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ISSUE NO. 64 APRIL 2015 WWW.AAVSO.ORG

AAVSO Newsletter

FROM THE DIRECTOR'S DESK

STELLA KAFKA



“The mission of the AAVSO is to enable anyone, anywhere, to participate in scientific discovery through variable star astronomy.” As we start our journey together, I took a small step back to examine what the AAVSO represents: collaboration between

professional and amateur astronomers, knowledge sharing, equal opportunities for all, an Association that brings people together through astronomy. In principle, the AAVSO is a community of astro-enthusiasts who strive to study and to understand some of the most dynamic, unpredictable, and fun phenomena in the night sky.

The AAVSO data are everywhere: in science papers, in press releases, in observing alert responses, and in citizen science projects. The data processing tools that accompany the database allow for everyone to get their hands dirty with light curve analysis and interpretation, and publish their results in *JAAVSO*. Courses and seminars provide the necessary background for everyone, especially new observers. Meetings and online forums are another great opportunity to learn, as well as to meet each other and brainstorm with seasoned observers. The AAVSO is beyond borders—it is an international multi-cultural collaboration, as science is. Many professional astronomers took



INTERNATIONAL
YEAR OF LIGHT
2015

their first steps through the AAVSO. And, because of the AAVSO, many non-professional astronomers are involved in high-profile projects.

I started my tenure as the AAVSO's new Director in February, moving to beautiful (and cold!) Boston a couple of weeks prior. After receiving a warm welcome from Arne and the HQ staff, we are all hard at work to continue the work of the AAVSO. Our focus for the future will be to strengthen our community and keep catering to its needs, while focusing on our core values and improving our services to the community. This is a challenging task, as we live in a fast-paced era, in which technology and means of communication and information-sharing are rapidly evolving. We start this year by participating in the International Year of Light—IYL 2015. This is a high-profile initiative by the United Nations aiming “to raise awareness of how optical technologies promote sustainable development and provide solutions to worldwide challenges in areas such as energy, education, communications, health, and sustainability” (<http://www.light2015.org/>). It is also quite an appropriate occasion for us to celebrate the AAVSO's multiple facets. We honor more than a century of hard work of thousands of members and observers, hundreds of thousands of stars observed, millions of data points in our database, billions of photons collected. We celebrate scientific collaborations,

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SINCE 1911...

The AAVSO is an international non-profit organization of variable star observers whose mission is: to observe and analyze variable stars; to collect and archive observations for worldwide access; and to forge strong collaborations and mentoring between amateurs and professionals that promote both scientific research and education on variable sources.

PRESIDENT'S MESSAGE

JENO SOKOLOSKI



When the recurrent nova RS Oph erupted in 2006, I watched a fleeting stellar explosion turn a scattered collection of individualistic, sometimes competitive astronomers, with full schedules and a wide range of interests, into the proverbial well-oiled machine. We shared ideas, distributed tasks, and communicated rapidly to make sure we didn't miss the secrets that RS Oph had to tell. But how can a group of friends and colleagues work effectively together without the impetus of a rare and exciting recurrent nova eruption, for a long-term goal such as good governance of the AAVSO? In my first *Newsletter* column, in 2014 January, I introduced the 10 basic responsibilities of a governing council, which I repeat below. In the rest of this column, I describe how Council attempts to carry out these responsibilities.

1. Determine mission and purpose.
2. Select the chief executive.
3. Support and evaluate the chief executive.
4. Ensure effective planning.

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**DIRECTOR'S MESSAGE
CONTINUED...**

fun discoveries, our favorite objects that never cease to surprise us, and our collective work striving to understand them, using light as our only tool. We cherish and recognize our past, we embrace our present, and we look forward to an exciting future. Please sign up for our monthly email *AAVSO Communications*, which is aiming to provide quick updates on current projects and events. And please join me in our activities this year and our journey for the years to come. ★

Ed. note: the Spanish language version of Stella's message can be found on page 13.

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**PRESIDENT'S MESSAGE
CONTINUED...**

5. Monitor, and strengthen programs and services.
6. Ensure adequate financial resources.
7. Protect assets and provide proper financial oversight.
8. Build a competent board.
9. Ensure legal and ethical integrity.
10. Enhance the organization's public standing.

Many of you who attend membership meetings are probably aware that Council meets face-to-face twice a year, typically before each general membership meeting. Much of Council's work, however, gets accomplished outside of these face-to-face meetings. In 2012, to bring the AAVSO more into line with accepted best practices for non-profit organizations, we formed several standing committees: a Governance Committee, a Programs Committee, a Budget Committee, and an Investment Committee. The rosters below show the current composition of the standing committees, with the names of the chairs marked with an asterisk. The Director and the President are ex officio members of all committees.

Governance

- *Roger Kolman (ex officio [2nd Vice President])
- Kristine Larsen
- Barbara Harris
- Doug Welch

Budget

- *Bill Goff
- Richard Sabo
- Rodney Howe

Programs

- *John Martin
- Roger Kolman
- Dave Turner
- Katrien Kolenberg
- Arlo Landolt (*JAAVSO*-related issues)

Investment/Finance

- *Gary Walker
- Bill Goff
- Doug Welch
- Joe Patterson

But what exactly do these committees do?

The Governance Committee is responsible for working with the Director and the rest of Council to establish concrete goals for both the Director and Council. It should also regularly assess the Director and Council itself. In the relatively short time

- | | |
|---------------------------|--------------------|
| DIRECTOR | Arne A. Henden |
| PRESIDENT | Jennifer Sokoloski |
| PAST PRESIDENT | Mario Motta |
| 1ST VICE PRESIDENT | Kristine M. Larsen |
| 2ND VICE PRESIDENT | Roger S. Kolman |
| SECRETARY | Gary Walker |
| TREASURER | Bill Goff |

COUNCILORS

- | | |
|-------------------|------------------|
| Barbara G. Harris | Joseph Patterson |
| Rodney H. Howe | Richard Sabo |
| Katrien Kolenberg | David G. Turner |
| John C. Martin | Doug Welch |

NEWSLETTER

- | | |
|--------------------------|---------------------|
| EDITOR | Elizabeth O. Waagen |
| PRODUCTION EDITOR | Michael Saladyga |
| DEVELOPMENT | Mike Simonsen |

The *AAVSO Newsletter* is published in January, April, July, and October. Items of general interest to the support of valuable research. Members include professional astronomers, amateur astronomers, researchers, educators, students, and those who love variable star astronomy.

