia	7	SHUA		H. Sears, Michigan	478
RJEA		J. Rayon, France	206	SJPA		J. Seitz, Michigan	459
RWSA	29	W. Rea, New Zealand	216	SDMA		D. Selmo, Brazil	2
REP	24	P. Reinhard, Austria	356	SSAB		S. Sementsov, Russian Federation	2
RFP	13	P. Reis Fernandes, Brazil	35	SASC		A. Semenyuta, Kazakhstan	144
RJG		J. Ribeiro, Portugal	3575	SIV		I. Sergey, Belarus	115
RCAB		C. Rice, Wyoming	1	SDEA		D. Severin, Argentina	2
RIX	29	T. Richards, Australia	278	SSTA	27	S. Shadick, Canada	1
RGW		G. Rinehart, Kansas	8	SSHA		S. Shaffer, Wyoming	1099
RCCA		C. Riou, France	31	SJDA	20	J. Shanklin, United Kingdom	179
OJR		J. Ripero Osorio, Spain	3270	SHS		S. Sharpe, Canada	2187
RIZ		J. Ritzel, New York	3674	SDP		D. Sharples, New York	1
RJC		J. Rivet, Texas	62	SQN		L. Shaw, California	15
RLUB	18	L. Rizzuti, Italy	88	SFY	20	J. Shears, United Kingdom	7013
RJWA		J. Robertson, Arkansas	1215	SVLA		V. Shlyonskov, Russian Federation	1
REE		E. Robinson, United Kingdom	10	SLH		L. Shotter, Pennsylvania	621
RPT		P. Rochford, Alabama	14	SGQ		C. Sigismondi, Italy	522
RAEA		A. Rodda, United Kingdom	1266	SFLB		F. Signoret, France	23
RDAE		D. Rodriguez, Spain	60	SAUA		A. Silcox, Michigan	190
RFC		F. Rodriguez Bergali, Spain	9	SPAO	18	P. Siliprandi, Italy	638
RZD		D. Rodriguez Perez, Spain	647	SMSC	37	M. Silva, Brazil	1
ROE		J. Roe, Missouri	151	SBN	13	A. Silva Barros, Brazil	3
RRO		R. Rogge, Germany	39	SGEO		G. Silvis, Massachusetts	3144
RFDA		F. Romanov, Russian Federation	1	SNE		N. Simmons, Wisconsin	3978
RES		E. Romas, Russian Federation	50	SXN		M. Simonsen, Michigan	544
RJOE		J. Rosano, Germany	6	SNIA		N. Sinel'nikov, Russian Federation	6
ROG		G. Ross, Michigan	204	SANG		A. Sing, Philippines	495
RGN		G. Rossi, Italy	499	SGOR		G. Sjöberg, Massachusetts	1749
RVR		V. Ruiz, Spain	4	SDN		D. Slauson, Iowa	61
RJV		J. Ruiz Fernandez, Spain	1483	SDAB		D. Smales, United Kingdom	397
RRR		R. Rynearson, Michigan	33	STAC		T. Smela, Poland	3323
RZM		M. Rzepka, Poland	4	SDWA	20	D. Smith, United Kingdom	4448
SRIC		R. Sabo, Montana	35082	SDZ		D. Smith, Arizona	115
SMRD		M. Sadh, India	159	SFRE		F. Smith, New Hampshire	21
SSU		S. Sakuma, Japan	198	SHA		H. Smith, Michigan	538
SQL	26	R. Salvo, Uruguay	1	SMJD	20	M. Smith, United Kingdom	438

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Table 3. AAVSO Observers, 2016–2017, cont.*

<i>Code</i>	<i>Org.</i>	<i>Name</i>	<i>No. Obs.</i>	<i>Code</i>	<i>Org.</i>	<i>Name</i>	<i>No. Obs.</i>
SKMA		K. Sniegocki, Poland	12	TWP		W. Toomey, Massachusetts	13
SLUA		L. Socha, Poland	1044	TOO	20	J. Toone, United Kingdom	5497
STAK		T. Soejima, Japan	8	TST		S. Toothman, Ohio	42
SROD		R. Solomon, Australia	275	TRT	03	T. Tordai, Hungary	33900
SYRA		Y. Solomonov, Russian Federation	89	TTN	03	T. Torok, Hungary	9
SZOL	03	Z. Sonkoly, Hungary	8	TTK	03	K. Toth, Hungary	4
SMAL	15	M. Soriano, Spain	12	TBOA		B. Tracy, Texas	16
SOI		M. Soukup, New Mexico	9	TVT		V. Tramazzo, Arizona	2
SMIE		M. Southam, Connecticut	6	TRF		C. Trefzger, Switzerland	29
SIQ		M. Spearman, Texas	29	TYGA		Y. Tsao, Taiwan	145
SPGA		P. Spital, United Kingdom	33	TANB		A. Tsvetkov, Russian Federation	12
SXR	03	M. Sragner, Hungary	4	TYEA		Y. Tsvetkova, Ukraine	275
SBL		B. Staels, Belgium	2514	TDG		D. Turner, Canada	285
SVAE		V. Stanimirov, Bulgaria	1	TSAA		S. Tzikas, Virginia	78
SDB		D. Starkey, Indiana	20511	UAN	03	A. Uhrin, Hungary	136
SPET		P. Starr, Australia	8570	UJHA		J. Ulowetz, Illinois	45917
SABB		A. Steenkamp, Denmark	60	UIS01		B. University of Illinois Springfield, Illinois	158
STI		P. Steffy, Florida	52	UMAA		M. Urbanik, Slovakia	874
SWOAA		W. Stegmueller, Germany	1	VLN	01	L. Vadrot, France	1
SWIL		W. Stein, New Mexico	6918	SROF		R. Valdomiro Silva, Brazil	96
SNIB		N. Steinkohl, Germany	6	VTY	20	T. Vale, United Kingdom	596
SET		C. Stephan, West Virginia	210	VJXA		J. Valle, Brazil	4
SRAC		R. Stiller, Indiana	1848	VADA		A. Valvasori, Italy	3
SCMB		C. Stinson, Virginia	1	BVE	04	E. Van Ballegoij, Netherlands	59
SOX		C. Stockdale, Australia	753	VBRB		B. Van Deventer, Washington	20
SGEA		G. Stone, California	220494	VDE	04	E. Van Dijk, Germany	47
SMIF		M. Stone, Missouri	50	VNL	05	F. Van Loo, Belgium	170
SDI	20	D. Storey, United Kingdom	31	VLYA		L. Van Rooijen-McCullough, Netherlands	21
SWIA		W. Strickland, Texas	22	VUG	04	G. Van Uden, Netherlands	139
SNJ		N. Stritof, Slovenia	36	VWS	05	J. Van Wassenhove, Belgium	3139
SHZ	02	H. Struever, Germany	3	VBH	05	H. Vandenbruaene, Belgium	5
SRX	14	R. Stubbings, Australia	44	VMT	05	T. Vanmunster, Belgium	49409
SAC	02	A. Sturm, Germany	499	VSD	05	D. Vansteelant, Belgium	8
SUS	02	D. Suessmann, Germany	415	VANA		A. Vasilev, Ukraine	1256
SPP		P. Sullivan, California	151	VMIA		M. Vazquez-Prada, Spain	1
SJAR		J. Suomela, Finland	262	VED	01	P. Vedrenne, France	5384
SWV		D. Swann, Texas	439	VERA		E. Verwichte, United Kingdom	67
SSW		S. Swierczynski, Poland	1	VBPA		B. Vietje, Vermont	2832
SJME		J. Sykes, Washington	13	VWIA		W. Vinton, Vermont	4
SAO	03	A. Szauer, Hungary	83	VJA	17	J. Virtanen, Finland	2
SLY	03	L. Szegedi, Hungary	80	VGK		G. Vithoukas, Greece	1370
TMAB		M. Tack, Belgium	2	VFK	02	F. Vohla, Germany	8855
TUO		U. Tagliaferri, Italy	95	VOL		W. Vollmann, Austria	1988
TMAA		M. Talero, Spain	69	WNBA		N. Wakefield, United Kingdom	1
TFK	03	F. Tamasko, Hungary	2	WGR		G. Walker, New Hampshire	10135
TTG		T. Tan, Australia	601	WBY		B. Walter, Texas	161
TJOB		J. Tapioles, Spain	2	WZIB		Z. Wang, China	3
TCGA	20	C. Taylor, United Kingdom	93	WJOB	19	J. Warell, Sweden	124
TDB	27	D. Taylor, Canada	312	WAU		A. Wargin, Poland	10
TSUB		S. Taylor, Colorado	25	WTIB		T. Weber, Colorado	4
TPS	03	I. Tepliczky, Hungary	830	WPT		P. Wedepohl, South Africa	15
TTU		T. Tezel, Turkey	4	WRCA		R. Weir, New Hampshire	2110
TGOA		G. Thaler, Austria	4	WWC		W. Weiss, Arizona	1
TJP	20	J. Thorpe, Australia	36	WKL	02	K. Wenzel, Germany	1230
TJD		J. Thrush, Michigan	767	WROC		R. Werder, Germany	228
TIA	03	A. Timar, Hungary	319	WDJC		D. Whalen, Georgia	65
TSCB		S. Toft, Switzerland	48	WIAA		I. Wheelband, Canada	1
TRL		R. Togni, Arkansas	1	WJAA		J. Whinfrey, United Kingdom	246
TRE		R. Tomlin, Illinois	14567	WNIB	20	N. White, United Kingdom	26

Table 3. AAVSO Observers, 2016–2017, cont.*

Code	Org.	Name	No. Obs.	Code	Org.	Name	No. Obs.
WBOA		B. Wichert, Germany	204	WPB	20	P. Withers, United Kingdom	2159
WFOA		F. Wierda, Finland	3	WGI	02	G. Wollenhaupt, Germany	6
WWK		K. Wierzchos, Florida	292	WUB	04	E. Wubbena, Netherlands	330
WTHB	19	T. Wikander, Sweden	4503	WCG		C. Wyatt, Australia	39
WEY		E. Wiley, Texas	267	YIGA		I. Yatsenkov, Russian Federation	248
WTHA		T. Will, Germany	8	YPFA		P. York, Australia	33
WTEB		T. Willamo, Finland	3	YBA		B. Young, Oklahoma	1
WI		D. Williams, Indiana	149	YCRA		C. Young, New Zealand	1275
WIG		G. Williams, Ohio	3	YDV		D. Young, Massachusetts	16
WJKA		J. Williams, Virginia	1	YON		R. Young, Pennsylvania	49
WPX	29	P. Williams, Australia	6305	ZMOA		M. Zachariasen, Denmark	1
WAJA	20	A. Wilson, United Kingdom	3	ZPA		P. Zeller, Indiana	14
WWJ		B. Wilson, United Kingdom	31	ZGEA		G. Zhao, California	8
WSN		T. Wilson, West Virginia	1654	ZXIA		X. Zhu, Wisconsin	1
WMAH		M. Winnicki, Poland	23	ZBOA		B. Zhuravlova, Ukraine	18
WERB	02	E. Wischnowski, Germany	22	ZUD		D. Zubenel, Kansas	135
WKM		M. Wiskirken, Washington	8	ZALC		A. Zverev, Russian Federation	321

*Totals reflect observations made during fiscal 2016–2017 and do not include historical data (data preceding fiscal 2016–2017) submitted during fiscal 2016–2017.

These codes, which appear in the Table (AAVSO Observers 2016–2017), indicate observers are also affiliated with the groups below:

01	Association Française des Observateurs d'Étoiles Variables (AFOEV)	14	Royal Astronomical Society of New Zealand, Variable Star Section
02	Bundesdeutsche Arbeitsgemeinschaft für Veränderliche Sterne e.V. (BAV) (Germany)	15	Agrupacion Astronomica de Sabadell (Spain)
03	Magyar Csillagászati Egyesület, Valtózcsoport (Hungary)	16	Association of Variable Star Observers "Pleione" (Russia)
04	Koninklijke Nederlandse Vereniging voor Weer-en Sterrenkunde, Werkgroep Veranderlijke Sterren (Netherlands)	17	URSA Astronomical Association, Variable Star Section (Finland)
05	Vereniging voor Sterrenkunde, Werkgroep Veranderlijke Sterren (Belgium)	18	Unione Astrofili Italiani (Italy)
06	Madrid Astronomical Association M1 (Spain)	19	Svensk Amatör Astronomisk Förening, Variabelsektionen (Sweden)
08	Norwegian Astronomical Society, Variable Star Section	20	British Astronomical Association, Variable Star Section
09	Ukraine Astronomical Group, Variable Star Section	24	Astronomischer Jugendclub (Austria)
10	Astronomical Society of Southern Africa, Variable Star Section	26	Red de Observadores (Montevideo, Uruguay)
11	Astronomisk Selskab (Scandinavia)	27	Royal Astronomical Society of Canada
12	Liga Iberoamericana de Astronomia (South America)	29	Variable Stars South (New Zealand)
13	Rede de Astronomia Observacional (Brazil)	31	Center for Backyard Astronomy
		34	Astronomical Society of South Australia
		36	Nucleo de Estudo e Observacao Astronomica--Jose Bazilio de Souza (Florianopolis, Brazil)
		37	Clube De Astronomia De Sao Paulo (Brazil)

Table 4. Observation statistics for fiscal year 2016–2017.*

<i>Observations (increments of 1000)</i>	<i>No. Observations per increment</i>	<i>% of All Observations</i>	<i>No. Observers per increment</i>
0 – 999	104997	5	684
1000 – 1999	84637	4	58
2000 – 2999	66840	3	28
3000 – 3999	54318	2	16
4000 – 4999	26981	1	6
5000 – 5999	60123	3	11
6000 – 6999	26182	1	4
7000 – 7999	44104	2	6
8000 – 8999	34622	2	4
9000 – 9999	28428	1	3
10000+	1679895	76	40

*Totals reflect observations made during fiscal 2016–2017 and do not include historical data (data preceding fiscal 2016–2017) submitted during fiscal 2016–2017.

Variable Star Observing Campaign Highlights

Elizabeth O. Waagen

The AAVSO participates in many observing campaigns on variable stars. These campaigns arise from the request for assistance by an astronomer, or from the AAVSO itself in response to unusual stellar activity. Campaigns may run from a few days to weeks or months, or may be ongoing. A complete list may be found at <https://www.aavso.org/aavso-alert-notice-for-observing-campaigns-and-discoveries>. Below are some highlights.

Highlights from FY 2017

A campaign on the bright star **b Per** (HD 26961) (AAVSO Alert Notice 563) was launched at the beginning of December at the request of Dr. Donald F. Collins (AAVSO member, Swannanoa, North Carolina) and colleagues Dr. Robert Zavala (US Naval Observatory, Flagstaff Station), Dr. Anatoly Miroshnichenko (University of North Carolina at Greensboro), and Jason Sanborn (Lowell Observatory). The third star in this triple system was predicted to transit the inner pair of stars during the week centered on December 15, 2016, and time series photometry was requested. The campaign was successfully concluded as AAVSO observers provided photometry that showed the eclipse on December 15–17 UT (Figure 1). This campaign was the fourth in a series with AAVSO participation to observe transits among the three stellar components of this system in order to assist in untangling the complicated orbital relationships. Links to more information about this system and an animation, as well as to the three earlier AAVSO campaigns, may be found in the *Alert Notice*.

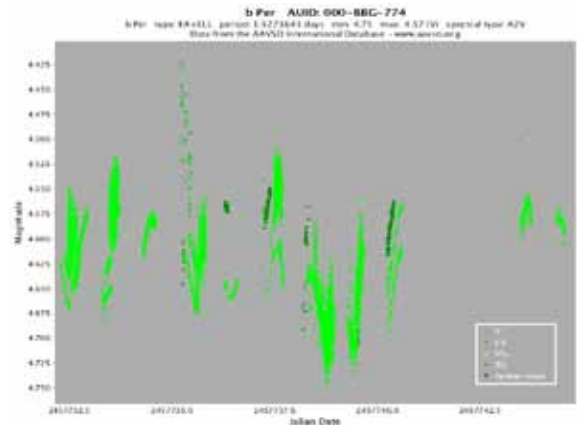


Figure 1. 9 December 2016–23 December 2016

Dr. Ed Sion (Villanova University) and colleagues requested AAVSO monitoring of the symbiotic-type recurrent nova **IM Nor** in support of observations with the Hubble Space Telescope (HST) Cosmic Origins Spectrograph (AAVSO Alert Notice 567). These observations were part of a study on short orbital period recurrent novae as Supernovae Type Ia progenitors. This campaign is a good example of many that the AAVSO carries out that involve HST. They often have a multi-fold purpose: to provide photometry for data analysis and correlation with the satellite data; and, in order to protect the HST instrumentation, to know the brightness of the target throughout the

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observing window, and, crucially, to know 24 hours prior to the satellite observations that the target is not in outburst. In the IM Nor campaign, AAVSO observers provided photometry throughout this campaign that showed IM Nor was not in outburst and that will be used in the analysis. The HST observations were obtained and the campaign concluded successfully.

Dr. Konstanze Zwintz (Universitaet Innsbruck) and her team requested monitoring of the bright, very small-amplitude delta Scuti star **beta Pic** (NSV 16683) (3.80–3.86V) during 2017–2018 because a transit of the star's planet's Hill sphere (the region around a planet in which it dominates the attraction of satellites) is predicted to occur during that time (*AAVSO Alert Notice 566*). Beta Pic is one of the targets of the BRlght Target Explorer-Constellation (BRITE-Constellation) satellite suite. BRITE is obtaining high-precision photometry of selected very bright ($m_v < 4$) stars in order to investigate the “stellar structure and evolution of the brightest stars in the sky and their interaction with the local environment.” The AAVSO is part of the BRITE-Constellation Ground Based Observations Team (GBOT), supporting cutting-edge science from the BRITE-Constellation satellites and coordinating with BRITE-Constellation scientist Dr. Zwintz. Observations of these BRITE stars is extremely challenging because of their very small amplitudes. This campaign will continue at least through 2018.

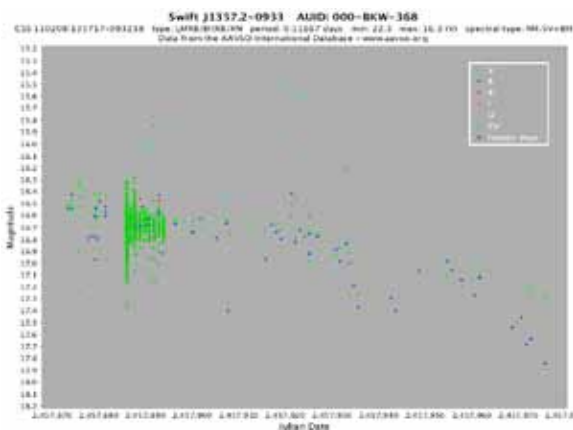


Figure 2. 30 April 2017–18 August 2017

Dr. Gregory Sivakoff (University of Alberta) requested monitoring of the black hole X-ray binary **Swift J1357.2-0933** (CRTS J135716.8-093238) during its outburst underway in late April 2017 (*AAVSO Alert Notice 575*). Its location at high Galactic latitude meant that extinction was relatively small and the bright blue nature of the outburst could be observed readily as the source faded into quiescence on a timescale of a few months. Dr. Sivakoff said that AAVSO observations would be critical in complementing multiple multi-wavelength campaigns observing this outburst; contributed multicolor photometry may be seen in Figure 2.

An example of a very long-running AAVSO observing campaign is the one begun in January 2016 at the request of Dr. George Wallerstein (University of Washington). He requested AAVSO coverage of the long period/symbiotic variable **R Aqr** (*AAVSO Alert Notice 535*) to continue at least for the next several years to cover the eclipse which occurs every 43–44 years and is predicted for 2022 (but which may come early).

Several other astronomers are also studying R Aqr closely and will be carrying out multi-mode, multiwavelength observations. R Aqr, both a Mira and a symbiotic variable, is a close binary system consisting of a hot star and a late-type star (the Mira), both enveloped in nebulosity. The cause of the eclipse, which lasts for years, is unknown; several theories have been proposed, and careful investigation of this upcoming event should help to resolve this question. Ongoing spectroscopy over the next several years was also recommended.

An unusual campaign for AAVSO observers was the one requested in mid-December by Roque Ruiz-Carmona (Ph.D. candidate, Institute of Mathematics, Astrophysics and Particle Physics, Radboud University Nijmegen, The Netherlands) for AAVSO assistance with his campaign to observe a set of **21 eclipsing cataclysmic variables** (CVs) with the William Herschel Telescope at La Palma in mid-December (*AAVSO Alert Notice 564*). Observers were asked to obtain an image of each target two nights in a row so Ruiz-Carmona could examine them to determine his final list of observing targets. Time constraints on when the images had to be taken and when they had to be uploaded to the AAVSO forum discussion thread were extremely tight. The targets were successfully imaged by AAVSO observers and Ruiz-Carmona was able to determine his final target list.

Other observing campaigns the AAVSO successfully participated in during FY 2017

Monitoring the pulsating white dwarf-containing cataclysmic variable **GW Lib** in preparation for and support of K2 (Kepler's Second Light) and three Hubble Space Telescope (HST) observations scheduled for August to November 2017 and August and September 2017, respectively (*AAVSO Alert Notices 591, 595, 596, 597*)—Dr. Boris Gaensicke (Warwick University). Campaign successfully concluded.

Monitoring the intermediate polar cataclysmic variable **FO Aqr** in support of a study how FO Aqr's accretion processes change during the drop to minimum (*AAVSO Alert Notice 598*)—Dr. Colin Littlefield (University of Notre Dame) and colleagues. Campaign successfully concluded.

Monitoring the eclipse of the very bright Algol-type eclipsing binary variable **VV Cep**, predicted to have begun in June 2017 and to conclude in November 2019. Its eclipse period is 20.53 years (7,498 days), making it one of the longest-period eclipsing binaries known (*AAVSO Alert Notice 593*)—AAVSO. Campaign is ongoing through 2019.

Monitoring the black hole X-ray transient LMXB **V404 Cyg** in support of Chandra observations (*AAVSO Alert Notice 592*)—Dr. Gregory Sivakoff (University of Alberta) and colleagues. Campaign successfully concluded.

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Monitoring the peculiar Young Stellar Object (YSO) **V1117 Her** to determine behavior during current fading episode (*AAVSO Alert Notice 590*)—AAVSO YSO Section leader Michael Poxon (Great Plumstead, Norfolk, UK). Campaign is ongoing.

Monitoring the symbiotic variable **R Aqr** in preparation for and in support of Chandra and HST observations, to monitor the state of the system and correlate with the satellite observations (*AAVSO Alert Notice 589*)—Dr. Margarita Karovska (Harvard-Smithsonian Center for Astrophysics). Campaign successfully concluded.

Monitoring the rare ER UMA-type cataclysmic variable **DDE 48** in Vulpecula to provide photometry to help characterize the nature of DDE 48 (long-term behavior, orbital period, evolution of superhumps period during superoutburst) (*AAVSO Alert Notice 588*)—Dr. Denis Denisenko (Sternberg Astronomical Institute, Moscow State University). Campaign is ongoing.

Follow-up observations of the flare star **FIVir** (Ross 128) subsequent to radio observations obtained with the Arecibo and Green Bank telescopes and the Allen Telescope Array (*AAVSO Alert Notice 587*)—Dr. Abel Méndez (University of Puerto Rico at Arecibo). Campaign successfully concluded.

Imaging **20 eclipsing cataclysmic variables** (CVs) to determine their outburst status, in order to select one system in outburst for observation with the William Herschel Telescope (WHT) at La Palma, to detect and study spiral density waves in the system (*AAVSO Alert Notice 586*)—Roque Ruiz-Carmona (Ph.D. candidate, Institute of Mathematics, Astrophysics and Particle Physics, Radboud University Nijmegen, The Netherlands). Campaign successfully concluded.

Follow-up monitoring of targets from the Evryscope survey (**EC 01541-1409, GD 1068, HE 0218-4447, HE 0218-3437, 2MASS J05144393-0848064, ASAS J102322-3737.0, JL 94, EC 23073-6905**) to help confirm debris/planetesimal candidates (*AAVSO Alert Notice 585*)—Dr. Octavi Fors (University of North Carolina at Chapel Hill) and colleagues. Campaign is ongoing.

Monitoring **PDS 110** (HD 290380), a very interesting young star that may have a large orbiting body with an extremely large ring system (on the order of 200 times wider than that of Saturn), in anticipation of an eclipse of PDS 110 expected in mid-September 2017 (*AAVSO Alert Notice 584*)—Dr. Joey Rodriguez (Harvard-Smithsonian Center for Astrophysics), Dr. Hugh Osborn (University of Warwick), Dr. Matthew Kenworthy (Leiden Observatory), and colleagues. Campaign successfully concluded, with substantial amount of multicolor data obtained throughout the observing window and beyond.

Monitoring three M-dwarf stars as part of the Red Dots campaign to find exoplanets orbiting around these stars (**GJ729** = V1216 Sgr, **Proxima Centauri** = V645 Cen, **Barnard's Star** = V2500 Oph) in the solar neighborhood (*AAVSO Alert Notice 583*)—John Strachan (Queen Mary University of London) and Dr. Guillem Anglada-Escude (Queen Mary University of London). Campaign concluded.

Photometry of **V3662 Oph** (Nova Oph 2017, TCP J17394608-2457555) in support of Target-of-Opportunity observations with Swift UVOT that were triggered in anticipation of a possible major dust event (*AAVSO Alert Notice 582*)—Drs. Frederick Walter (Stony Brook University) and Paul Kuin (University College London) and colleagues. Campaign successfully concluded.

Monitoring the very bright ($V = 4.23$) and very unusual eclipsing binary **HD 148703** (HR 6143, N Sco) during its infrequent primary and secondary eclipses scheduled for 2017 June 11 and June 14, respectively (*AAVSO Alert Notice 581*)—Dr. Milena Ratajczak (University of Wrocław). Campaign successfully concluded.

Monitoring the newly-discovered helium dwarf nova **ASASSN-17fp** after it was observed to be in outburst again on 16 May 2017 after fading 2.5 magnitudes from its original outburst detected on 28 April 2017. (*AAVSO Alert Notice 580*)—Dr. Tom Marsh (University of Warwick) and Dr. Elme Breedt (University of Cambridge). Campaign successfully concluded.

Monitoring the enigmatic variable **KIC 8462852** (Boyajian's Star, Tabby's Star) requested following a series of possible small optical dips beginning in late April 2017 and a definite, significantly larger dip underway in mid-May (reported by T. Boyajian (Louisiana State University) et al.) (*AAVSO Alert Notice 579*)—AAVSO. Campaign is ongoing.

Monitoring the young, disk-bearing low-mass (M type) pre-main-sequence star **EPIC 204278916** (2MASS J16020757-2257467) to look for dimming events (*AAVSO Alert Notice 574*)—Dr. Carlo Manara (ESA Science and Technology SCI-S, the Netherlands) and colleagues. Campaign is ongoing.

Monitoring of the young eruptive star (FUOR type) **V2492 Cyg** from the optical to the infrared in support of X-ray observations with XMM-Newton (*AAVSO Alert Notice 573*)—Dr. Nicolas Grosso (CNRS, Observatoire Astronomique de Strasbourg). Campaign successfully concluded.

Monitoring the symbiotic variable **AG Dra** as a follow-up to spectroscopic observations and in order to monitor the system for an outburst anticipated in April–May 2017

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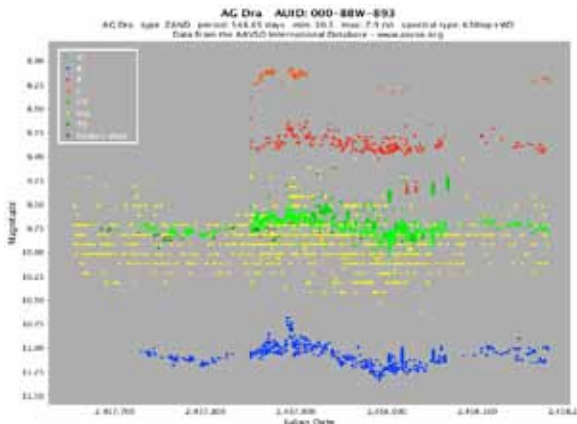


Figure 3. 21 September 2016–8 February 2018

(AAVSO Alert Notice 572)—Dr. Rudolf Gális (Pavel Jozef Šafárik University (Slovakia)) and colleagues. Campaign successfully concluded, with multicolor photometry of outburst in late April 2017 (Figure 3).

Follow-up observations of the recently discovered exoplanet **Proxima Centauri b**. This exoplanet is a suspected Earth-size planet orbiting in the habitable zone of our nearest stellar neighbor, Proxima Centauri (V645 Cen) (AAVSO Alert Notice 571)—Dr. Karen Collins (Vanderbilt University). Campaign is ongoing.

Monitoring **NR TrA** (Nova TrA 2008) in support of XMM Newton observations. NR TrA was of interest because it was a normal Fe II nova that, upon reaching quiescence, took on the appearance of a super-soft source in the optical high state, which suggested an extremely high mass accretion rate (AAVSO Alert Notice 570)—Dr. Fred Walter (Stony Brook University). Campaign successfully concluded.

Monitoring the eclipsing cataclysmic variable **1SWASP J162117.36+441254.2** (= CSS_J162117.4+441254) in support of observations scheduled with the Hubble Space Telescope (AAVSO Alert Notice 569)—Dr. Elmé Breedt (University of Warwick). Campaign successfully concluded.

Close monitoring of the SU UMa-type dwarf nova **YZ Cnc** in support of Chandra X-ray observations to be carried out via a Target of Opportunity (TOO) triggering when the system was in a suitable place in its cycle of superoutbursts and normal outbursts (AAVSO Alert Notice 565)—Dr. Christian Knigge (University of Southampton) and colleagues. Campaign successfully concluded.

Monitoring **V725 Tau**, the Be star in the high-mass X-ray transient A0535+26/HDE245770, in order to plan for the X-ray outburst predicted to follow 8 days after the optical brightening that occurs at periastron passage (AAVSO Alert Notice 562)—Dr. Franco Giovannelli (Istituto di Astrofisica e Planetologia Spaziali di Roma). Campaign successfully concluded.

Providing optical photometry of **CI Cam** (the B[e] optical counterpart of a HMXB system) in support of their high-resolution spectroscopy with the Mercator telescope + Hermes spectrograph in La Palma (AAVSO Alert Notice 559)—Kelly Gourджи and Marcella

Wijngaarden (graduate students at the University of Amsterdam/Anton Pannekoek Institute for Astronomy). Campaign successfully concluded.

Monitoring the recurrent nova **CI Aql** in support of observations with the HST Cosmic Origins Spectrograph as part of a study on short orbital period recurrent novae as Supernovae Type Ia progenitors (*AAVSO Alert Notice 558*)—Dr. Edward Sion (Villanova University). Campaign successfully concluded.

Monitoring the recurrent nova **V2487 Oph** in order to catch and observe its next outburst, which may be expected in the next two years, based on its past behavior (*AAVSO Alert Notice 556*)—Dr. Ashley Pagnotta (Louisiana State University). Campaign is ongoing.

Providing optical multicolor photometry in support of high-resolution spectroscopy of the peculiar High Mass X-ray Binary **V420 Aur** (HD 34921) being carried out at La Palma (*AAVSO Alert Notice 554*)—Marcella Wijngaarden and Kelly Gourdji (graduate students at the University of Amsterdam/Anton Pannekoek Institute for Astronomy). Campaign successfully concluded.

Monitoring the symbiotic recurrent nova **T CrB** in anticipation of an outburst that may occur in 2026, based on historical behavior and behavior in 2016 (*AAVSO Special Notice #415*)—AAVSO. Campaign is ongoing.

Optical photometry of the bright colliding-winds binary **V1687 Cyg** (WR 140, HD 193793) in support of a multi-wavelength campaign studying dust behavior as the system passes through periastron (*AAVSO Alert Notice 546*, *AAVSO Special Notice #419*)—Dr. Noel Richardson (University of Toledo) and colleagues. Campaign continuing until at least 2018.

Monitoring the enigmatic variable star **KIC 8462852**, discovered in October 2015, to further characterize the star's variability (*AAVSO Alert Notice 532*)—AAVSO. Campaign is ongoing.

Monitoring the Cepheids **X Cyg**, **SZ Cyg**, **TX Cyg**, **VX Cyg**, and the RV Tau star **MZ Cyg** for correlation with spectra to be obtained during radial velocity studies (*AAVSO Alert Notice 529*)—Dr. George Wallerstein (University of Washington). Campaign is ongoing.

Monitoring the X-ray black hole binary **V404 Cyg** (*AAVSO Alert Notice 520*) during and also subsequent to the official campaign, as the December 2015 outburst that followed its June spectacular outburst demonstrated that its behavior around outburst events is

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clearly unpredictable (*AAVSO Alert Notices 520 and 522*)—AAVSO and many astronomers. Excellent coverage obtained, campaign is ongoing.