Membership in the AAVSO is open to anyone who is interested in variable stars and in contributing to the support of valuable research. Members include professional astronomers, amateur astronomers, researchers, educators, students, and those who love variable star astronomy.

AAVSO
49 Bay State Road
Cambridge, Massachusetts, 02138, USA
617-354-0484 / 1-888-802-STAR(7827)
www.aavso.org

since these standing committees were established, the Governance Committee has undertaken one Council self-evaluation and negotiated goals and an evaluation process for the new Director. The Governance Committee is also currently reviewing the Bylaws and the Policies & Procedures Manual. It additionally oversees such activities as making sure clear instructions exist to guide the chair of the Nominating Committee in selecting the best possible candidates for Council. Given its purview, the Governance Committee helps Council with its responsibilities of evaluating the chief executive (#3), effective planning (#4), and building a competent board (#8).

The primary goal of the Programs Committee is to regularly assess existing programs. In 2013, this committee produced a comprehensive report on AAVSO's programs (based in large part on

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PRESIDENT'S MESSAGE CONTINUED...

surveys led by past councilor Kevin Paxson), which can be found on our web site at (<http://www.aavso.org/program-committee-report-membership-february-2015>). This report provided fodder for many illuminating and valuable conversations during the search for a new Director this past year. Moving forward, Stella will use this report to assist her in making decisions about strengthening programs and services (responsibility #5).

In the 2014 October *Newsletter*, Gary Walker, Bill Goff, and I gave a brief overview of the budgeting process and how Council invests the endowment. Those activities are carried out by the Budget and Investment/Finance Committees, respectively. These committees obviously help with responsibilities #6 and #7, about financial resources and oversight.

Ad hoc committees also enable us to accomplish finite tasks. The only currently active ad hoc committee is the Transition Committee, whose charge is to support the new Director (responsibilities #2 and #3; see also the 2014 April *Newsletter*). This committee was initially chaired by Kristine Larsen and is now led

by Rebecca Turner. The Director Search Committee (chaired by Kevin Marvel) provided Council with a short-list of candidates for the Directorship. In 2012, the Mission-Statement Committee (chaired by Bob Stine) re-examined the mission of the AAVSO, as experts in non-profit governance recommend be done approximately every five years. Finally, we convene a Nominating Committee every year to construct a slate of nominees for Council (responsibility #8). The President appoints committee chairs (with input from the rest of Council) and also often assists the chairs in selecting committee members. Although the standing committees are usually (but not always) composed entirely of members of Council, the ad hoc committees typically contain a mix of councilors and other AAVSO members. The bylaws specify that the three members of the Nominating Committee must be members who are not on Council.

However, if committees are the parts of our machine, then communication is the oil. To facilitate interaction among councilors, we hold scheduled meetings and enjoy unscheduled discussion on a special Council email list. Three years ago, we decided to add a regular half-day Council telecon between the semiannual face-to-face meetings. In addition,

committees typically converse among themselves as necessary via email and/or telecon, and chairs report to the full Council at every business meeting. Headquarters also maintains a Council email list, through which we can discuss issues as they arise, follow-up on topics that arose during meetings, and give and receive updates on work. Finally, I find it useful to check in with committee chairs (and Stella) by phone approximately once a month. If we all stay in contact despite our geographical separation and busy lives, we can maintain continuity and work efficiently.

By keeping a close eye on our committees, and making sure that the lines of communication stay open, my aim has been to help Council fulfill its responsibilities, and to enjoy doing it. It shouldn't take a stellar explosion to push us into action when it comes to governance of the AAVSO. ★

Ed. note: the Spanish language version of Jenó's message can be found on page 13.

INTRODUCING "AAVSO COMMUNICATIONS"

We are pleased to announce the launch of "AAVSO Communications." The purpose of this monthly email is to highlight new initiatives and ongoing projects in a concise way which we hope you will find informative. Sometimes there is just so much going on that it is hard to keep track of it all. We hope that AAVSO Communications will make it easier for you to see what is happening and follow the links to read more about what interests you.

By now, you should have received your first issue. If you do not see it in your inbox, please check your spam or "promotions" folder in case the email is misplaced. Since we are using a third-party tool to create and send this email (MailChimp) you may have to "train" your email provider to accept it.

If you have not received a copy, you may subscribe to "AAVSO Communications" in two ways:

(1) If you are logged into the AAVSO website, subscribe at:

<http://www.aavso.org/apps/subscriptions/>

(2) If you do not have an account on the AAVSO website, subscribe at the webpage given here:

<http://aavso.us10.list-manage.com/subscribe?u=3ad9dedd265a0351968ebdde&id=e6d3652e35>



104TH SPRING MEETING OF THE AAVSO

The 2015 Spring Meeting of the AAVSO will be held June 4–6 at Ball State University in Muncie, Indiana. As many of you may know, 2015 is the International Year of Light. This year's meeting theme, "We are light!" celebrates the AAVSO's century-long commitment to the study of the variable light of the night sky. This will be Stella Kafka's first AAVSO meeting as Director of the Association. We invite you to join us in Muncie to welcome Stella and to celebrate the International Year of Light 2015. *We are light!*

Brief description of events

Opening dessert meet and greet

We will be holding an informal gathering at 8 p.m. Thursday evening featuring ice cream, cookies, fruit, and fellowship. All attendees are invited to stop by, register, drop off presentations for talks, and say hello. This will be an excellent opportunity to connect with old friends and to welcome our new members and first-time meeting attendees.