Monitoring the symbiotic variable **AG Peg** following its outburst in late May 2015 (*AAVSO Alert Notice 521*), the first outburst since its only other known outburst, which occurred in 1860–1870 (it took about 10 years to reach maximum)—Dr. Gavin Ramsay (Armagh Observatory, N. Ireland). Campaign successfully concluded; continued coverage requested.

Monitoring the rare FU Ori object **2MASS J06593158-0405277** as part of a multiwavelength campaign to observe it from the optical to the infrared; only about two dozen of these objects are known; it is poorly understood and is one of the brightest such objects seen in recent times (*AAVSO Alert Notice 518*)—Dr. Fabienne A. Bastien (Hubble Postdoctoral Fellow, Pennsylvania State University). Campaign is ongoing.

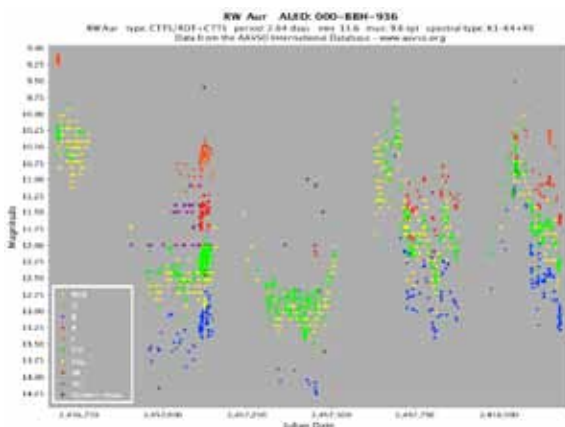


Figure 4. 23 January 2014–27 February 2018

Monitoring of component A of the classical T Tauri star **RW Aur** (begun in early 2015) continued at a less intense level to support a multiwavelength study investigating whether dimming of the star, when component B has no accretion disk, may have been caused by RW Aur B passing by A and pulling matter out of the disk around A (Figure 4; *AAVSO Alert Notice 514*)—Dr. Hans Moritz Guenther (Massachusetts Institute of Technology). Ongoing study.

Multicolor monitoring of the semiregular variable **CH Cyg** (multiple *AAVSO Alert* and *Special Notices*, most recently *AAVSO Special Notice #320*)—Dr. Margarita Karovska (Harvard-Smithsonian Center for Astrophysics (CfA)). Campaign is ongoing.

Multicolor monitoring of the symbiotic star **RT Cru** before, during, and after observations by the X-ray satellites Chandra and Swift which were carried out in November 2015 (*AAVSO Special Notice #411*)—Dr. Margarita Karovska (CfA). Campaign is ongoing.

Visual and instrumental monitoring of the symbiotic nova candidate **ASAS J174600-2321.3** before, during, and after eclipse which occurred during the outburst (*AAVSO Alert Notice 510*)—S. Otero, P. Tisserand, K. Bernhard, and S. Hümmerich. Campaign ongoing, particularly until nova begins to decline, and then until it returns to minimum.

Post-eclipse monitoring of **epsilon Aur** to look for expected coherent pulsation (AAVSO *Alert Notice* 504)—Dr. Robert Stencel (University of Denver). Pulsation observed, ongoing study.

Monitoring eclipse of the long period eclipsing binary **EE Cep** (Be star w/orbiting dusty disk belonging to unseen companion) (AAVSO *Alert Notice* 502, AAVSO *Special Notice* #387)—Dr. Cezary Galan (Nicolaus Copernicus Astronomical Center). Eclipse detected and campaign very successfully concluded; ongoing observations requested.

Monitoring **V1400 Cen** = J1407 (1SWASP J140747.93-394542.6) to look for eclipses (to explain dips in light curve) in this possibly multi-body system (AAVSO *Alert Notice* 462)—Dr. Eric Mamajek (CTIO, U. Rochester). Campaign is ongoing.

Monitoring of the S Dor (Luminous Blue Variable) **P Cyg** (AAVSO *Alert Notice* 440)—Ernst Pollmann (Active Spectroscopy in Astronomy (ASA) group, Germany). Campaign is ongoing.

Monitoring of **HMXBs** and **SFXTs** (AAVSO *Alert Notice* 377)—Dr. Gordon Sarty (University of Saskatchewan). Campaign is ongoing.

Monitoring of faint Mira **QX Pup** (AAVSO information page)—Dr. Arne Henden (formerly AAVSO, now retired). Ongoing observations requested.

Monitoring of **Blazars** (AAVSO *Alert Notice* 353)—Dr. Markus Boettcher (Ohio University). Ongoing study.

Novae

In addition to the above campaigns on established variable stars, observing campaigns were carried out on four galactic novae and one extragalactic nova discovered in FY 2017:

V3662 Oph (Nova in Ophiuchus = TCP J17394608-2457555): Fe-II nova (highly reddened). Discovered by Koichi Itagaki (Yamagata, Japan) at unfiltered CCD magnitude 13.6 on 2017 May 08.7511 UT (AAVSO *Alert Notice* 576). As of 2017 July 14.8898 UT it was V magnitude 18.985 ± 0.043 (K. Hills, Hartford, Cheshire, UK).

V1657 Sco (Nova Sco 2017 = PNV J16521887-3754189): He/N nova. Discovered 2017 February 1.862 UT by Hideo Nishimura at unfiltered CCD magnitude 11.7 (AAVSO *Alert Notice* 568). As of 2017 May 6.7674 UT it was visual magnitude < 15.2 (A. Pearce, Nedlands, W. Australia).

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V5854 Sgr (Nova in Sagittarius = ASASSN-16ma = PNV J18205200-2822100): Classical nova (fast type). Discovered 2016 October 25 and 26 UT, respectively, by ASAS-SN and by Yukio Sakurai at magnitude ~ 13.7 V and unfiltered CCD magnitude 10.4, respectively (*AAVSO Alert Notice 561*). As of 2017 October 4.0118 UT it was visual magnitude 12.1 (L. Shotter, Uniontown, Pennsylvania).

V5855 Sgr (Nova in Sagittarius): Classical nova (fast type). 2016 October 20.383 UT by Koichi Itagaki (Yamagata, Japan) at unfiltered CCD magnitude 10.7 (*AAVSO Alert Notice 560*). As of 2017 August 28.5688 UT it was visual magnitude 14.0 (A. Pearce, Nedlands, W. Australia).

MASTER OT J010603.18-744715.8 (Nova in Small Magellanic Cloud (Tuc)): Classical nova in Small Magellanic Cloud. Discovered 2016 October 14.19341 UT by the MASTER-OAFA auto-detection system at unfiltered CCD magnitude 10.9 (*AAVSO Alert Notice 557*). As of 2017 January 21.6782 UT it was magnitude $15.92 \text{ V} \pm 0.05$ (P. Nelson, Ellinbank, Victoria, Australia).

The International Variable Star Index (VSX)

Sebastián Otero and Patrick Wils

The International Variable Star Index is a continuously evolving database including most available variable star catalogues and stars published in variable star listings/journals plus new discoveries submitted by individual researchers. It was created by amateur astronomer Christopher Watson and is kept by the AAVSO with the valuable input of individual contributors who revise known variable stars and submit new ones. All that information is included in our database after a strict moderation process.

VSX is mostly maintained by staff member Sebastián Otero and volunteer Patrick Wils. Sebastián reviews all submissions/revisions and contacts the observers so they can correct or improve the uploaded information. Questions about catalogues and data analysis—and especially issues concerning variable star classification—are continuously being discussed by e-mail as part of the moderation process. Sebastián also adds stars from alert pages, works on updates of existing records, prepares new lists of objects for upload, hides duplicate entries and works on inconsistencies between VSX, VSD (the AAVSO Comparison Star Database), and the AID (AAVSO International Database). He also deletes comparison stars from sequences (the Sequence Team then replaces the “lost” comparison if needed).

Patrick works with data updates from journals and some other miscellaneous sources. He uploads lists of variable stars prepared by volunteer Klaus Bernhard, Sebastián, and himself, helps replace AUIDs in VSX when an already existing AUID in VSD is found, and does some of Sebastián’s duties when he’s not available. He is always behind the scenes making changes and improvements to the database structure and the user interface, and correcting bugs—all things that may go unnoticed but make the VSX process faster and more efficient. More recently, some volunteers have joined us in this endeavor.

For instance, this year Patrick added proper motion information to a large number of VSX stars (from UCAC4, Gaia DR1, Hipparcos, and PPMXL) and fixed the VSX search by AUID. He added some improvements to the submission forms:

- a draft option was added and through this option, users can save the forms and keep working at a later time and they can also add multiple references and files.

- a revision comment field was also added to the New star form to mention whether information from different sources was used in a submission.

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Volunteers

As years go by, more and more new variable stars are being discovered, not only by the growing number of sky surveys but also by amateurs equipped with CCD or DSLR cameras. It is a challenge to keep our database up to date with such a flood of information but we struggle to reach that goal without compromising the quality of the data included in VSX. Also, the number of alerts that we need to check grows faster, just think about ASAS-SN, MASTER, CRTS, and Gaia and how popular they are nowadays. We are even correcting some mistakes made by the survey teams as we add those stars to VSX. Collaboration between groups is essential.

This is where our volunteers play a major role. Patrick Wils has dedicated a lot of volunteer work over these years to add new variables or corrections made on known variables as they are published in journals, alert pages, or even in web resources.

Klaus Bernhard continued working actively on preparing lists for VSX import. It is not something straightforward because each paper or each variable star list comes with its own format and we need to extract the information in a format suitable for our database needs. A very important step in this work is to make sure that the new variables added are not actually duplicates of stars already included in VSX, so a thorough cross-identification of the new stars with our own records is always performed. Klaus also checks the reliability of the published data so we can avoid overwriting good information with wrong numbers in the case of revisions and we make sure that we are adding bona-fide new variables in the case of the new entries. Then Sebastián makes some final checks and Patrick uploads them. That is a nice example of team work!

David Hinzl joined us again in September 2016 and helped check papers from the Astro-ph listings in order to add newly published variables and revise already known ones, until August when he had to leave.

Raúl Salvo (from Uruguay) sent us a list of potential duplicate entries in VSX that he found and we have narrowed down his list to 318 that will be addressed this year. If you find a duplicate entry, please let us know so we can create a primary record or add your duplicate to our working list.

We need more volunteers. If you have experience with variable star classifications, light curves, and if you have used VSX in the past, you might want to give these tasks a try:

- checking Astro-ph papers;
- checking various online journal papers;

- preparing lists for VSX upload;
- revising VSX records with obvious mistakes or missing information.

If you want to join us, send a message to vsx@aavso.org

New variability types added

We always try to update our variability types document by adding the most recent variable star types recognized in the literature.

The new IMXB (Intermediate Mass X-ray Binary) type was added to the already existing LMXB and HMXB subtypes of X-ray binaries.

The HB (Heartbeat) stars (eccentric binaries whose light curves resemble a cardiogram) are now in VSX. One of the most active researchers of these heartbeat stars is the AAVSO's new Staff Astronomer, Bert Pablo.

We also incorporated the BLAP-type (Blue Large Amplitude Pulsators) discovered by the OGLE Team. These stars show light curve shapes similar to those of the RRAB-type stars but have periods of only 20–40 minutes and smaller amplitudes.

Number of submissions and revisions

We've had 860 new variables submitted to VSX by individual users (other than VSX Team members) this year (580 in 2015–2016). Thus, the mean number of new submissions per month was 72 against 48 from last year.

The number of average monthly revisions made by users more than doubled from 9 (total = 110) last year to 20 (total = 239) in 2016–2017.

We currently have 348 different users that have submitted at least one submission or revision to VSX. 37 of them had their first VSX experience this year.

Sebastian's personal average count of revisions per month decreased from 292 last year to 167, with 1,998 revisions made over the whole year (3,498 last year). This decrease is in line with the time needed to moderate the individual stars submitted to VSX and the fact that the number of new stars published through alert pages also increased. He added 1,257 stars (993 last year) and most of them came from alerts from different groups. And that is without counting the Gaia alerts which are now mostly added as lists periodically because their number grew enormously.

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The VSX Team (including Sebastian's revisions) updated data on 3,377 variable stars.

The number of new objects added by our team keeps growing each year. For the fiscal year 2016–2017 we added 69,878 new objects (including Sebastian's additions), while last year the number was 63,929. This means a total of 70,738 objects (adding the 860 objects submitted by individuals) were added to VSX.

You can check what's new on VSX by trying one of the special searches (like "Changes since last login") in the VSX search page.

VSX submission policy

The numbers presented in this report show that people are intensively using VSX to publish new discoveries or updated information, and this poses a challenge. Even when we encourage everyone in the variable star community to submit revisions of VSX stars with up-to-date data from the literature or with new observations both original and obtained from public survey databases, we need to prioritize the use of our time to keep VSX up to date in this new survey era when stars are published by thousands. At the time we write this report we have pending lists including hundreds of thousands of new objects.

In 2017 we started to implement some changes in our policies in order to improve this situation. The new policy can be read here:

<https://www.aavso.org/vsx/index.php?view=about.notice#policy>

A limit of one submission per day by an individual or group was set. We also require higher quality in the individual submissions.

If you are undertaking a survey or finding new variables systematically (in large numbers), we encourage you to publish these results in journals like *JAAVSO*. VSX is not strictly a publishing venue.

We also added a Frequently Asked Questions (FAQ) page because most of the questions and doubts our observers ask time after time are basically the same. Having this page in place also helps us save some precious time. The VSX FAQ page can be found here:

<https://www.aavso.org/vsx/index.php?view=about.faq>

VSX forum

Originally, the VSX forum was meant to be a way to inform our members of some news or improvements we might make to VSX and where one could post questions related to VSX so they wouldn't get lost in the other forums and the discussions could be found more easily. Even though this is not something implemented in Fiscal year 2016–2017, now is a good chance to announce that for 2018 we have suggested all VSX submitters to also use this forum for pre-submission discussions so everybody can share their experiences and learn from one another. There are very experienced observers among the VSX users, so having them sharing a common space will be a huge relief for us because people will discuss their submissions, ask questions, post doubts, and eventually get to the submission stage with a higher quality product that will not require lots of staff/volunteer time spent in requesting changes, correcting mistakes, etc. The VSX forum is at: <https://www.aavso.org/forums/about-aavso/vsx>

And remember that to start discussions in the VSX forum you have to create an AAVSO website account: <https://www.aavso.org/apps/register/>

Duplicate records

VSX has currently over 475,000 records. We don't call them stars because there are still some duplicate records among them but we have been working hard with to minimize that problem this year. Hiding visible duplicates helps avoiding confusion when an observer finds two stars at nearly the same position and can't decide if there are actually two variable stars there or they are just one and the same. Software can be fooled by these duplicates too and our International Database may suffer the consequences with spurious reports being submitted. We surely don't want that!

In the framework of this primary record creation work (which means that all the information available is used to update a star's detail sheet), Sebastian hid 131 duplicate visible entries this year plus 53 unclassified (not visible for the public) duplicate objects. 6,374 duplicate records were hidden since the primary record creation work started back in 2011 (6,568 counting the unclassified ones). Patrick hid another 40 records this year after cross-identifications were made while importing new lists.

But this year we also hid an additional 4,143 objects altogether, trying to eliminate most of the known cases. For these records, work remains to be done to check their information because the hidden entry (the former duplicate) may have better data than the currently visible record. We try to do our best to show the best data available but sometimes we have to compromise on the quality of the data shown and on being up

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to date or free from duplicates. This will always be work in progress. A total of 27,894 objects have been hidden since VSX was launched in 2005.

The balance between avoiding duplications and giving quality the priority is finding new forms as the number of objects discovered or in need of revision becomes larger. This is also why this year we have implemented the “Not checked” flag. This flag is applied to objects belonging to lists that couldn’t be checked for duplicates for a number of reasons, mainly stars in crowded areas and with poor coordinates. We currently have 3,938 records like that. Since checking one by one is not possible, these objects are entered in VSX with a flag that the object might already be in VSX as a duplicate with a slightly different position. In those crowded areas, it is also likely to find artifacts and not actual variable stars so users should be aware of these facts when looking at an object with the “Not checked” flag.

Incorrect identifications corrected

More incorrect identifications are being found in the process of cleaning up the VSX database. 50 incorrect cross-identifications in VSX have been corrected this year (usually incorrect identifications made by surveys). 6 GCVS/NSV identifications have also been corrected and reported to the GCVS team. It is nice that observers report incorrect identifications when they find them. Let us know if you find any.

Cross-identifications (between existing entries) added

151 new cross-identifications between VSX records were established this year (2,790 in total since 2011) and the 151 resulting duplicates were deleted.