Paper Sessions

We are light! Keeping with our meeting theme, papers on any topic dealing with the variable light from the night sky or the sun will be presented in sessions held on Friday and Saturday. Posters will also be presented on Saturday.

Planetarium Show

Our host at Ball State University, Dr. Ron Kaitchuck, is also the Director of Ball State's Charles W. Brown Planetarium, which opened to the public in November 2014. A planetarium show will be a part of our program, so that we can see this state of the art facility in action! Currently the show is scheduled for Friday at the conclusion of the afternoon paper session.

Membership Meeting

All attendees are invited to this gathering, which will be held Saturday morning. The purpose of this meeting is to inform attendees of the activities of the Association. The Treasurer's and Director's Reports will be included. All portions of the membership meeting will be broadcast online at no charge via GoToWebinar. (Details will be announced on the website.) We will leave plenty of time for Q&A and will be taking questions from both in-person and online attendees.

Closing Awards Banquet

We will hold our closing awards banquet on the Ball State University campus.

For updates and more information

<http://www.aavso.org/104th-spring-meeting-aavso>

Preliminary schedule

(Events held at Ball State University unless otherwise noted.)

Thursday June 4th

All day—Council meeting—current council members only
Evening—Dessert meet and greet (at Hampton Inn)

Friday June 5th

All day—Paper sessions and planetarium show

Saturday June 6th

All day—Poster papers displayed

Morning—Membership meeting with award presentations

Afternoon—Paper session

Evening—Closing banquet with award presentations

Accommodations

Sleeping rooms for AAVSO meeting attendees have been reserved both at the Muncie Holiday Inn Express and the Muncie Hampton Inn. (The properties are across the street from each other.) We have secured a special group rate of \$109 plus tax. Both hotels include breakfast in this rate. Please make your reservations by calling the hotel no later than May 3, 2015, and be sure to mention that you will be participating in the AAVSO meeting when making room reservations.

Hotel contact information

Hampton Inn
4220 West Bethel Ave, Muncie, IN 47304
(765) 288-8500

Holiday Inn Express
4201 West Bethel Ave, Muncie, IN 47304
(765) 289-4678

Roommate matching assistance will be available for those who would like to lower costs by sharing a room—just complete the appropriate section of the registration form once available.

Deadlines to remember

May 3rd—Hotel Reservation Deadline

May 8th—Early Registration & Abstract Submission Deadline

May 15th—Final Abstract Submission Deadline

May 18th—Notification of Oral Presentation Status

May 26th—Final Preregistration Deadline



A SPECIAL INVITATION TO REGIONAL ASTRONOMY CLUBS

MIKE SIMONSEN (SXN), DEVELOPMENT OFFICER

The AAVSO cordially invites all members of astronomy clubs and astronomical societies in Indiana, Illinois, Ohio, and Michigan to participate in our Spring Meeting, June 4–6, 2015, at Ball State University in Muncie, Indiana. We have something for everyone and opportunities for volunteers from the amateur community to receive complimentary registrations for your time and efforts.

Prior to the meeting, on Wednesday, June 3, AAVSO Director Stella Kafka will be giving a talk at the Ball State Planetarium entitled “Variable Stars and Their Stories.” The exact time is yet to be determined, but you can keep up with updates on the Spring Meeting Page <http://www.aavso.org/104th-spring-meeting-aavso>.

Thursday evening, June 4, we will be holding an informal meet and greet session at the Muncie Hampton Inn at 8 p.m.

Friday will feature scientific papers all day and a planetarium show at the end of the paper sessions at Ball State’s Charles W. Brown Planetarium, which opened to the public in November 2014.

Saturday morning we will hold the AAVSO Membership Meeting, featuring presentations from the Director and Council Officers explaining all that the AAVSO is doing in research, outreach, and education for the 2015 International Year of Light. The Membership Meeting is open to all registered attendees and volunteers. Saturday afternoon the scientific paper sessions continue, and Saturday evening is the closing banquet and award presentations.

You can register to attend one or all the days of the meeting in person or virtually/online. Please visit the 104th Spring Meeting of the AAVSO page <http://www.aavso.org/104th-spring-meeting-aavso>.

TALKING ABOUT THE AAVSO

ELIZABETH O. WAAGEN (WEO), AAVSO HQ

Events—AAVSO members, observers, and friends have given or will be giving presentations about the AAVSO and variable stars at the following venues:

March 2, 2015—**Gary Poyner** (PYG, Birmingham, England) gave a talk on “Introduction to VS observing” to the Blackpool Astronomical Society. He reports there was excellent attendance and a knowledgeable audience.

March 27, 2015—**Gary Poyner** gave a talk on “Historical Novae” in Earby, Lancashire.

April 1, 2015—**Horace Smith** (SHA, East Lansing, Michigan) gave a talk about the AAVSO and variable star observing entitled: “The AAVSO and Variable Star Observing: 27 million observations and counting” to the Lansing, Michigan, astronomy club, the Capital Area Astronomy Association.

Volunteer Opportunities

We invite astronomy club members to bring your telescopes on Friday or Saturday for solar observing during coffee breaks.

If you are able to help with the following tasks we will provide complimentary registration to the meeting.

Help with shuttling between Ball State University and the meeting Hotels, approximately a 10-minute drive (4 shifts):

Ball State to Hotels:

Thursday, June 4 at 1:30 p.m.

Thursday June 4 at 7:30 p.m.

Hotels to Ball State:

Sunday, June 7 at 9 a.m.

Sunday, June 7 at 1:30 p.m.

Those with SUVs or vans are especially encouraged!

We also offer complimentary registration for help at the registration table (3 shifts):

Thursday evening meet and greet

Friday morning and the tail end of the lunch break

Saturday morning and the tail end of lunch break

Please contact us with questions or offers of help by emailing meetings@aavso.org

We hope to see you all there! ★

April 7, 2015—**Gary Poyner** gave a talk on “Introduction to VS observing” to the Sheffield Astronomical Society.

April 29, 2015—**Gary Poyner** will give a talk on “Historical Novae” to the Chester Astronomical Society.

Gary also reports he has talks booked in the second half of 2015—he is a very active speaker!

Thank you, speakers!

We know many of you are involved in outreach related to the AAVSO and variable stars—let us help you spread the word! Send us information about your event (upcoming or past) for inclusion in the July 2015 *AAVSO Newsletter* (submission deadline June 15, 2015). Many thanks for your education and outreach efforts on behalf of the AAVSO and variable star observing! ★

INTERNATIONAL YEAR OF LIGHT (IYL 2015)

The International Year of Light is a global initiative which will highlight to the citizens of the world the importance of light and optical technologies in their lives, for their futures, and for the development of society. It is a unique opportunity to inspire, educate, and connect on a global scale.

The AAVSO is taking part in the celebrations by sponsoring several events aimed at creating awareness of the critical role that light plays in astronomy—both good and bad! It is only through the careful measurement of light from the stars and the sun that we have been able to learn anything about the universe of which we are a part. On the other hand, the devastating effects of light pollution have greatly diminished our ability to enjoy and study the night sky in many parts of the world.

Now is your chance to think about the role that light plays in your life as an astronomer and share it with the community. You are encouraged to do this by taking part in one of the following activities:

Involve the youth (K–12 or equivalent age) in your local school, club, or scout group by encouraging them to take part in a contest with the theme, Cosmic light: from the solar system to our favorite stars. We invite submissions in the following three categories:

Observations and related research

Essays (up to 1000 words)

Arts (music, sculpture, drawing/painting, etc.)

All submissions will be posted on our website and the winners will be invited to present their work at an AAVSO meeting.

Submit one photo (you with your telescope, binoculars, finder chart, etc.) along with a short testimonial on what motivates you to observe the night sky.

Write a short story about your favorite astronomical object (Mira, Algol, Sirius, a particular comet, etc.) observed in different cultures throughout time. These stories can be written or in the form of a self-posted YouTube video.

Submit a paper, poster, or report covering a variable star project. These projects may be scientific studies, historical and cultural investigations, or creative work in writing, poetry, and the fine arts. Submissions can be posted on the AAVSO website, presented as posters/talks at the AAVSO meetings, or submitted to *JAAVSO*.

If you have already participated in an IYL activity, please tell us about it.

For more details on each of these activities, submission instructions, contest rules, word limits, etc. please visit our AAVSO IYL page. [<http://www.aavso.org/planned-activities-international-year-light>]. The UNESCO IYL page with its list of worldwide events and activities can be found here: [<http://www.light2015.org/Home.html>]

We look forward to hearing from you! ★



**INTERNATIONAL
YEAR OF LIGHT
2015**

MARCH SOLAR ECLIPSE

JOHN O'NEILL (ONJ), RUSH, IRELAND

I observed the partial solar eclipse of 2015 March 20 from Rush, County Dublin, Ireland. The maximum magnitude was 93%. The morning was very gloomy and at first contact the sky was completely overcast. However, right on the time of maximum a small thinning appeared in the direction of the Sun, and the thin cloud formed a filter showing the crescent Sun. A few minutes later a larger, bluer gap appeared. By 10.15 UT cloud had closed in again. The photo was taken at 09.48 UT with a DSLR camera on a TeleVue 85-mm refractor, 1/500-second exposure at ISO 800, Thousand Oaks 2+ solar filter used.

Note: For eclipse novices, “magnitude” is defined to be the fraction of the Sun’s diameter (not the area) covered by the Moon. ★



DEDICATED ASTRONOMERS GIVEN CANADA'S LARGEST TELESCOPE

DAVID DUNLAP OBSERVATORY, RICHMOND HILL, ONTARIO, CANADA

David Dunlap Observatory donated to Toronto Centre of Royal Astronomical Society of Canada Richmond Hill, Ontario

In what astronomers might describe as “stellar news,” Corsica Development Inc. is donating the David Dunlap Observatory to the facility’s long-time stewards—the Royal Astronomical Society of Canada, Toronto Centre.

The decision was made in 2012 by Corsica to transfer the Administration Building and Dome to an agency that would honour the spirit of the Observatory and ensure its long-term viability. Members of the RASC Toronto Centre have been managing and operating the David Dunlap Observatory for the last six years and are the resident experts.

Corsica, which purchased the 190 acre Observatory property from the University of Toronto in 2008, is also donating nearly 100 acres of the land to the Town of Richmond Hill.

RASC Toronto Centre has been involved in public outreach programs at the Dunlap Observatory since it first opened in 1935. The registered charity took on full responsibility for the Observatory and Administration building in 2009, including maintaining and operating Canada’s largest optical telescope. “We’re honoured by this incredibly generous gift,” says Paul Mortfield, President of RASC Toronto Centre. “Fred DeGasperis was very supportive of our work at the DDO and our commitment as stewards of the Observatory and telescope. We will always be grateful for the confidence he showed in us.”

The historic buildings will continue to be a centre for education and science literacy for the community. For the last six years RASC Toronto Centre member volunteers have managed the facility and provided hundreds of award-winning educational and outreach programs to York Region families and students. Most impressively, they’ve done so without the use of local tax dollars.

Centre members say they’re looking forward to working collaboratively with the town on new programs and projects that will continue to benefit town residents.



The 74-inch reflector at the David Dunlap Observatory—the largest optical telescope in Canada

RASC Toronto Centre will be the recipient of a Richmond Hill Volunteer Achievement Award on April 17th. The award recognizes the Centre’s ongoing work at the David Dunlap Observatory. The Centre is also receiving this year’s RASC national Qilak Award, which recognizes excellence in promoting astronomy outreach.