Work on VSX/AID inconsistencies and problems with submitted data

Work to clean up the AAVSO International Database (AID) from errors caused by duplicate entries in VSX (most of them not visible to the public) has also continued. The fact that we have the same object listed two or even three times under different names and with different AUIDs means that we may have data for the same object split in different records. Thus, the light curves are not as complete as they could be. We individually corrected 32 such records over the first months of the fiscal year and in August 2017 we took a huge leap forward: we eliminated duplicate AUIDs for 956 objects that we had identified in 2016.

Sara Beck moved all the observations to the new primary records and I deleted the AUID of the obsolete records so people can’t submit data using the old identifiers anymore.

This work continued after that massive update but—as with the duplicate deletion work—the hardest part is already done!

As usual, we have also contacted several observers to modify wrong observations reported to the AID that are found while analyzing AAVSO data to improve the information delivered in VSX. We urge observers to double-check their images to properly identify the stars being reported.

Remember that we periodically update the list of stars with companions that may cause identification or photometry problems. It can be found here:

<https://www.aavso.org/variable-stars-companions>

Work on VSX/VSD: comparison stars that turned out to be variable

Finally, we don't want variable stars to be used as comparison stars, but this may happen sometimes. There were not enough data some years ago to judge if some stars were variable or not and they could have been selected as good comp stars based on color or proximity. Now, with more survey data available or with observations provided by our observers, we can identify that some of those comp stars are actually variable. Work is being done to eliminate these stars from our sequences and find suitable replacements. 6 stars have been eliminated this year. Our plan is to give more priority to this project next year.

VSX is a core application

VSX interacts with almost everything else in the AAVSO universe, from other software tools to the observers submitting data via WebObs. We try to improve it every day, solving inconsistencies and updating the database with the most recent data available.

We thank all the people who contribute to VSX and all the AAVSO staff that help in the cleaning up process.

The AAVSO Network of Remote, Robotically Controlled, and Automatically Queued Telescopes (AAVSONet)

Arne A. Henden

The AAVSO Robotic Telescope Network, AAVSONet, started in 2005 with a single telescope, SRO35, located in Sonoita, Arizona. In 2008 we added OC61 by partnering with the University of Canterbury in New Zealand at Mt. John Observatory. 2009 saw the addition of the first Bright Star Monitor at Astrokolhoz Observatory near Cloudcroft, New Mexico. In 2017 there were nine active telescopes: the BSM systems (NM, South, Hamren, Berry, and NH), Coker30, SRO50, TMO61, and OC61.

Each of these telescopes uses identical software: MaximDL for image acquisition; ACP and ACP Scheduler for controlling the telescope, camera, and scheduling observations, and FocusMax for focusing each system. Each telescope is either at a University or located at a private site. Volunteers perform any local maintenance and operation. AAVSO members, as a free benefit, can propose to observe specific targets. These proposals are reviewed by a small Telescope Allocation Committee. Those approved are then put on the telescope queues. When images are taken, they are transferred back to HQ where they are automatically dark-subtracted and flat-fielded. Processed images are then placed on the AAVSO ftp site, and/or uploaded to the VPhot cloud analysis program at the discretion of the individual investigator. In the background we also extract all stars in every image to be placed into the on-line Epoch Photometry Database at a later date.

We continue to consider options to improve the reliability of the AAVSONet system; to automate and make the entire process more efficient; and to draw more volunteers into the operation and quality control aspects of the network. We have many new volunteers to examine the images acquired by the AAVSONet telescopes, looking for weather- and instrument-related problems. They have been extremely helpful in finding issues early on, so that repairs can be made. Many thanks to Robert Dudley, Damien Lemay, Ken Menzies, Lou Cox, Jean-Bruno Desrosiers, Dave Hinz, Duane Dedrickson, and JoDee Baker for performing this valuable service. In addition, we'd like to thank our site managers and operators as well: Helmar Adler, Arne Henden, Nigel Frost, Bart Staels, Jon Holtzman, Dirk Terrell, Walt Cooney, John Gross, Peter Nelson, Greg Bolt, Mike Linnolt, Gary Walker, and Bill Stein.

There have been significant equipment changes in the past year. Dick Post has made arrangements for five Paramount ME mounts to be given on a long-term loan to AAVSONet. The first of these has been installed at BSM_NM. Frank Schorr donated a CFW-10 filter wheel, which is being installed at BSM_South. John Centala's large donation

from 2015 has now been placed into the AAVSONet Fund for future use in maintaining and improving the network. BSM_HQ was moved to Arne Henden's observatory in New Hampshire, and renamed BSM_NH. A spare CFW-10 filter wheel was added to BSM_NH and additional filters purchased. Tim Crawford donated an SA200 grating for BSM_NH. Dick Post provided a new computer for BSM_NM. Gary Walker has begun the search for a good, cheap enclosure for BSM_Hamren.

Volunteer George Silvis has finished a new project-input system (ASA), allowing AAVSONet to maintain and manage jobs sent to the telescopes using comma-delimited EXCEL files. Using this system, jobs can be easily input, modified, and managed at the local level using common software. This system has been rolled out to all of the AAVSONet telescopes. George and volunteer Bill Toomey have been making improvements on the HQ pipeline, and oversaw the transition to a single computer (occam) at HQ for processing and serving images.

A new bright star section using the BSM telescopes was envisioned by the AAVSONet Task Force set up by the Council. This section was announced to the membership at the 2017 SAS meeting, where Mike Nicholas and Bill Toomey volunteered to chair the section. They are working on new web pages and in providing a new direction for the smaller telescopes of AAVSONet. Helping them is a Working Group of Council members and volunteers.

During 2017, a total of 15 new proposals were accepted, from professionals as well as amateurs. These included individual research, monitoring of objects for campaigns, and time series observations for some professional members of the AAVSO. The AAVSONet telescopes collected 222,997 images of over 2,000 targets. Many of these are part of the BSM survey of all variables brighter than 8th magnitude.

The AAVSO Photometric All-Sky Survey (APASS)

Arne A. Henden

APASS started in late 2009 in the north, and about a year later in the south. The goal is to cover the entire night sky, with every object being observed on at least four photometric nights. The main survey covers the magnitude range $10 < V < 17$ in the Johnson B and V and the Sloan $g'r'i'$ passbands. The expected final astrometry will be within 150 milliarcseconds; the photometry should be better than 0.02 mag for bright objects. This catalog was designed to do for photometry what the positional catalogs (such as UCAC and USNO-A) did for astrometry: provide calibrated references in every CCD field of view.

The original survey was funded by the Robert Martin Ayers Sciences Fund. In 2014, the NSF awarded the AAVSO a 2-year grant to both complete the observations as well as produce a final catalog. As part of the NSF proposal, we are extending the catalog with a Bright Star Extension, covering the range $7 < V < 12$ and with $BVu'g'r'i'zY$ passbands. In 2017, we asked for and received a one-year no-cost extension to the original NSF grant.

The equipment at each site is composed of two ASA N8 20cm astrographs, Apogee Aspen CCD CG16m (KAF-16083 sensor) cameras and filter wheels, coaligned on a Paramount ME. The northern system is located at Weed, NM; the southern system is at CTIO in the MEarth roll-off building.

To date, over 530,000 images have been taken on about 1,400 nights (combined north and south). Nine data releases have been made, with the most recent one occurring in January 2015. In DR9, a total of 60 million objects have a minimum of two observations each, covering about 99% of the sky. DR9 mainly added southern photometry, which was already nearly complete and so only a few million new objects are present. This completed the processing of northern and southern images taken through 2013. The APASS “means catalog” can be searched on-line at the AAVSO web site. The Epoch Photometry (individual measures) can also be searched on-line if you are an AAVSO member.

Work on Data Release 10 (DR10) is underway. This is a complete reprocessing of all data collected to date. We are using SExtractor for star-finding and centroiding; DAOPHOT routines for aperture photometry; astrometry.net plate solving for the basic astrometry. As before, we are making additional photometric and astrometric corrections to improve the catalog. Doug Welch (McMaster) has been the key person in this data reprocessing, gaining access to the Canadian SHARCnet parallel processing computer, and providing storage for all images and star lists.

APASS is being used by many groups worldwide, and is also being used by individual researchers for obtaining precise photometry of their favorite targets. We get over a dozen requests annually from professionals who want access to the entire catalog. Within the AAVSO, APASS is being used primarily for the generation of photometric sequences around program stars, and photometric confirmation of new submitted variable stars to VSX. The VisieR group in France hosts DR9 publicly.

A great many people have been involved in the APASS development. The PI of the project is Arne Henden; Dirk Terrell has provided computers, software and analysis; Stephen Levine is the primary astrometry expert; Doug Welch is archiving all images and photometry, serving catalogs and performing the SExtractor and astrometry.net initial processing; and Ulisse Munari is providing quality control and external comparisons. In addition, there are a large number of volunteers, staff and students, including at least: Tom Smith, Aaron Sliski, Alan Sliski, Ken Launie, Shouvik Bhattacharya, Anisha Sharma, Patrick Wils, John Gross, Sebastian Otero, Matt Templeton, Doc Kinne, and Sara Beck. The UNC group (especially Kevin Ivarsen and Josh Haislip) provided on-site support when APASS South was at Prompt; Jonathan Irwin has been enormous help since the system moved to MEarth, along with the CTIO telescope operators. We've also had equipment and software contributions from Tom Bisque (Software Bisque), Bob Denny (DC3 Dreams), Doug George (Diffraction Ltd.), Apogee CCD, and Don Goldman (Astrodon). We thank them all—without their support and help, this project would never have happened!

The Journal of the American Association of Variable Star Observers

John R. Percy, Editor

The Journal of the American Association of Variable Star Observers (JAAVSO) is the peer-reviewed research publication of the AAVSO, dedicated to variable star astronomy and a wide variety of related topics. It exists to disseminate the scholarly work of AAVSO members, observers, and others to the AAVSO “family” and to the astronomical community at large; to demonstrate the scientific value of AAVSO data and thereby motivate AAVSO observers; to record the scientific content of AAVSO meetings; and to inform and inspire our members and others about variable star astronomy. It demonstrates, among other things, that small observatories and skilled amateur astronomers can continue to make significant contributions to variable star astronomy.

In 2016–2017, we published two issues, with well over 200 pages of content in total, in our (relatively) new large-page format. We are now routinely using an automated manuscript-handling system, and “blind” refereeing. The published papers covered the usual range of variable star topics, including papers on research with new data and old; instruments, methods, and techniques; data; education and outreach; history; book reviews; and abstracts of papers presented at AAVSO meetings. *JAAVSO* authors come from countries around the world, and include professional astronomers, amateur astronomers, and students. A typical issue contains about a dozen research papers and two dozen abstracts. We did not publish any review articles this year, but are open to publishing either long or short reviews/updates on topics which are relevant to our readers. I have also continued to provide editorials on topics which I hope are both relevant and interesting. I would be happy, at any time, to receive suggestions about any aspect of *JAAVSO*, including possible topics for future editorials or review articles. One small concern: the range of topics of the research papers in recent issues has been rather narrow. We encourage papers on the observation, analysis, and interpretation on all types of variables.

In late 2017, I surveyed the Editorial Board and Headquarters staff about the present and future of *JAAVSO*. Please see my editorial in Volume 45, Number 2. The AAVSO Council will soon be striking a small committee to discuss and recommend on possible future directions for our flagship publication.

As always, I am grateful to the Editorial Board for their advice and assistance, to the many voluntary and anonymous referees who ensure the integrity of the *JAAVSO* content, and to the Headquarters staff, especially Michael Saladyga and Elizabeth Waagen, for their hard work and excellent judgment in carefully editing and attractively formatting over 200 pages of informative but complex material.

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Charts and Sequences

Section Leader: Tom Bretl, 2400 Garland Lane N, Plymouth, MN 55447

The Charts and Sequences Team is made up of volunteers and staff who work behind the scenes to keep the Variable Star Plotter (VSP) as up-to-date, accurate, and useful as possible. The current members of the team are Arne Henden, Barbara Harris, Bob Stine, Bruce Sumner, John Toone, Robert Fidrich, Keith Graham, Jim Jones, Patrick Wils, Sara Beck, Sebastian Otero, Tim Crawford, Tom Bretl, Natalia Virnina, Brad Walter, Matthew Templeton, Mati Morel, Stella Kafka, and Elizabeth Waagen.

The team continued to be very active this year. Here are the numbers for January 1 through December 14, 2017:

- 488 new sequences
- 112 revised or updated sequences
- 98 CHET responses (some revisions, some new)
- 173 ASASSN sequences (some revisions, some new)

And here are the totals for the last six years (for roughly the same time span):

<i>Year</i>	<i>New/Revised Sequences</i>
2017	600
2016	597
2015	695
2014	259
2013	787
2012	860

CHET (CHart Error Tracking) submissions continue to be made online at <https://www.aavso.org/chet>. A new and improved version of CHET went online in October, and many thanks go to volunteer Phil Manno for doing a great job converting the old code to the new. Requests for new sequences are made via email to compstars@aaavso.org. Complete instructions for doing so are given at <https://www.aavso.org/request-comparison-stars-variable-star-charts>.

2. The Year in Review

Six volunteers completed new or revised sequences during 2017, but Tim Crawford and Jim Jones deserve special mention: Tim fulfilled most of the requests for new sequences, and Jim created sequences for most of the newly discovered ASASSN (All Sky Automated Survey for SuperNovae) objects. Both of them submitted work on an almost daily basis.

SeqPlot continues to serve as the primary tool for sequence creation. The VSD Admin tool allows experienced team members to access, edit, add, and delete information from the comp star database. Less experienced members send their work to the section leader who checks their submissions before uploading. The team shares its work via the sequence team mail list and by recording each new or revised sequence in a Google spreadsheet accessible to the public at <https://docs.google.com/spreadsheets/d/1mR4I7bEIFYZI5lwkkVEBwByCNXwiKCMzIPS1IAx0QvQ/edit?hl=en&pref=2&pli=1#gid=317284472>

Every few months all observers are made aware of new and revised sequences via the AAVSO website News.

The sequence team is currently developing a new website where members can find things like SeqPlot instructions, sequence creation guidelines, and information about photometric resources other than SeqPlot. This should prove especially useful to new team members. At the moment the site consists only of links to relevant files, and is definitely a work in progress.

Eclipsing Binary

Section Leader: *Gerard Samolyk, P.O. Box 20677, Greenfield, WI 53220*

This past year, Gary Billings resigned as co-chair of the Eclipsing Binary Section. Gary had been co-chair since 2008. I would like to thank Gary for his contributions to the section, particularly the web site that he created.

In 2017, two papers containing 813 times of minima of 383 stars observed by 12 observers were submitted to the *JAAVSO* in 2017. Observers who would like to contribute data to these papers in the future should upload their observations to the AID and send a copy to gsamolyk@wi.rr.com.

Observations received last year included data on 23 stars from the “Otero+” list. These are stars identified and published by Sebastián Otero and his co-authors in numerous *IBVS* and *OEJV* papers. Many have no published times of minima since the original publication, and only ASAS or NSVS light curves are available. It requires one or two times of minima per observing season to refine the light elements of these stars and check the stability of the periods. Ken Menzies has been a major contributor of data on these stars. A list of 1,000 of these stars can be found on the EB section website.