The Toronto Centre of the Royal Astronomical Society of Canada, founded in 1868, has a mandate to promote science literacy. Its more than 900 members include both amateur and professional astronomers. The David Dunlap Observatory opened in 1935 in Richmond Hill. For more information on this remarkable piece of Canadian history, visit www.theDDO.ca. ★

YOUR 2015 ANNUAL CAMPAIGN

**MIKE SIMONSEN (XN), AAVSO HQ,
MEMBERSHIP DIRECTOR/DEVELOPMENT OFFICER**

You've made the AAVSO what it is today.

The AAVSO International Database contains your observations. The research presented at the annual meetings and published in the *Journal of the AAVSO* is your research.

You are the people who represent the AAVSO and give talks to astronomy clubs and star parties.

It is also your support that has built the AAVSO into the premier amateur/professional astronomical organization in the world.



The story of the AAVSO is the story of you and the thousands of others like you who have built it into what it is today. It is your generosity and support that has allowed the AAVSO to grow. It is your dreams and desires that will help shape the future of the organization.



Realizing those aspirations takes money. This year's Annual Campaign will run from May 1 to June 30. Our goal is to raise \$40,000. This is money donated by you to keep your organization vital and relevant for another hundred years.

At the end of the first full week of the campaign we have raised over \$17,000 in donations and pledges.

You can mail a check to AAVSO headquarters, or you can make a donation online. To make a gift online, just click the **Donate Now** button on our home page. "Annual Campaign" is conveniently pre-selected in the drop-down menu to make sure your gift is credited to the annual campaign fund.

This year we are going to show our gratitude to you, our donors, by offering you rewards for your generosity.

For donations of \$100–299 you will receive a 1 5/8" diameter diffraction grating slide.

For donations of \$300–599 we will send you a tote bag with the AAVSO logo.

And for donations of \$600 or more you will receive a fine AAVSO travel mug.



Checks should be payable to AAVSO, and mailed to:
AAVSO
49 Bay State Rd.
Cambridge, MA 02138 USA

Thank you for your support! ★

from the AAVSO Archives

AAVSO MEETINGS ABOUT 1930–1940

DORRIT HOFFLEIT

compiled by Michael Saladyga, AAVSO Headquarters

We are accustomed to think of Dorrit Hoffleit as an accomplished and celebrated astronomer, but in the following reminiscence—written by Dorrit in 1978 for the AAVSO’s “Long Term Members” celebration—she reminds us that she, too, had started at the bottom as a staff astronomer at HCO. It is fascinating to read here how Dorrit—in 1929, age 22—looked up to AAVSOers Anne Young, Harriet Bigelow, Caroline Furness, Leah Allen, and others, and probably did not dream that she herself would later join their ranks as a mentor to future generations of young astronomers.

Friendliness and enthusiasm are two attributes that have always seemed to characterize AAVSO Meetings. As a young employee at Harvard Observatory I was privileged to attend the meetings as early as 1929, encouraged by Leon Campbell, “The Recorder.” W. T. Olcott always looked dignified but courted the muse of poetry in everything that he did. Friendly David Pickering didn’t look at all like “E. C.” or “W. H.,” but I was nevertheless disappointed to learn he was not related to them. “W. H.” was a striking visitor then living on the island of Jamaica, much interested in Pluto which he, himself just might have discovered! Charlie Elmer put everyone in a jovial mood by his self depreciating accounts of his efforts that failed to yield an observation.

Then, in that pre-women’s lib era, the learned presence not only of Harvard lady astronomers (who were just about taken for granted, thanks to their extensive

recruitment by E. C. Pickering a few decades previously) but numerous erudite women college professors, heads of astronomy departments: Anne Young from Mount Holyoke, Harriet Bigelow from Smith, Caroline Furness from Vassar, authoress of *An Introduction to [the Study of] Variable Stars*, and Leah Allen of Hood College. I looked up to all of them in admiration of their ability and achievements. Often they brought some of their younger associates and better students with them, to introduce them to HCO astronomers. Looking back at the representation of women professors as AAVSO meetings prior to 1940, it strikes me that nowadays there are unexpectedly fewer women in these key astronomy positions in what used to be the women’s colleges. And among those women in the college teaching profession, few now come to our meetings. What must we do to retrieve their interest in our friendly and cooperative organization? Even if they neither want to observe variable stars nor have need to ask for observations, they can take advantage of the stimulus the AAVSO can provide for their young students.

Many astronomical groups are sometimes referred to as gastronomical as well. Nothing brings out the crowd more than the expectation of good food. In the years that Harlow Shapley headed the Harvard College Observatory, where the AAVSO was born and lived through 1955, Mrs. Shapley became famous for the Saturday lunch she sumptuously prepared for the AAVSO. On one such occasion she planned to have jellied chicken consomme. All the day before was devoted to preparations. On Saturday morning the big kettle of consomme was nowhere to be found! The maid had come in, saw the kettle and assumed it was simply slop and threw it out. What to do in the very last minute? The big gathering enjoyed chicken a la king in patty shells, and few of the guests were ever aware that there had been a predicament. ★



Dorrit Hoffleit in 1929, age 22 (number 5 in the group photo)



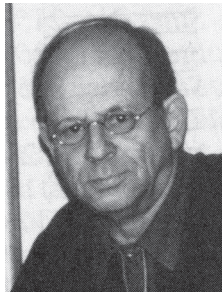
1929 Annual Meeting of the AAVSO held at Harvard College Observatory, Cambridge, Massachusetts, October 19, 1929

KEY TO THE PHOTOGRAPH

1 Franklin F. Marsh	14 Charles T. Whitehorn	27 Mrs. D. B. Prentice	40 Helen Sawyer	53 Vera M. Gushee
2 Leon Campbell	15 Mrs. Robinson	28 Eric M. Lindsay	41 M. Alberta Hawes	54 Miss Maubetsh
3 Margaret Harwood	16 L. V. Robinson	29 Miss Gould	42 Annie Jump Cannon	55 Miss Kohler
4 Willard J. Fisher	17 Augustus L. Wallon	30 Sherman	43 Percival R. Allen	56 Jenka Mohr
5 Dorrit Hoffleit	18 Edward P. Hollis	31 Alice H. Farnsworth	44 William Tyler Olcott	57 Peter M. Millman
6 Miss Murdock	19 David B. Pickering	32 Edward W. Clement	45 Charlotte Guiler	58 Lillian Pickering
7 Eugene H. Jones	20 J. H. Logan	33 Martha Shapley	46 Arthur W. Butler	59 Ida E. Woods
8 Clyde Fisher	21 Anne S. Young	34 Fr. Blatchford	47 Mrs. Leavens	60 Henrietta H. Swope
9 Lewis J. Boss	22 Vincent H. Huck	35 Svein Rosseland	48 Miss Williams	61
10 Rev. John A. Ingham	23 Arville Walker	36 Mrs. E. W. Clement	49 Mrs. L. J. Boss	62 Clara H. Olcott
11 Fr. Sohon	24 Harlow Shapley	37 Hufnagel	50 Miss Hodgdon	63 Mrs. Boss, Sr.
12 Ralph Buckstaff	25 Donald B. Prentice	38 Fr. Bary	51 Margaret Walton Mayall	64 Leah B. Allen
13 Inez Clough	26 Ernest W. Brown	39 Mrs. Plaskett	52 Madeline R. Dwyer	65 Gordon Stoyte

IN MEMORIAM

MEMBERS, OBSERVERS, COLLEAGUES,
AND FRIENDS OF THE AAVSO



Lennart Dahlmark

LENNART DAHLMARK

(DL, Gävle, Sweden) died February 23, 2015, at the age of 94. An AAVSO member 1982–2008, he contributed 2,438 photographic observations of his variables made between June 1967 and March 2000 to the AAVSO International Database.

Lennart discovered over 400 variable stars (the LD variables) in the course of his decades-long meticulous photographic search for new variables (which had begun as nova searching). He had become interested in astronomy as a boy upon reading an article that talked about watching the stars move across the night sky, which he had never noticed because of his light-polluted city skies. He then built his first telescope, and later built several blink and stereocomparators for his variable star research. He was also an active solar observer and researcher, and traveled to many eclipses, where he assisted in professional research. Believing that there was no possibility of a professional career in astronomy in Sweden for him, Lennart taught high school mathematics and physics, continuing his astronomical research long after retirement. His photographic plates and negatives, along with his observing notebooks, have been archived at the Centre for the History of Science at the Royal Academy of Sciences in Stockholm. We extend sincere condolences to Lennart's family, friends, and colleagues.



Walter Haas

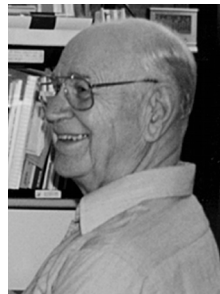
WALTER H. HAAS

(HAA, Las Cruces, New Mexico) died April 7, 2015, at the age of 97. An AAVSO member 1935–1938, Walter contributed 346 variable star observations made between December 1934 and July 1938 to the AAVSO International Database.

His interest in solar system astronomy was sparked when he spent a summer during high school assisting planetary observer William Pickering. Walter founded the Association

of Lunar and Planetary Observers (ALPO) in 1947. He was Executive Director of ALPO from 1947 to 1985, and on the Board of Directors from his retirement until his death. He was a champion for the amateur astronomer in encouraging the study of solar system objects via observations and photography and in advocating for professional-amateur collaborations, particularly in planetary studies. Countless amateur astronomers benefited from his kind and patient support. Throughout his career as a professor of mathematics, he pursued his observations and work with ALPO.

Awards he received for his contributions to astronomy include the Astronomical Society of the Pacific's Amateur Achievement Award, the Astronomical League (AL) Award, the AL's Leslie C. Peltier Award for lunar and planetary astronomy, and the AL's Presidential Award. Minor planet (3853) Haas was named in his honor. We extend sincere sympathy to his family and many friends and colleagues.



Howard Landis

HOWARD J. LANDIS

(LND, Jonesboro, Georgia) died September 26, 2014, at the age of 93. An AAVSO member for 35 years, Howard contributed over 1,500 variable star observations (nearly all photoelectric photometric) made between March 1970 and April 1992 to the AAVSO International

Database. Howard was actively involved as an observer and administrator in the AAVSO Photoelectric Photometry program throughout his time with the AAVSO; he served as Chair of the AAVSO PEP Committee for 26 years (1975–2001). He worked with Art Stokes in the 1970s to improve the PEP observing program; John Percy, Janet Mattei, and he created the modern version of the program in the early 1980s. Howard wrote the original PEP data reduction software and created and maintained the original PEP databases for data, comparison/check stars, and observer parameters. He was a good correspondent and a patient teacher, and was always willing to encourage, guide, and advise new and experienced PEP observers. He was a mentor, too, to numerous professional astronomers regarding the most productive use of observing opportunities and the channeling of research into valuable and rewarding avenues.

In 1996 Howard received an AAVSO Observer Award for his contribution of over 1,000 PEP observations.

In 2001 he was recognized with a special citation from the AAVSO honoring his myriad contributions to variable star astronomy and the Association, and in 2014, he was further recognized with Honorary membership in the AAVSO.

Interested in astronomy since childhood, Howard's interest in PEP came naturally, as his background was in electronics, having spent 30 years in that field with Southern Airways/Northwest Airlines. Howard served in the United States Army during WWII.

Howard and his charming wife Delores (Dee) were regular attendees at AAVSO meetings, where they always brightened the proceedings. Everyone who knew Howard appreciated the unstintingly kind, cheerful, and gentle man that he was, and we extend deepest condolences to Dee and their families and to his many friends.