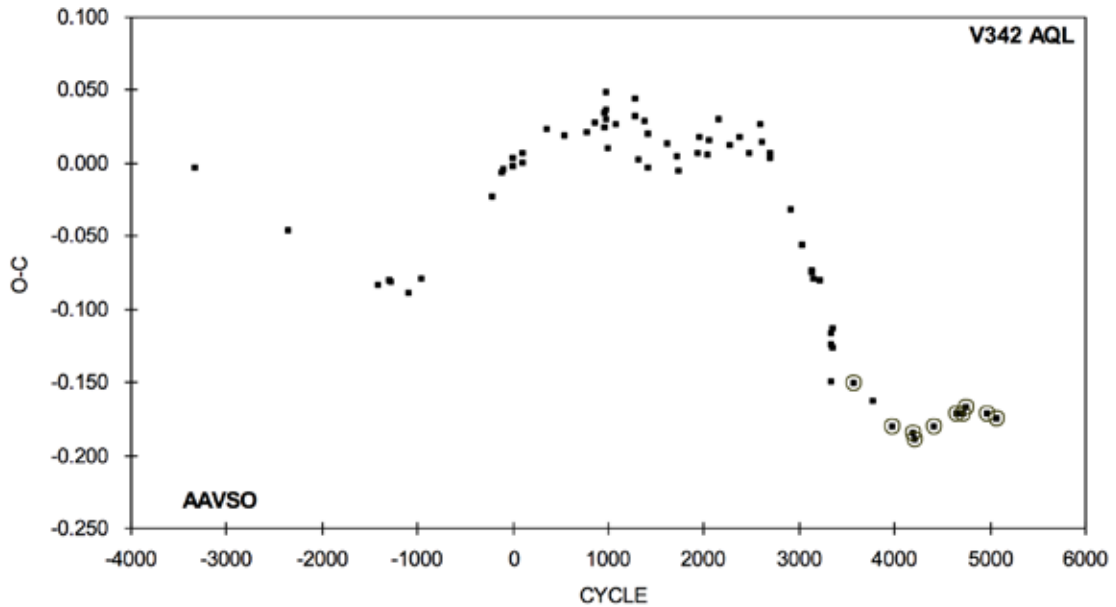
In the past year, 174 of the 201 stars on the legacy program were observed. The four listed stars below have been neglected for a number of years and are in need of observation:

Not been observed since 2013: V342 Aql

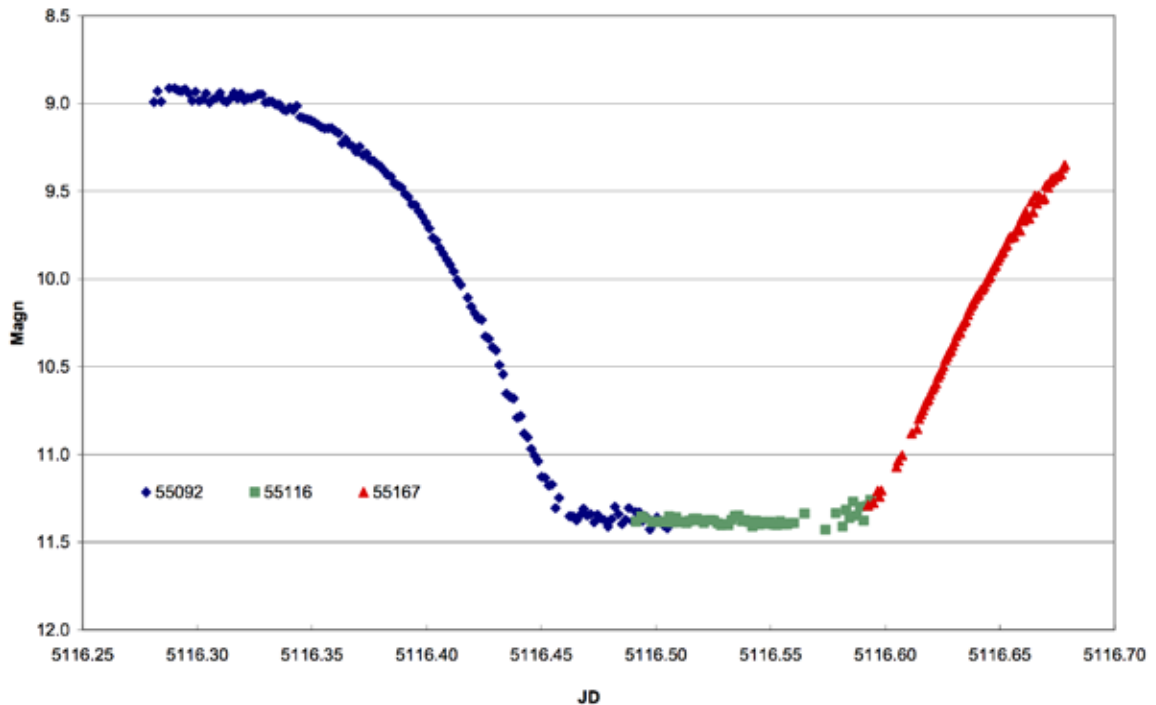
Not been observed since 2015: UU Leo, RU Mon, and FL Ori

As the O–C plot on the next page shows, V 342 Aql has a history of large period changes. This star has a three-hour totality so a long observing run is required. Because of the long eclipse, there are few opportunities to observe the eclipse in a observing season. Another option is to observe portions of different eclipses and combining them. This method was used to generate the light curve shown.

2. The Year in Review



An O-C plot for V342 Aql from 1935 through 2013. The circled points are times of minima observed with CCD. The rest were observed visually.



An eclipse of V342 Aql observed in 2009 generated by combining portions of eclipses observed on three nights.

Exoplanets

Section Leader: *Dennis Conti, 141 E. Bay View Drive, Annapolis, MD 21403*

This past fiscal year (October 1, 2016 – September 30, 2017) saw an increase in the number of AAVSO members who have been trained and involved in exoplanet observations. The first Exoplanet Observing CHOICE course was conducted during February 2017 involving 40 participants. A second course was also being offered in October 2017. The course was an introduction to the “best practices” of exoplanet observing with small telescopes, as well as the use of AstrolmageJ for performing everything from image calibration to differential photometry to exoplanet transit modeling. During this period, significant updates were also made to “A Practical Guide to Exoplanet Observing.” This document is used as material for the exoplanet CHOICE courses and is also being used as a stand-alone document for use by both amateur astronomers and educational institutions interested in exoplanet observing.

During this period, the Section Leader conducted a number of outreach activities, including presentations to both amateur and professional astronomy conferences. These included:

1. A presentation at NEAIC 2017 entitled “Fundamentals of Exoplanet Observing,” as well as a workshop on “Exoplanet Observing using AstrolmageJ.”
2. Presentations at NEAF 2017: “Fundamentals of Exoplanet Observing” and “Exoplanet Detection via Microlensing.”
3. A presentation at the 2017 joint meeting of the AAVSO and Society for Astronomical Science entitled “Exoplanet Observing: From Art to Science.”
4. A presentation at the NASA-sponsored Know Thy Star, Know Thy Planet Conference entitled “Achieving High Precision Transit Observations with Sub-meter Telescopes.”
5. A presentation entitled “High Precision Exoplanet Observations with Amateur Telescopes” at the October 2017 meeting of the Howard Astronomical League (HAL).
6. A keynote speech at the 2017 AAVSO Annual meeting.
7. A colloquium at the University of North Texas on November 7, 2017 on exoplanet observing with small telescopes.

2. The Year in Review

Focus is now on providing members with the necessary training, documentation, and observational techniques to help them participate in ground-based observations associated with the TESS (Transiting Exoplanet Survey Satellite) space telescope, currently scheduled to be launched in March 2018. TESS is a follow-on to the very successful Kepler telescope, which has resulted in the bulk of the current exoplanet discoveries.

Long Period Variable (LPV)

Section Leaders: *Andrew Pearce, 35 Viewway, Nedlands, Western Australia 6009*
Frank Schorr, 431 Hunters Cove Court, Lawrenceville, GA 30044

The AAVSO LPV section continued the rejuvenation process which commenced in early 2016. Work continued throughout the year on a number of initiatives and activities to predominantly update and improve the LPV Section web page.

The LPV Section web page is now fully functioning with a lot of additional features that have been revised and/or added over the last 12 months and can be found at <https://www.aavso.org/aavso-long-period-variable-section>.

A number of further initiatives and activities were conducted in FY 2016–2017 which included:

- The LPV of the month page was continued successfully throughout the year and was widely publicised in the LPV Forum and in the monthly e-publication *AAVSO Communications*. Brief descriptions and preliminary analysis were performed on the following stars in the last 12 months: LX Cyg, S Cep, TT Cen, R Aur, RS Cyg, U UMi, R Lep, V Hya, R Hya, BH Cru, T Cas, CT Lac, and T Cam. Thanks to Frank Schorr and Mike Soukup for contributing articles throughout the year. All observers are invited to contribute articles on their favorite LPVs.

- Dr. John Percy (LPV Section Scientific Advisor) produced an interesting study for the LPV Section which was a selection of pulsating red giants (PRGs) and LPVs which have displayed interesting behavior such as significant variations in amplitude and rapid period changes. He produced a list of approximately 50 stars which he encouraged observers to follow. Many of these are existing LPV Legacy Program stars, however, there were quite a few that weren't. These have been captured as the "Percy List" and included on the LPV Section File Downloads page (<https://www.aavso.org/lpv-section-file-downloads>). Thanks to John for providing this list.

- Probably the most significant task completed this year was a re-assessment of the LPV Legacy Program list. In 2009, an LPV Legacy list of stars was published and promoted. These are LPVs for which there are long observational histories and which have generated a certain degree of scientific interest, judging by their appearance in the scientific literature. In early 2017, we re-examined this list. Using the same criteria as was used in 2009 to develop the initial list, a further 21 stars were added to the Legacy list. The vast majority of LPVs in the legacy list are north of the celestial equator, which is

2. The Year in Review

understandable given most observers have been located in the northern hemisphere. However, to ensure there is sufficient coverage south of the celestial equator (and the fact that I (AP) live in the Southern hemisphere!), a separate legacy list was developed for LPVs south of declination 20S. These lists are included on the LPV Section File Downloads page (<https://www.aavso.org/lpv-section-file-downloads>). We would encourage all observers to continue long term monitoring of these Legacy stars.

- During the year, the LPV Legacy, LPV Legacy South, and Percy List stars were configured in VSX such that these lists can be searched under “Campaign” or “Program” to make it easier for everyone to find specific information on their favorite LPVs.

- The LPV Section was a contributor during the development of the AAVSO Target Tool (ATAT). This is a very useful resource and all LPV Legacy, LPV Legacy South, and Percy List stars are included, which will allow all observers to effectively plan an LPV observing program suited to the particular observer.

- Links to recent scientific papers regarding LPVs in which AAVSO observations have been used or referenced continue to be updated on a quarterly basis.

- A list of target LPVs for both northern and southern hemisphere has been promoted throughout the year. These stars generally have displayed interesting features in their light curves.

- Frank Schorr continues to maintain the LPV Hump page, which contains a lot of data and discussion on these interesting longer period Miras which show a hump or double maximum in their light curve.

- The LPV Section web page is now updated on a monthly basis where possible so all observers are encouraged to visit it often.

The primary goals of the LPV section are: to facilitate the long-term observation, both visually and electronically, of the Legacy LPVs in the program; and to promote other scientifically significant LPV targets for observers to follow. We are particularly interested in encouraging and guiding visual observers to include LPVs in their target selection and in building their own observing programs. As with all Sections, the LPV section requires interest from the larger observer community. The AAVSO encourages both LPV observers and users of AAVSO LPV data in their research to get involved with the AAVSO LPV section.

Photoelectric Photometry (PEP)

Section Leader: *James M. Kay, 26 Steeplebush Road, Shelburne, VT 05482*

Report by Tom Calderwood, Bend, OR, PEP Section member

The AAVSO photoelectric photometry (PEP) section uses Optec SSP3, SSP4, and SSP5 photometers to study bright stars. Our observational protocol is time consuming, but though we collect a limited amount of data, we are capable of very high-quality results. The box scores for submitted observations in fiscal 2017 are as follows:

AAVSO International Database PEP data contributors 2016–2017

UIS01	Barber Observatory	Illinois	27
BJFB	John F. Briol	Minnesota	13
BSO	Scott J. Burgess	Maine	8
CTOA	Tom Calderwood	Oregon	60
DFR	Frank Dempsey	Canada	10
DSI	Giorgio Di Scala	Australia	24
FXJ	James H. Fox	New Mexico	181
KJMB	James M. Kay	Vermont	36
KPL	Paul W. Kneipp	Louisiana	100
KCD	Carl R. Knight	New Zealand	26
LPD	Patrice Lemarchand	France	57
MYV	Terry T. Moon	Australia	684
PGD	Gerald Persha	Michigan	2058
BVE	Erwin Van Ballegoij	Netherlands	49
		TOTAL	3333

Also, 148 historical observations by Olin Eggen (OEJ) were extracted from the AAVSO database of his scanned note cards and added to the AAVSO International Database by Jack Crast (CJH) of New York.

A project was started this year at the behest of Dr. Ralph Bohlin of STScI, who is planning calibration activity for the James Webb Space Telescope. Vega (alpha Lyrae) is a linchpin standard for spectrophotometry, but there is a decades-long debate about its constancy. No, JWST will not observe alpha Lyrae, but it will calibrate off of a trio of white dwarfs whose fluxes are referenced against that of Vega. We have begun following this star, which is not suited to CCD photometry, and the work will likely continue into 2019.

2. The Year in Review

Ralph has other “standard” stars that need variability pedigrees, and Dr. Arlo Landolt of Louisiana State University also has a list of suspect standards, so this may be the beginning of an extended program.

As part of the work on Vega, there was preliminary testing of SSP3 linearity. Comparison stars for alpha Lyrae are four to five magnitudes dimmer, which brings detector linearity questions to the forefront. It appears that in our operating range for Vega, we can expect linearity on the order of 0.05%, which is excellent.

January saw the new PEP observing manual released: “The Hitch-Hiker’s Guide to Photoelectric Photometry.” This publication covers a broad range of hands-on procedures and technical background, and contains material of interest for CCD photometry as well. The presentation is intended to be more approachable than the professionally-authored photometry books, while not sacrificing rigor. In the spring, Jim Kay conducted the first-ever AAVSO CHOICE course on PEP, using the manual for instruction.

2017 also saw results from a digitization project. From 1980 to 2001, the International Amateur-Professional Photoelectric Photometry journal (*IAPPP Communications*) published papers, news, letters, etc. by photometrists. While individual papers can be located via the Astrophysics Data System, there is no online archive of the actual volumes. Frank Dempsey and Pat Garey made their personal collections available for scanning, and we now have PDF copies of most all the printed material. We will eventually place this archive on the AAVSO website. In the meantime, check out the following forum thread: <https://aavso.org/iappp-communications-archive>.

Nova Search

The Nova Search Section is being redesigned. Information will be available on the AAVSO website as work in this section develops.

Short Period Pulsator

Section Leader: Gerard Samolyk, P.O. Box 20677, Greenfield, WI 53220

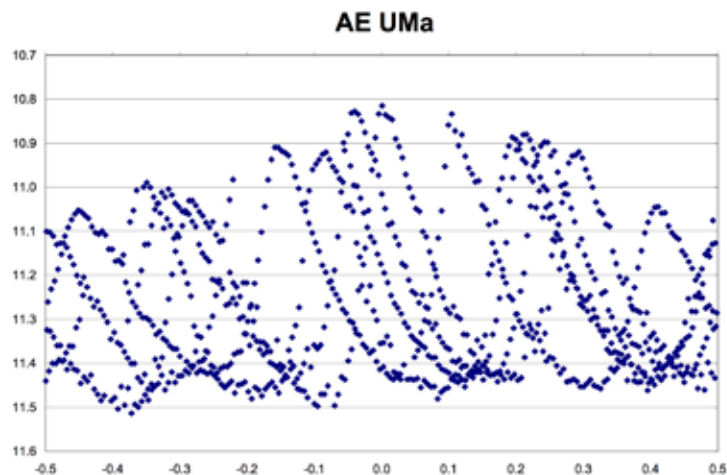
Section Webmaster: Shawn Dvorak, 1643 Nightfall Drive, Clermont, FL 34711

For the second consecutive year, all of the stars on the AAVSO legacy program were observed. In 2017, five of these stars that exhibit the Blazhko effect were heavily observed, SW And, AC And, XZ Cyg, DM Cyg, and AR Her. Most observers only observe these stars near the time of maximum, however, observations at all phases including minimum and maximum are important when analyzing Blazhko stars because the brightness and phase at both of these extremes vary during the Blazhko cycle.

A paper containing 353 times of maxima of 82 stars was published in Volume 45, Number 1 of *JAAVSO*. This paper contained the reduction of data sent to the section chair by six observers in 2017. Any observer who would like to contribute data to these papers in the future should upload their observations to the AID [and](#) send a copy to gsamolyk@wi.rr.com.

There has been significant progress in the analysis of the visual observations of RR Lyr stars made by the RR Lyr committee since the 1960s. This year, two papers containing times of maxima for these stars were submitted to Volume 45, Numbers 1 and 2 of *JAAVSO*. These papers included almost 1,000 times of maxima for 14 stars. I expect to complete this project in the next two years.

AE UMa is a Delta Sct type star that pulsates in multiple modes. The phase plot below shows observations from last year plotted to a period of 7 hours. The fundamental period is about 2 hours and the amplitude of the pulsations is modulated by a 7-hour period.