Donald Parker

DONALD C. PARKER

(Miami, Florida) died February 22, 2015, of lung cancer at the age of 76. Don was not an AAVSO member or observer, but was well known to many AAVSOers for his impressive astronomical photography, especially his many beautiful images of Mars and Jupiter. A

physician and anesthesiologist by training and an amateur astronomer from childhood, his astronomy interests centered on Solar System research and planetary photography, often in support of professional astronomical studies. Don was a former Director of the Association of Lunar and Planetary Observers (ALPO), and had been its Mars Section coordinator since 1977. He was also co-author of *Introduction to Observing and Photographing the Solar System*. Recognition for his work and his contributions include ALPO's Walter H. Haas Observer's Award for excellence in observational Solar System astronomy, the Astronomical League's Leslie C. Peltier Award for CCD astronomy and lunar and planetary astronomy, the Astronomical Society of the Pacific's Amateur Achievement Award for planetary imaging, and the Gold Medal from the Oriental Astronomical Association (Japan) for his work on Mars. Minor planet (5392) Parker was named in his honor. Don was a veteran of the United States Navy. We extend our sincere sympathy to Don's family, friends, and colleagues. *(photo from ALPO website and cited there as courtesy of Bob Maxey)*

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IN MEMORIAM CONTINUED...



Jerzy Speil

JERZY SPEIL

(SJZ, Walbrzych, Poland) died February 19, 2015, after an illness of less than a day at the age of 67. A sponsored member of the AAVSO member since the 1970s, Jerzy contributed 55,371 visual variable star observations made between May 1975 and February 2015 to the

AAVSO International Database. In 1994, 2001, and 2012, he received AAVSO Observer Awards for his cumulative contributions of 10,000, 25,000, and 50,000 visual observations, respectively, to the AAVSO International Database.

Jerzy's career was in geophysics, and he had worked for the Polish Academy of Sciences since 1971, most recently in the Seismological Observatory in Książ, part of the Academy's Institute of Geophysics. In 1978–1980, he participated in the Third Polish Antarctic Expedition, which included wintering over in Antarctica. In 1985–1986, he was a member of the Eighth Polish Polar Expedition and wintered over in Spitsbergen, Greenland.

Jerzy was a member of the Polish Association of Amateur Astronomers and the Czech Astronomical Society. He gave many popular science lectures to student groups and the public, and was very active in natural sciences outreach to children and youth. In addition to astronomy, his interests included seismology, physical geography, climatology, and meteorology, and he was an avid and award-winning athlete. We extend our sincere sympathy to his many friends and colleagues. *Thanks to Tomasz Lewicki (Director, portable planetarium Bajkonur, Poland) for information used here.*



Charles Townes

CHARLES H. TOWNES

(Oakland, California) died January 27, 2015, at the age of 99. Dr. Townes was a member of the AAVSO for 17 years. Not a variable star observer himself, he used observations from the AAVSO International Database in his variable star research carried out with

radio and infrared astronomy and interferometry, and he appreciated the valuable, dependable work of AAVSO observers. In a career of nearly 80 years, Dr. Townes was an experimental physicist who worked on the development of radar during World War II, then the use of microwaves and spectroscopy for analyzing the structure of atoms and molecules and for controlling light. In 1964 he shared the Nobel Prize in Physics for the invention of the maser and the description of the laser, and subsequently pioneered the use of lasers in astronomy. Institutions that benefited from his presence on their staff included Bell Telephone Laboratories, Columbia University, the Institute for Defense Analyses, the Massachusetts Institute of Technology, and, most recently, the University of California, Berkeley, where he had taught physics and done research for nearly 50 years.

Dr. Townes and colleague William Welch were the first to discover three-atom organic molecules near the center of the Milky Way galaxy; they went on to discover the water maser in space. He was also a co-discoverer of the first evidence for a black hole at center of Milky Way, swirling gas clouds that could only be orbiting a massive object. He built UC Berkeley's Infrared Spatial Interferometer, an array consisting of three movable telescopes. One of his particular interests was long-term studies of the dust disks around old stars and the changes in evolved red giants such as Betelgeuse, and he was looking forward to exploring the disks in developing planetary systems.

In addition to teaching and research, Dr. Townes served in numerous government capacities, including as director of research for the Institute of Defense Analyses, as chairman of an ad hoc science advisory committee to NASA's manned space program to secure support for the Apollo moon flights from the larger scientific community and to ensure that they would yield maximum benefits in scientific research, and as chair of a panel reviewing President Reagan's planned deployment of MX missiles. He actively advocated controls on nuclear weapons, including a test ban treaty to regulate underground weapons testing.

Unfailingly curious and optimistic, Dr. Townes was dedicated to science, and was deeply admired and appreciated by his colleagues and students as a truly great teacher and mentor, researcher, and

public servant. Also, he found a balance between science and religion and was a unique voice—among scientists, in particular—seeking commonality between the two. In 2005 he was awarded the Templeton Prize for contributions to “affirming life's spiritual dimension.” “My own view is that, while science and religion may seem different, they have many similarities, and should interact and enlighten each other,” Townes wrote in a statement upon accepting the Templeton Prize. “Science tries to understand what our universe is like and how it works, including us humans,” he wrote. “Religion is aimed at understanding the purpose and meaning of our universe, including our own lives. If the universe has a purpose or meaning, this must be reflected in its structure and functioning, and hence in science.”