2. The Year in Review

Solar

*Section Leader and SID Group Leader: Rodney Howe, 3343 Rivaridge Drive,
Fort Collins, CO 80526*

Sunspot Group Leader: Kim Hay, 76 Colebrook Road, Yarker, ON K0K 3N0, Canada

Sunspot Report

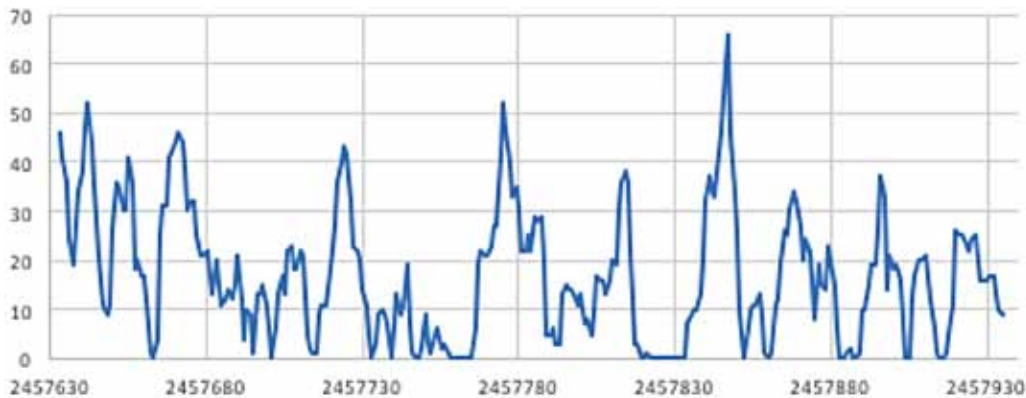
The sun is now approaching the quiet time and is becoming somewhat less active, although with ups and downs on a daily basis, as we go into the solar minimum. Kim Hay has done an excellent job of collecting, cleaning, and creating the monthly American Relative numbers for the *Solar Bulletin*. There were a total of 78 observers who contributed 13,146 observations (September 2016–September 2017). Their efforts should be applauded as they continue to monitor our nearest star. We also have many sunspot observers who have earned AAVSO Solar Observer Awards (Sunspots) at different levels (see table below).

<i>Solar Observer Initials</i>	<i>Observer</i>	<i>2017 Award</i>
MMAV	Marcelino Vázquez Muñoz, Spain	100
SNE	Neil Simmons, Wisconsin	100
LRRA	Robert Little, Florida	500
MJAF	Juan Antonio Moreno Quesada, Spain	500
RLM	Mat Raymonde, France	500
BSAB	Santanu Basu, India	1000
FLF	Fredirico Luiz Funari, Brazil	1000
HMQ	Mark Harris, Georgia (USA)	1000
KAND	Kandilli Observatory, Turkey	1500
MJHA	John McCammon, Colorado	1500
SDOH	Jan Alvestad, Norway	2000
STAB	Brian Gordon-States, United Kingdom	2000
BERJ	Jose Alberto Berdejo, Spain	2500
HAYK	Kim Hay, Ontario, Canada	2500
BMF	Michael Boschat, Nova Scotia, Canada	3000
FERJ	Javier Ruiz Fernandez, Spain	3500
MCE	Etsuiku Mochizuki, Japan	3500
KAPJ	John Kaplan, Minnesota	4000

Table continued on next page

<i>Solar Observer Initials</i>	<i>Observer</i>	<i>2017 Award</i>
VARG	A. Gonzalo Vargas, Bolivia	4000
FLET	Tom Fleming, Texas	4500
SUZM	Miyoshi Suzuki, Japan	4500
ARAG	Gema Araujo, Spain	5000
BRAB	Brenda Branchett, Florida	5500

The figure below shows the daily American R_a numbers go up and down as we move toward the Solar Minimum.



Solar Ionospheric Disturbance (SID) Report

For the last 12 months, overall SID Activity has been stable. Our observer ranks have remained consistent with between 14 and 17 submissions each month. There were a total of 18 observers submitting reports and a total of 176 reports were sent in for fiscal year 2017. Thanks to all VLF observers for their efforts in monitoring, data analysis, and report generation.

Two observers are eligible for an AAVSO Solar Observer Award (SIDs) for over 40 observations this year.

<i>(SID) Observer Initials</i>	<i>Observer</i>
A-122	Frank Adamson, Queensland, Australia
A-136	Radovan Mrllák, Czech Republic

Young Stellar Object (YSO)

Section Leader: *Michael Poxon, 9 Rosebery Road, Great Plumstead,
Norfolk NR13 5EA, England*

Once again our growing band of observers has kept a keen watch on several objects, both well-known and rather more obscure. T Tau and RY Tau have been doing interesting things of late and RW Aur may still have surprises up its stellar sleeve. Not far away in the sky UY Aur seems to be going through a faint phase. This is one of the challenges of many YSOs—they tend to be more interesting when they fade, as opposed to CVs where everyone looks out to see which ones are outbursting! Speaking of fades, definitely a highlight of this year was the deep fade of V1117 Her. In this regard, looking at past fades, I suggest we should start watching out for the next one roughly at the end of September 2018. A curious facet of these fades is that, at least over the past 2000 days, alternate ones have tended to be deeper, so maybe this coming one will be a shallow fade. Keep your eyes on this interesting star!

Back in starforming regions, observers should also note that RW Aur isn't the only such object in the area—UY Aur above is very close by, as are GM Aur (in the same field as AB Aur and SU Aur) and DG Aur which is usually around mag 13-ish. And in the triangle bordered by Rigel, Saiph, and M42 are a whole host of "single" (as opposed to those in the Orion Nebula) interesting YSOs, some of which will be visible in quite small scopes—V1366 Ori, V1650 Ori, UY Ori, V1818 Ori, DM Ori, and DL Ori, the last of which is close to another YSO in V1791 Ori. None of these are too far from old friends like UX Ori and V350 Ori—so why not include them in your observing list too?

Treasurer's Report

October 1, 2016–September 30, 2017

Robert Stephens, *Treasurer, AAVSO, 49 Bay State Road, Cambridge, MA 02138*

Audited Financial Statements

American Association of Variable Star Observers Statement of Financial Position September 30, 2017

Assets

Current Assets

Cash and cash equivalents	\$ 564,624
Prepaid expenses	7,646
Investments	13,066,896
Total Current Assets	<u>13,639,166</u>

Property and Equipment, Net of Accumulated Depreciation	<u>1,320,326</u>
----------------------------------------------------------------	------------------

Total Assets	<u>\$ 14,959,492</u>
---------------------	----------------------

Liabilities and Net Assets

Current Liabilities

Accounts payable and accrued expenses	\$ 26,613
Prepaid membership dues and meetings	27,342
Total Current Liabilities	<u>53,955</u>

Long Term Liabilities

Security deposit and last month's rent re Annex	8,332
-------------------------------------------------	-------

Net Assets

Unrestricted	11,319,002
Temporarily restricted	212,159
Permanently restricted	3,366,044
Total Net Assets	<u>14,897,205</u>

Total Liabilities and Net Assets	<u>\$ 14,959,492</u>
-----------------------------------------	----------------------

2. The Year in Review

American Association of Variable Star Observers Statement of Activities and Changes in Net Assets For the Year Ended September 30, 2017

Changes in Unrestricted Net Assets

Unrestricted Revenues, Gains, and Other Support

Contributions and grants	\$ 79,915
Investment interest and dividends	173,361
Membership dues and fees	79,938
Sales of publications and related material	9,324
Meeting fees	26,065
Annex rent	29,167
Unrealized losses on available-for-sale securities	1,185,758
Gain on sale of investments	157,538
	<hr/>
	1,741,066
Net assets released by restrictions	189,289
Total Unrestricted Revenues, Gains, and Other Support	<hr/> 1,930,355 <hr/>

Expenses

Program Services—research, data collection, publication, and meetings	545,458
General and administrative	383,438
Fundraising	14,097
Total Expenses	<hr/> 942,993 <hr/>
Increase in Unrestricted Net Assets	<hr/> 987,362 <hr/>

Changes in Temporarily Restricted Net Assets

Contributions and grants	103,884
Investment interest and dividends	2,780
Gain on sale of investments	2,527
Assets released from program restrictions	(189,289)
(Decrease) in Temporarily Restricted Net Assets	<hr/> (80,098) <hr/>

Changes in Permanently Restricted Net Assets

Contributions	1,225
Increase in Permanently Restricted Net Assets	<hr/> 1,225 <hr/>

Increase in Net Assets

908,489

Net Assets—Beginning of Year

13,988,716

Net Assets—End of Year

\$ 14,897,205



3. Officers, Staff, and Volunteers

AAVSO Officers, Council Members, and Section Leaders for Fiscal Year 2017–2018

You may contact these persons through AAVSO Headquarters.

Officers

Director	Stella Kafka	(term of office 1 February 2015—)
President	Kristine M. Larsen	(2015–2018)
1st Vice President	Bill Stein	(2017–2018)
2nd Vice President	Kevin B. Marvel	(2015–2018)
Secretary	Gary Walker	(2009–2018)
Treasurer	Robert Stephens	(2017–2018)

Council Members

Richard Berry	(2016–2018)
Tom Calderwood	(2016–2018)
Michael Cook	(2017–2019)
Joyce A. Guzik	(2015–2019)
Michael Joner	(2016–2018)
Katrien Kolenberg	(2014–2018)
Arlo Landolt	(2017–2019)
Gordon Myers	(2017–2019)
Gregory R. Sivakoff	(2016–2018)

3. Officers, Staff, and Volunteers

Section Leaders

Charts and Sequences	Tom Bretl
Eclipsing Binary	Gerard Samolyk
Exoplanets	Dr. Dennis Conti
Long Period Variable	Andrew Pearce, Frank Schorr
Science Advisors	Dr. John Percy, Dr. Lee Anne Willson
Photoelectric Photometry	James M. Kay
Short Period Pulsator	Gerard Samolyk, Shawn Dvorak
Science Advisors	Dr. Doug Welch, Dr. Horace Smith
Solar	
Section Chair	Rodney H. Howe
Sunspot Group Leader	Kim Hay
Solar Flare/SID Observing Group	Rodney H. Howe
<i>Solar Bulletin</i> Editor	Rodney H. Howe
Young Stellar Objects	Michael Poxon
Science Advisor	Dr. William Herbst
<i>Journal of the AAVSO</i> Editor	Dr. John R. Percy

AAVSO Headquarters Staff

Sara J. Beck	Technical Assistant (Science Operations), Special Projects
Gloria Ortiz Cruz	Data Entry Technician
Stella Kafka, Ph.D.	Director
Sebastián Otero	External Consultant, VSX Team, Spanish Translations
Michael Saladyga, Ph.D.	Technical Assistant, <i>JAAVSO</i> , <i>Newsletter</i> , and <i>Annual Report</i> Production Editor
Kathy Spirer	Operations Manager
Owen Tooke	Administrative Assistant
Elizabeth O. Waagen	Senior Technical Assistant (Science Operations), <i>JAAVSO</i> Associate Editor, <i>AAVSO Newsletter</i> and <i>Annual Report</i> Editor

AAVSO Volunteers

AAVSO members are very generous with their time and talents. Many of the programs and services we offer would not be possible without the participation of member volunteers: they are regularly involved in teaching new observers; writing articles for our publications; helping to keep the *Variable Star Index* up to date and functional, and submissions vetted; and the creation of charts and comparison star sequences.

We take this opportunity to recognize these special people who volunteered during the fiscal year, and to say *thank you* for another year of valuable contributions of time and expertise.

Mentor Program

Patrick Abbott	Jim Fox	Ken Menzies
Umair Asim	Jaime García	Gordon Myers
Barry Beaman	Bill Goff	Peter Nelson
David Benn	Keith Graham	Sebastián Otero
John A. Blackwell	Tim Hager	Stefano Padovan
Tom Bretl	Barbara Harris	Roger Pieri
John Centala	Jerry Hubbell	Alan Plummer
Tim Crawford	Rick Huziak	Chuck Pullen
Michael Deconinck	Stella Kafka	Mike Simonsen
Shawn Dvorak	Roger Kolman	Donn Starkey
Robert Fidrich	Mike Linnolt	Chris Stephan
Ron Fournier	Morgan MacLeod	Bob Stine

Variable Star Index (VSX) Team

Klaus Bernhard	Raúl Salvo	Paul York
David Hinzl	Patrick Wils	

Charts and Sequences

Tom Bretl	Arne Henden	John Toone
Tim Crawford	Jim Jones	Natalia Virnina
Robert Fidrich	Mati Morel	Brad Walter
Keith Graham	Bob Stine	Patrick Wils
Barbara Harris	Bruce Sumner	

3. Officers, Staff, and Volunteers

AAVSO Headquarters

Arne Henden

John O'Neill

George Silvis

APASS

Sara Beck

Arne Henden

Anisha Sharma

Shouvik Bhattacharya

Johathan Irwin

Aaron Sliski

Tom Bisque

Kevin Ivarsen

Alan Sliski

Bob Denny

Richard Kinne

Tom Smith

Doug George

Stephen Levine

Matt Templeton

Don Goldman

Ken Launie

Dirk Terrell

John Gross

Ulisse Munari

Doug Welch

Josh Haislip

Sebastián Otero

Patrick Wils

AAVSONet

Helmar Adler

Nigel Frost

Dick Post

JoDee Baker

John Gross

Frank Schorr

Greg Bolt

Arne Henden

George Silvis

John Centala

Dave Hinzl

Bart Staels

Walt Cooney

Jon Holtzman

Bill Stein

Lou Cox

Damien Lemay

Dirk Terrell

Tim Crawford

Mike Linnolt

Bill Toomey

Duane Dedrickson

Ken Menzies

Gary Walker

Jean-Bruno Desrosiers

Peter Nelson

Robert Dudley

Mike Nicholas

Archival Digitization and Special Archival Projects

Stuart Morris

George Silvis

CHOICE Instructors

JoDee Baker-Maloney

Barbara Harris

Bradley Walter

Dennis Conti

Jim Kay

Ed Wiley

Michael Cook

Kenneth Menzies

Blake Crosby

Philip Sullivan

AAVSO Newsletter Contributing Authors

Tom Calderwood
Dennis Conti
Arne Henden
Rodney Howe
Jim Kay

David Levy
Andrew Pearce
John Percy
Alan Plummer
Mike Poxon

Michael Saladyga
Mike Simonsen
Donn Starkey

Software Development and Support

David Benn	<i>VStar</i>	Bill Hoston	<i>AAVSONet software</i>
Dan Burger	<i>AAVSO Target Tool</i>	Phil Manno	<i>Find a Member, CHET</i>
Dennis Conti	<i>Exoplanet Database Tools</i>	Kenneth Menzies	<i>VPhot</i>
Jack Gleeson	<i>Exoplanet Database Tools</i>	George Silvis	<i>VPhot</i>
Francis Hemsher	<i>LCGv2</i>	John Weaver	<i>SpecDB</i>
Brian Hill	<i>AID database analysis</i>	Patrick Wils	<i>V SX</i>

Eggen Card Project

Jack Crast
John Ritzel

Ed Schmidt
George Silvis

3. Officers, Staff, and Volunteers

Translators

Arabic Translation, *10-Star Training Tutorial for the Northern Hemisphere*

Rani Ahmed

French Translation, *AAVSO DSLR Observing Manual*

Bernard Candela

French Translation, *AAVSO Guide to CCD Photometry*

Manon Bouchard

Jean-Bruno Desrosiers

Jean-Bernard Pioppa

Pierre Cheyssac

Jean-Claude Mario

Florian Signoret

German Translation, *Manual for Visual Observations of Variable Stars*

Ilka Petermann

Persian Translation, *AAVSO Guide to CCD Photometry*

Fatemeh Bahrani

Polish Translation, *AAVSO DSLR Observing Manual*

Ewa Stokłosa

Ryszard Biernikowicz

Polish Translation, *AAVSO Guide to CCD Photometry*

Roman Korczyk

Dominik Gronkiewicz

Maciej Nowaczyk

Łukasz Socha

Adam Popowicz

Krzysztof Kida

Russian Translation, *Manual for Visual Observations of Variable Stars*

Nikolai Samus

Spanish translations, *AAVSO Newsletter*

Jaime R. García



4. Science Summary: AAVSO in Print

These pages present a partial listing of all literature using AAVSO data or resources. The majority of these listings were taken from the arXiv.org preprint archive (<https://arxiv.org/abs/>; preprint number given after title), with others contributed directly by the authors themselves. It is intended to show the extent to which the observations of AAVSO observers are used in modern astronomical literature.

AAVSO data contributed by thousands of observers over decades is vital to variable star research. Annually, AAVSO Headquarters receives from 200 to 300 requests for data from researchers, members, observers, and educators. The AAVSO data are used extensively to correlate multi-wavelength observations of variable stars, to schedule ground-based and satellite observations, and for analysis of stellar behavior. Papers using AAVSO data are published by researchers, members, observers, and AAVSO staff. These papers are a testimony to the dedication and contribution of thousands of observers around the world who contribute data to the AAVSO International Database.

Publications using the AAVSO International Database (AID)

John R. Percy, "Forty Years of Linking Variable Star Research with Education" (1710.04492) (Sep 27, 2017)

Duane W. Hamacher, "Observations of red-giant variable stars by Aboriginal Australians" (<http://rdcu.be/wF5m>) (Sep 27, 2017)

John R. Percy and Jennifer Laing, "Amplitude Variations in Pulsating Red Giants. II. Some Systematics" (1709.09696) (Sep 27, 2017)

Nimisha Kantharia, "Novae II. Model, "multi-band outburst, bipolar ejecta, accretion disk, relativistic electrons, etc." (1709.09400) (Sep 27, 2017)

Stephen B. Potter and David A. H. Buckley, "Discovery of spin modulated circular polarization from IGR J17014-4306, the remnant of Nova Scorpii 1437 A.D" (1709.08220) (Sep 24, 2017)

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- Smitha Subramanian, Massimo Marengo, Anupam Bhardwaj et al., “Young and Intermediate-age Distance Indicators” (1709.07265) (Sep 21, 2017)
- D. P. K. Banerjee, Mudit K. Srivastava, N. M. Ashok et al., “Near-infrared and optical studies of the highly obscured nova V1831 Aquilae (Nova Aquilae 2015)” (1709.06585) (Sep 19, 2017)
- M. J. Middleton, P. Casella, P. Gandhi et al., “Paving the way to simultaneous multi-wavelength astronomy” (1709.03520) (Sep 11, 2017)
- Daniela Hadasch, Wlodek Bednarek, Oscar Blanch et al., “MAGIC VHE Gamma-Ray Observations Of Binary Systems” (1709.01626) (Sep 5, 2017)
- C. A. Hill, Robert Connors Smith, L. Hebb et al., “Roche tomography of cataclysmic variables—VIII: The irradiated and spotted dwarf nova, SS Cygni” (1709.01349) (Sep 5, 2017)
- Kwan-Lok Li, Brian D. Metzger, Laura Chomiuk et al., “A Nova Outburst Powered by Shocks” (1709.00763) (Sep 3, 2017)
- A. Mehner, D. Baade, J. H. Groh et al., “Spectroscopic and photometric oscillatory envelope variability during the S Doradus outburst of the Luminous Blue Variable R71” (1709.00160) (Sep 1, 2017)
- Yasuyuki Wakamatsu, Keisuke Isogai, Mariko Kimura et al., “ASASSN-16eg: New candidate of long-period WZ Sge-type dwarf nova” (1708.09206) (Aug 30, 2017)
- M. Van de Sande, L. Decin, R. Lombaert et al., “Chemical content of the circumstellar envelope of the oxygen-rich AGB star R Dor: Non-LTE abundance analysis of CO, SiO, and HCN” (1708.09190) (Aug 30, 2017)
- Maroussia Roelens, Laurent Eyser, Nami Mowlavi et al., “Short timescale variables in the Gaia era: detection and characterization by structure function analysis” (1708.08703) (Aug 29, 2017)
- L. N. Berdnikov, M. A. Burlak, O. V. Vozyakova et al., “The jet of the young star RW Aur A and related problems” (1708.08488) (Aug 28, 2017)
- Huan Y. A. Meng, George Rieke, Franky Dubois et al., “Extinction and the Dimming of KIC 8462852” (1708.07556) (Aug 24, 2017)

Albert Bruch, "Photometry of some more neglected bright cataclysmic variables and candidates" (1708.00364) (Aug 1, 2017)

Patrick Godon, Edward M. Sion, Solen Balman et al., "Modifying the Standard Disk Model for the Ultraviolet Spectral Analysis of Disk-dominated Cataclysmic Variables. I. The Novalikes MV Lyrae, BZ Camelopardalis, and V592 Cassiopeiae" (1708.00325) (Aug 1, 2017)

Michael S. Gordon, Dinesh Shenoy, Roberta M. Humphreys et al., "Searching for Cool Dust: II. Infrared Imaging of the OH/IR Supergiants, NML Cyg, VX Sgr, S Per and the Normal Red Supergiants RS Per and T Per" (1708.00018) (Jul 31, 2017)

L. C. Oostrum, B. B. Ochsendorf, L. Kaper et al., "Unidentified emission features in the R Coronae Borealis star V854 Centauri" (1707.03398) (Jul 11, 2017)

B. P. Hema, Gajendra Pandey, Devika Kamath et al., "Abundance analyses of the new R Coronae Borealis stars: ASAS-RCB-8 and ASAS-RCB-10" (1707.01268) (Jul 5, 2017)

Albert Bruch, "Orbital variations and outbursts of the unusual variable star V1129 Centauri" (1706.08425) (Jun 26, 2017)

Mariko Kimura, Taichi Kato, Keisuke Isogai et al., "Rapid Optical Variations Correlated with X-rays in the 2015 Second Outburst of V404 Cygni" (GS 2023+338)" (1706.06779) (Jun 21, 2017)

S. Antonucci, B. Nisini, K. Biazzo et al., "High-resolution TNG spectra of T Tauri stars: Near-IR GIANO observations of the young variables XZ Tau and DR Tau" (1706.05447) (Jun 16, 2017)

F. Bernardini, D. de Martino, K. Mukai et al., "Broad-band characteristics of seven new hard X-ray selected cataclysmic variables" (1706.04005) (Jun 13, 2017)

Taichi Kato, Keisuke Isogai, Franz-Josef Hamsch et al., "Survey of Period Variations of Superhumps in SU UMa-Type Dwarf Novae. IX: The Ninth Year (2016–2017)" (1706.03870) (Jun 12, 2017)

David A. Neufeld, Gary J. Melnick, Michael J. Kaufman et al., "SOFIA/GREAT Discovery of Terahertz Water Masers" (1705.09672) (May 26, 2017)

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P. Zemko, M. Orio, G. J. M. Luna et al., "Multi-mission observations of the old nova GK Per during the 2015 outburst" (1705.07707) (May 22, 2017)

Rodolfo Montez Jr., Sofia Ramstedt, Joel H. Kastner et al., "A Catalog of GALEX Ultraviolet Emission from Asymptotic Giant Branch Stars" (1705.05371) (May 15, 2017)

Brian D. Metzger, Ondrej Pejcha, "Shock-powered light curves of luminous red novae as signatures of pre-dynamical mass loss in stellar mergers" (1705.03895) (May 10, 2017)

Han Zhongtao, Qian Shengbang, Lajús et al., "Long-term photometric behavior of the eclipsing cataclysmic variable V729 Sgr" (1705.03164) (May 9, 2017)

Zhong-tao Han, Sheng-bang Qian, Irina Voloshina et al., "Long-term photometric behaviour of the eclipsing Z Cam-type dwarf nova AY Psc" (1705.03163) (May 9, 2017)

Z.-T. Han, S.-B. Qian, Irina Voloshina et al., "Cyclic period oscillation of the eclipsing dwarf nova DV UMa" (1705.03145) (May 9, 2017)

Albert Bruch, "Photometry of the three eclipsing novalike variables EC 21178-5417, GS Pav and V345 Pav" (1705.01012) (May 2, 2017)

A. Skopal, S. Yu. Shugarov, M. Sekeráš et al., "New outburst of the symbiotic nova AG Peg after 165 years" (1705.00076) (Apr 28, 2017)

L. Izzo, M. Della Valle, F. Matteucci et al., "The nova V1369 Cen—a short review" (1704.07214) (Apr 24, 2017)

Johnathan Ross and Henrik Latter, "Turbulent fluctuations and the excitation of Z Cam outbursts" (1704.05926) (Apr 19, 2017)

T. Giannini, S. Antonucci, D. Lorenzetti et al., "The 2015–2016 outburst of the classical EXor V1118 Ori" (1704.05777) (Apr 19, 2017)

Rod Stubbings, Peredur Williams, "Observation of a Deep Visual 'Eclipse' in the WC9-Type Wolf-Rayet Star, WR 76" (1704.05720) (Apr 19, 2017)

L. Decin, A. M. S. Richards, L. B. F. M. Waters et al., "Tracing the phase transition of Al-bearing species from molecules to dust in AGB winds. Constraining the presence of gas-phase $(\text{Al}_2\text{O}_3)_n$ clusters" (1704.05237) (Apr 18, 2017)

- E. M. L. Humphreys, K. Immer, M. D. Gray et al., "Simultaneous 183 GHz H₂O Maser and SiO Observations Towards Evolved Stars Using APEX SEPIA Band 5" (1704.02133) (Apr 7, 2017)
- M. R. Kennedy, P. M. Garnavich, C. Littlefield et al., "X-ray observations of FO Aqr during the 2016 low state" (1704.01909) (Apr 6, 2017)
- Laurent Eyer, Gisella Clementini, Leanne P. Guy et al., "Pulsating star research and the Gaia revolution" (1704.01581) (Apr 5, 2017)
- Gavin Ramsay, Matthias Schreiber, Boris Gansicke et al., "Distances of CVs and related objects derived from Gaia Data Release 1" (1704.00496) (Apr 3, 2017)
- U. Munari, F.-J. Hamsch and A. Frigo, "Photometric evolution of seven recent novae and the double component characterizing the lightcurve of those emitting in gamma rays" (1703.09017) (Mar 27, 2017)
- Laura D. Vega, Keivan G. Stassun, Rodolfo Montez Jr. et al., "Evidence for Binarity and Possible Disk Obscuration in Kepler Observations of the Pulsating RV Tau Variable DF Cygni" (1703.08566) (Mar 24, 2017)
- Koji Mukai, "X-ray Emissions from Accreting White Dwarfs: a Review" (1703.06171) (Mar 17, 2017)
- H. M. Schmid, A. Bazzon, J. Milli et al., "SPHERE / ZIMPOL observations of the symbiotic system R Aqr. I. Imaging of the stellar binary and the innermost jet clouds" (1703.05624) (Mar 16, 2017)
- Albert Bruch and Berto Monard, "Photometry of the long period dwarf nova GY Hya" (1703.04712) (Mar 14, 2017)
- Nimisha G. Kantharia, "Novae: I. The maximum magnitude relation with decline time" (MMRD) and distance" (1703.04087) (Mar 12, 2017)
- J. D. Linford, L. Chomiuk, T. Nelson et al., "The Peculiar Multi-Wavelength Evolution of V1535 Sco" (1703.03333) (Mar 9, 2017)
- A. Dobrotka, J.-U. Ness, S. Mineshige and A. A. Nucita, "XMM-Newton observation of MV Lyr and the sandwiched model confirmation" (1702.08313) (Feb 27, 2017)

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- Scott G. Engle, Edward F. Guinan, Graham M. Harper et al., "The Secret Lives of Cepheids: delta Cep—the Prototype of a New Class of Pulsating X-ray Variable Stars" (1702.06560) (Feb 21, 2017)
- S. Etoke, E. Gerard, A. M. S. Richards et al., "Recurring OH Flares towards o Ceti: I. location and structure of the 1990s and 2010s events" (1702.06040) (Feb 20, 2017)
- Paula Szkody, Anjum S. Mukadam, Odette Toloza et al., "Hubble Space Telescope Ultraviolet Light Curves Reveal Interesting Properties of CC Sculptoris and RZ Leonis" (1702.04076) (Feb 14, 2017)
- M. Wittkowski, K.-H. Hofmann, S. Höfner et al., "Aperture synthesis imaging of the carbon AGB star R Sculptoris: Detection of a complex structure and a dominating spot on the stellar disk" (1702.02574) (Feb 8, 2017)
- Ivan L. Andronov, K. A. Andrych, K. A. Antoniuk et al., "Instabilities in Interacting Binary Stars" (1702.02011) (Feb 7, 2017)
- Jérôme Rodriguez, "Recent Constraints on Jet physics and Properties Obtained from High Energy Observations of Microquasars" (1702.01616) (Feb 6, 2017)
- Kevin Krisciunas, Nicholas B. Suntzeff, Bethany Kelarek et al., "Spectrophotometry of Very Bright Stars in the Southern Sky" (1702.01602) (Feb 6, 2017)
- D. Jack, J. de J. Robles Pérez, I. De Gennaro Aquino et al., "Study of the variability of Nova V5668 Sgr, based on high resolution spectroscopic monitoring" (1702.01171) (Feb 3, 2017)
- S. P. S. Eyres, D. Bewsher, Y. Hillman et al., "Temporal resolution of a pre-maximum halt in a Classical Nova: V5589 Sgr observed with STEREO HI-1B" (1701.09026) (Jan 31, 2017)
- Michael A. Gully-Santiago, Gregory J. Herczeg, Ian Czekala et al., "Placing the spotted T Tauri star LkCa 4 on an HR diagram" (1701.06703) (Jan 24, 2017)
- Grant M. Kennedy, Matthew A. Kenworthy, Joshua Pepper et al., "The transiting dust clumps in the evolved disk of the Sun-like UXor RZ Psc" (1701.06568) (Jan 23, 2017)
- C. Paladini, D. Klotz, S. Sacuto et al., "The VLTI/MIDI view on the inner mass loss of evolved stars from the Herschel MESS sample" (1701.05407) (Jan 19, 2017)

- Patrick Godon, Edward Sion, Boris Gansicke et al., "Hubble Space Telescope Cosmic Origins Spectrograph Spectroscopy of the Southern Nova-like BB Doradus in an Intermediate State" (1701.05222) (Jan 18, 2017)
- Pierre Kervella, Boris Trahin, Howard E. Bond et al., "Observational calibration of the projection factor of Cepheids—III. The long-period Galactic Cepheid RS Puppis" (1701.05192) (Jan 18, 2017)
- V. V. Neustroev, T. R. Marsh, S. V. Zharikov et al., "The remarkable outburst of the highly evolved post-period-minimum dwarf nova SSS J122221.7-311525" (1701.03134) (Jan 11, 2017)
- Thomas Finzell, Laura Chomiuk, Brian D. Metzger et al., "A Comprehensive Observational Analysis of V1324 Sco, the Most Gamma-Ray Luminous Classical Nova to Date" (1701.03094) (Jan 11, 2017)
- A. F. Pala, B. T. Gänsicke, D. Townsley et al., "Effective Temperatures of Cataclysmic Variable White Dwarfs as a Probe of their Evolution" (1701.02738) (Jan 10, 2017)
- Chien-Hsiu Lee, "Time-domain Studies of M31" (1701.02507) (Jan 10, 2017)
- Lingzhi Wang, Bin Ma, Gang Li et al., "Variable Stars Observed in the Galactic Disk by AST3-1 from Dome A, Antarctica" (1701.00484) (Jan 2, 2017)
- A. Raj, R. K. Das and F. M. Walter, "Optical and Near-IR study of nova V2676 Oph 2012" (1612.07906) (Dec 23, 2016)
- J. M. Alcalá, C. F. Manara, A. Natta et al., "X-Shooter spectroscopy of young stellar objects in Lupus: Accretion properties of class II and transitional objects" (1612.07054) (Dec 21, 2016)
- David Boyd, "Photometric and spectroscopic observations of the outburst of the symbiotic star AG Draconis between March and June 2016" (1612.07352) (Dec 20, 2016)
- D. R. S. Boyd, E. de Miguel, J. Patterson et al., "A 16-Year Photometric Campaign on the Eclipsing Novalike Variable DW Ursae Majoris" (1612.06883) (Dec 20, 2016)
- L. Molnár, A. Derekas, R. Szabó et al., "V473 Lyr, a modulated, period-doubled Cepheid, and U TrA, a double-mode Cepheid observed by MOST" (1612.06722) (Dec 20, 2016)

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- A. Evans, D. P. K. Banerjee, R. D. Gehrz et al., "Rise and fall of the dust shell of the classical nova V339 Delphini" (<https://arxiv.org/pdf/1612.06241v1.pdf>) (Dec 20, 2016)
- C. S. Buemi, C. Triglio, P. Leto et al., "Exploring the multifaceted circumstellar environment of the Luminous Blue Variable HR Carinae" (1612.05039) (Dec 15, 2016)
- Wako Aoki, Tadafumi Matsuno, Satoshi Honda et al., "High-resolution spectroscopy of the extremely iron-poor post-AGB star CC Lyr" (1612.03669) (Dec 12, 2016)
- C. Moni Bidin, D. I. Casetti-Dinescu, T. M. Girard et al., "Young stars in the periphery of the Large Magellanic Cloud" (1612.03072) (Dec 9, 2016)
- S. Geier, R. H. Østensen, P. Nemeth et al., "The population of hot subdwarf stars studied with Gaia I. The catalogue of known hot subdwarf stars" (1612.02995) (Dec 9, 2016)
- Irene V. Salazar, Amy LeBleu, Bradley E. Schaefer et al., "Accurate Pre-Eruption and Post-Eruption Orbital Periods for the Dwarf/Classical Nova V1017 Sgr" (1612.00405) (Dec 1, 2016)
- K. Li, S.-M. Hu, J.-L. Zhou et al., "A possible giant planet orbiting the cataclysmic variable LX Ser" (1611.09504) (Nov 29, 2016)
- Liam K. Hardy, Martin J. McAllister, Vik S. Dhillon et al., "Hunting For Eclipses: High Speed Observations of Cataclysmic Variables" (1611.07885) (Nov 23, 2016)
- K. P. Mooley, J. C. A. Miller-Jones, R. P. Fender et al., "Rapid Radio Flaring during an Anomalous Outburst of SS Cyg" (1611.07064) (Nov 21, 2016)
- P. Kervella, W. Homan, A. M. S. Richards et al., "ALMA observations of the nearby AGB star L2 Puppis—I. Mass of the central star and detection of a candidate planet" (1611.06231) (Nov 18, 2016)
- E. De Beck, L. Decin, S. Ramstedt et al., "Search for aluminium monoxide in the winds of oxygen-rich AGB stars" (1611.05409) (Nov 16, 2016)
- Keiichi Ohnaka, Gerd Weigelt, and Karl-Heinz Hofmann, "Clumpy dust clouds and extended atmosphere of the AGB star W Hya revealed with VLT/SPHERE-ZIMPOL and VLTI/AMBER II. Time variations between pre-maximum and minimum light" (1611.04622) (Nov 14, 2016)

- Anna Aret, Michaela Kraus, Indrek Kolka et al., "A new outburst of the yellow hypergiant star ρ Cas" (1611.04493) (Nov 14, 2016)
- V. V. Neustroev, S. Tsygankov, V. Suleimanov et al., "Correlated X-ray and optical variability in intermediate polars during their outbursts" (1611.04428) (Nov 14, 2016)
- John R. Percy, Henry Leung, "Studies of the Long Secondary Periods in Pulsating Red Giants. II. Lower-Luminosity Stars" (1611.03334) (Nov 10, 2016)
- Hilding R. Neilson, John R. Percy, Horace A. Smith, "Period Changes and Evolution in Pulsating Variable Stars" (1611.03030) (Nov 9, 2016)
- Qazuya Wada, Masahiro Tsujimoto, Ken Ebisawa et al., "A Systematic X-ray Study of the Dwarf Novae Observed with Suzaku" (1611.02887) (Nov 9, 2016)
- F. Rahoui, J. A. Tomsick, P. Gandhi et al., "The nova-like nebular optical spectrum of V404 Cygni at the beginning of the 2015 outburst decay" (1611.02278) (Nov 7, 2016)
- Albert Bruch, "Photometry of some neglected bright cataclysmic variables and candidates" (1611.00253) (Nov 1, 2016)
- Paul J. Morris, Garret Cotter, Anthony M. Brown et al., "Gamma-ray Novae: Rare or Nearby?" (1610.09941) (Oct 31, 2016)
- M. Hillen, H. Van Winckel, J. Menu et al., "A mid-IR interferometric survey with MIDI/VLTI: resolving the second-generation protoplanetary disks around post-AGB binaries" (1610.09930) (Oct 31, 2016)
- S. Facchini, C. F. Manara, P. C. Schneider et al., "Violent environment of the inner disk of RW Aur A probed by the 2010 and 2015 dimming events" (1610.08303) (Oct 26, 2016)
- Rod Stubbings and Mike Simonsen, "UY Puppis—A New Anomalous Z Cam Type Dwarf Nova" (1610.07056) (Oct 22, 2016)
- E. Plachy, L. Molnár, M. I. Jurkovic et al., "First observations of W Virginis stars with K2: detection of period doubling" (1610.05488) (Oct 18, 2016)
- Kosuke Namekata, Keisuke Isogai, Taichi Kato et al., "Superoutburst of WZ Sge-type Dwarf Nova Below the Period Minimum: ASASSN-15po" (1610.04941) (Oct 17, 2016)

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László Molnár, Róbert Szabó, Emese Plachy, “Variable stars with the Kepler space telescope” (1610.05488) (Oct 6, 2016)

M. Wittkowski, B. Arroyo-Torres, J. M. Marcaide et al., “VLT/AMBER spectro-interferometry of the late-type supergiants V766 Cen” (= HR 5171 A), sigma Oph, BM Sco, and HD 206859” (1610.01927) (Oct 6, 2016)

T. Kaminski, H. S. P. Müller, M. R. Schmidt et al., “An observational study of dust nucleation in Mira” (o Ceti): II. Titanium oxides are negligible for nucleation at high temperatures” (1610.01141) (Oct 4, 2016)

A. Somero, P. Hakala and G. A. Wynn, “High-resolution optical spectroscopy of RS Ophiuchi during 2008–2009” (1610.00914) (Oct 4, 2016)

Andrey Semena, Mikhail Revnivtsev, David Buckley et al., “Peculiarities of the Accretion Flow in the System HL CMA” (1610.00874) (Oct 4, 2016)

Artur Rutkowski, Waclaw Waniak, George W. Preston et al., “Spiral structures and temperature distribution in the quiescent accretion disc of the cataclysmic binary V2051 Ophiuchi” (1610.00665) (Oct 3, 2016)

Rajeev Manick, Hans Van Winckel, Devika Kamath et al., “Establishing binarity amongst Galactic RV Tauri stars with a disc” (1610.00506) (Oct 3, 2016)

Publications using the AAVSO Photometric All-Sky Survey (APASS)

Andrew W. Mann, Andrew Vanderburg, Aaron C. Rizzuto, et al., “Zodiacal Exoplanets in Time” (ZEIT) VI: a three-planet system in the Hyades cluster including an Earth-sized planet” (<https://www.aavso.org/arxiv.org/1709.10328>) (Sep 29, 2017)

E. Dennyhy, J. C. Clemens, John H. Debes et al., “WIRED for EC: New White Dwarfs with WISE Infrared Excesses and New Classification Schemes from the Edinburgh-Cape Blue Object Survey” (1709.09675) (Sep 27, 2017)

V. Testa, R. P. Mignani, N. Rea et al., “Large Binocular Telescope observations of PSR J2043+2740” (1709.09169) (Sep 26, 2017)

A. Melandri, S. Covino, E. Zaninoni et al., “Colour variations in the GRB 120327A afterglow” (1709.08865) (Sep 26, 2017)

- M. A. Gorbunov, A. A. Shlyapnikov, "Identification of stars and digital version of E. S. Brodskaya and V. F. Shajn catalogue of 1958" (1709.08113) (Sep 23, 2017)
- Shu Wang, Biwei Jiang, He Zhao et al., "The Optical-Mid-infrared Extinction Law of the $I = 165$ Sightline in the Galactic Plane: Diversity of Extinction Law in the Diffuse Interstellar Medium" (1709.05989) (Sep 18, 2017)
- N. Erasmus, M. Mommert, D. E. Trilling et al., "Characterization of Near-Earth Asteroids using KMTNet-SAAO" (1709.03305) (Sep 11, 2017)
- P. B. Kuzma, G. S. Da Costa, A. D. Mackey, "The Outer Envelopes of Globular Clusters. II. NGC 1851, NGC 5824, and NGC 1261" (1709.02915) (Sep 9, 2017)
- George Gontcharov, Aleksandr Mosenkov, "Verifying reddening and extinction for Gaia DR1 TGAS main sequence stars" (1709.01160) (Sep 4, 2017)
- A. Rebassa-Mansergas, J. J. Ren, P. Irawati et al., "The white dwarf binary pathways survey—II. Radial velocities of 1453 FGK stars with white dwarf companions from LAMOST DR4" (1708.09480) (Aug 30, 2017)
- R. Raddi, N. P. Gentile Fusillo, A. F. Pala et al., "Multi-band photometry and spectroscopy of an all-sky sample of bright white dwarfs" (1708.09394) (Aug 30, 2017)
- Joshua D. Simon, Benjamin J. Shappee, G. Pojmanski et al., "Where Is the Flux Going? The Long-Term Photometric Variability of Boyajian's Star" (1708.07822) (Aug 25, 2017)
- Joris Vos, Péter Németh, Maja Vučković et al., "Composite hot-subdwarf binaries—I. The spectroscopically confirmed sdB sample" (1708.07340) (Aug 24, 2017)
- Hong Soo Park, Dae-Sik Moon, Dennis Zaritsky et al., "Dwarf Galaxy Discoveries from the KMTNet Supernova Program I. The NGC 2784 Galaxy Group" (1708.07326) (Aug 24, 2017)
- S. Vennes, P. Németh, A. Kawka et al., "An unusual white dwarf star may be a surviving remnant of a subluminous Type Ia supernova" (1708.05568) (Aug 18, 2017)
- A. D. Mackey, S. E. Koposov, G. S. Da Costa et al., "Structured star formation in the Magellanic inter-Cloud region" (1708.04363) (Aug 15, 2017)

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5. Word from the Astronomical Community

Cataclysmic Variables (CVs) were thought to be the only accreting objects that did not launch jets, but recent observations of SS Cyg indicate otherwise. By means of radio observations of CVs on the rise to outburst, we will determine whether CVs launch jets and consequently establish if there is a universal link between accretion and jets. The AAVSO has made this project possible. The type of monitoring needed for this project (long-term and high-cadence) is not possible at professional observatories—the AAVSO, however, excels at it. Thank you so much to all the observers. In particular, through your fast outburst-notifications, we were able to get VLA observations right at the time when we predicted the radio emission to peak. I have really enjoyed working with the AAVSO and am looking forward to working with you in future projects. Clear skies,

Deanne Coppejans
Ph.D. candidate,
Radboud University
Nijmegen (Netherlands)
and University of Cape Town

I am very grateful to the AAVSO for their continuing observations of variable stars and especially for the wonderful campaign and continuous observations of some of the objects that I and my colleagues study using space-based facilities. These include CH Cyg, Mira, RT Cru, and many others.

I am impressed also by the efficiency and the kindness of the Headquarters personnel.

With hope for many great observations to come, and best wishes to all,

Margarita Karovska
*Harvard-Smithsonian
Center for Astrophysics*

5. Word from the Astronomical Community

The VSP [Variable Star Plotter, creates finder charts for variable stars] system continues to be an outstanding service that the AAVSO provides. I'm a visual observer and follow a large number of stars and without accurate charts, it would make it very difficult to produce meaningful results. Similarly the chart team are to be commended for their timely response to my requests for sequence for little observed southern stars. Regards,

Andrew Pearce (PEX)
Nedlands, Western Australia

One of my goals this year was to start doing photometry, DSLR in particular.

I decided the VPHOT course would be a good way to get my head into that space and I was right. The course run by Blake Crosby and Mike Simonsen was awesome. I learned so much and was able to help someone in the VPHOT forum, apply it to the DSLR course, and help Mark Blackford with use of VPHOT.

The DSLR course run by Mark Blackford was also superb and I am getting close to being able to do DSLR photometry with my own setup. Again, I learned an enormous amount. I've already expressed my thanks to Mark.

Running the VStar course was very full-on and also rewarding. Again, I learned from the participants and received much useful feedback. Watching JoDee Baker run the course and seeing how she and Brad Walter are running with it this year is fantastic.

David Benn (BDJB)
Klemzig, South Australia

"Wonderful and friendly staff always there to help. CHOICE courses are a great way to learn new skills. VPhot and VStar provide superb data reduction and analysis. AAVSONet allows access to telescopes around the world. Best of all is getting together with the other members at meetings where we can share our experiences, learn from each other, and have fun."

Dave Cowall (CWD)
Nanticoke, Maryland

5. Word from the Astronomical Community

Are you interested in variable stars? AAVSO. Do you want to share your interest with others? AAVSO. Do you want to observe and contribute to the understanding of variable stars with anything from eyeballs to binoculars to observatories with massive scopes, CCDs, and spectrographs? AAVSO.

In the comfort of my home, I can access AAVSO's website, research a variable star (VSX, etc.), download charts to locate and observe the variable star (Variable Star Plotter), upload my observations to the database (WebObs), and then see how my observations and the observations of others continue to spin the thread of rich photometric history (over 100 years, in some cases, and still going strong!) of the variable star I've observed (Light Curve Generator). I ask: How cool is that?

Bob Stine (SRB)
Newbury Park, California

When I joined the AAVSO, the only way we could get charts was to order the Blue-print copies at \$0.25 per chart and then wait until they were sent via snail-mail. A great improvement was made when the charts were available via the CD format, but that did not involve refinements to the charts. Now, thanks to the AAVSO Chart Committee, we can download charts and are made aware of updates.

Going back, my reports needed to be reported via paper copy. Today, we are able to submit data via the Internet—a great improvement. We also have the opportunity to check the quality of our observations in almost real time.

The CHOICE program, in my humble opinion, is one of the AAVSO gems. I have taken two of the courses and have found them to be high quality. Again, IMHO, members of the AAVSO would be missing out on a great benefit if they do not take advantage of one of the best benefits of membership.

Roger Kolman (KRS)
Glen Ellyn, Illinois

5. Word from the Astronomical Community

The AAVSO has been at the forefront in making astronomical resources available to the public. Put that together with the magazine *Australian Sky and Telescope*, (AS&T, also going to New Zealand), the offspring of the parent *Sky & Telescope*, a supportive editor (crucial) and we have a useful relationship. Both the previous Editor, Greg Bryant, and the current one, Jonathan Nally, are supporters of the AAVSO, and eight issues a year, from 2010 until today, have included a small column on VSOing, and a finder chart for the month's target.

The thinking in starting the column was that this was one of the easiest ways into useful astronomy. The *AAVSO Bulletin* is useful in target selection, if a brightish LPV is selected. It would ideally be picked up at or near maximum light, in a good position in the sky. The more southerly the target, the better. Sometimes I can sneak in a more challenging target, like the dwarf nova BV Centauri. The AAVSO Variable Star Plotter is used with every column to generate a finder chart. The web site generally is used to find papers or features on the target selected. A few Variable Stars of the Season have been utilized—for instance, on pulsating stars, RCBs, or dwarf novas.

With great good luck, I have pre-empted some observing campaigns. I write 3 to 4 months in advance, and to have the issue hit the stands as the *AAVSO Special Notice* is released, is gratifying. These being S Doradus, V854 Cen, and ETA Carinae. Follow ups of *Special Notices* have included T Pyxis, and others. Put simply, this would not be possible if not for the AAVSO on one hand, and AS&T on the other.

Alan Plummer (PAW)
Linden, NSW, Australia

I would like to comment about benefits of the CHOICE courses that I have taken. Besides providing the basic background information about variable stars, the CHOICE courses have given me confidence that I'm doing things the "right way" and not missing significant steps while making observations, as well as allowing me to maximize efficiency in planning and making variable star observations. The photometry-related courses have been especially helpful in allowing me to overcome obstacles that occur with technology and software that I most likely would have found too frustrating to deal with alone, without the excellent instructors and other students in the courses.

Frank Dempsey (DFR)
Locust Hill, Ontario, Canada



6. Support for the AAVSO

The Argelander Society

Named for Friedrich Argelander, who is considered to be "the father of variable star astronomy," **The Argelander Society** offers membership benefits to those individuals who have given substantial financial support to the AAVSO over many years. Once a benefactor has donated a cumulative total of \$35,000.00 to the AAVSO, they are eligible for a lifetime membership in the organization, free registration to annual meetings, invitations to special events, special awards, and tokens of the association's appreciation.



Friedrich Wilhelm August Argelander
(1799–1875)

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A sampling from the AAVSO Archives. Counterclockwise from upper right: souvenir of the 4th Spring Meeting, May 1917; The Practical Observing of Variable Stars, 1918; General Instructions to Observers pamphlet; catalogue of the AAVSO C. Y. McAteer Library; blueprint and photographic charts; letters and postcard (1919–1921) from Charter Member Prof. Anne S. Young of Mount Holyoke College.

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The AAVSO's 75th Anniversary Meeting at Harvard University, 1986

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Annual Campaign Fund Donations to this fund provide additional support for the essential and important day to day functions, tools, and programs of the AAVSO, including website maintenance, member services, observer support, CHOICE course development, AAVSO publications, and online tools (Chart Plotter, Light Curve Generator, VPHOT, VStar, WebObs, etc.).

Building Fund This fund is dedicated to replenishing the Endowment Fund for the cost of purchasing the new headquarters building (49 Bay State Road, Cambridge, MA 02138), to provide funds to refurbish the building, and to cover other costs incurred with the original purchase.

Janet A. Mattei Research Fellowship Program This fund enables a visiting scientist, postdoctoral researcher, or student to perform research at AAVSO Headquarters with the goal of disseminating the results throughout the astronomical community.

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AAVSO
49 Bay State Road
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