Townes was a member of the National Academy of Sciences, National Inventors Hall of Fame, South Carolina Hall of Fame and Engineering and Science Hall of Fame. He received honorary degrees from 25 colleges and universities and numerous honors, including, in addition to the Nobel Prize, the National Medal of Science, National Academy of Sciences' Comstock Prize and the John J. Carty Medal, American Academy of Arts and Sciences' Rumford Premium, Franklin Institute's Stuart Ballentine Medal (twice), the Optical Society of America's C.E.K. Mees Medal, Institute of Electrical and Electronics Engineers' Medal of Honor, American Physical Society's Plyler Prize, NASA's Distinguished Public Service Medal, UNESCO's Niels Bohr International Gold Medal, the Thomas Young Medal and Prize of the Institute of Physics and the Physical Society (England), and the Wilhelm Exner Award for excellence in research and science (Austria). In 1998 he was awarded the American Astronomical Society's (AAS) Henry Norris Russell Lectureship for a lifetime of eminence in astronomical research.

He also was a member of the AAS, the American Physical Society (former President), the American Academy of Arts and Sciences, and the National Academy of Engineering, and a foreign member of the Royal Society and the Russian Academy of Sciences.

We extend our sincere condolences to Dr. Townes' wife, Frances, their family, and his many friends and colleagues.

SCIENCE SUMMARY: AAVSO IN PRINT

ELIZABETH O. WAAGEN (WEO), AAVSO SENIOR TECHNICAL ASSISTANT

AAVSO data are constantly being used by researchers around the world in presentations and publications. Below is a listing of some of the publications that appeared 2014 December 16 through 2015 April 14 on the arXiv.org preprint server and used AAVSO data or resources and/or acknowledged the AAVSO. To access these articles, type the preprint number into the “Search or Article-id” box at <http://www.arXiv.org>.

- I. San Roman, C. Muñoz, D. Geisler et al., “The Gaia-ESO Survey: Detailed Abundances in the Metal-poor Globular Cluster NGC 4372” (arXiv:1504.03497) [Apr 14, 2015]
- S. Covino, M.C. Baglio, L. Foschini et al., “Short Timescale Photometric and Polarimetric Behavior of two BL Lacertae Type Objects” (arXiv:1504.03020) [Apr 12, 2015]
- Scott G. Engle, “The Secret Lives of Cepheids: A Multi-Wavelength Study of the Atmospheres and Real-Time Evolution of Classical Cepheids” (arXiv:1504.02713) [Apr 10, 2015]
- R. J. Hanisch, G. B. Berriman, T. J. W. Lazio et al., “The Virtual Astronomical Observatory: Re-engineering Access to Astronomical Data” (arXiv:1504.02133) [Apr 8, 2015]
- D. Yu. Tsvetkov, I. M. Volkov, N. N. Pavlyuk, “PSN J07285387+3349106 in NGC 2388: extremely rapidly declining luminous supernova” (arXiv:1504.01864) [Apr 8, 2015]
- J. L. Galache, C. L. Beeson, K. K. McLeod and M. Elvis, “The Need for Speed in Near-Earth Asteroid Characterization” (arXiv:1504.00712) [Apr 3, 2015]
- Matthias Steinmetz, for the RAVE collaboration, “RAVE as a Gaia precursor: what to expect from the Gaia RVS?” (arXiv:1504.00404) [Apr 1, 2015]
- Michael M. Shara, David Zurek, Bradley E. Schaefer et al., “HST Images Flash Ionization of Old Ejecta by the 2011 Eruption of Recurrent Nova T Pyxidis” (arXiv:1503.08840) [Mar 30, 2015]
- Jeremy Shears, Boris Gaensicke, Pablo Rodriguez-Gil et al., “Faint-state transitions in the SW Sextantis nova-like variable, HS 0455+8315” (arXiv:1503.07992) [Mar 27, 2015]
- Benjamin T. Montet, Timothy D. Morton, Daniel Foreman-Mackey et al., “Stellar and Planetary Properties of K2 Campaign 1 Candidates and Validation of 18 Systems, Including a Planet Receiving Earth-like Insolation” (arXiv:1503.07866) [Mar 26, 2015]
- Huan Y. A. Meng, Kate Y. L. Su, George H. Rieke et al., “Planetary Collisions outside the Solar System: Time Domain Characterization of Extreme Debris Disks (arXiv:1503.05610) [Mar 18, 2015]
- F. Lykou, D. Klotz, C. Paladini et al., “Dissecting the AGB star L2 Puppis: a torus in the making” (arXiv:1503.05031) [Mar 17, 2015]
- V. Kovtyukh, L. Szabados, F. Chekhonadskikh et al., “Discovery of blue companions to two southern Cepheids: WW Car and FN Vel” (arXiv:1503.04754) [Mar 16, 2015]
- G. Tagliaferri, G. Ghisellini M. Perri, M. Hayashida et al., “NuSTAR and multifrequency study of the two high-redshift blazars S5 0836+710 and PKS 2149-306” (arXiv:1503.04848) [Mar 16, 2015]
- P. P. Petrov, G. F. Gahm, A. A. Djupvik et al., “Another deep dimming of the classical T Tauri star RW Aur A” (arXiv:1503.04158) [Mar 13, 2015]
- Joel D. Hartman, Waqas Bhatti, Gáspár A. Bakos et al., “HAT-P-50b, HAT-P-51b, HAT-P-52b, and HAT-P-53b: Three Transiting Hot Jupiters and a Transiting Hot Saturn From the HATNet Survey” (arXiv:1503.04149) [Mar 13, 2015]
- M. Hillen, B. L. de Vries, J. Menu et al., “The evolved circumbinary disk of AC Her: a radiative transfer, interferometric and mineralogical study” (arXiv:1503.03984) [Mar 13, 2015]
- P. Pietrukowicz, M. Latour, R. Angeloni et al., “A Low-Resolution Spectroscopic Exploration of Puzzling OGLE Variable Stars” (arXiv:1503.03499) [Mar 11, 2015]
- L. Mancini, J. D. Hartman, K. Penev et al., “HATS-13b and HATS-14b: two transiting hot Jupiters from the HATSouth survey” (arXiv:1503.03469) [Mar 11, 2015]
- D. Jack, E. Baron and P. H. Hauschildt, “Identification of the feature that causes the I-band secondary maximum of a type Ia supernova” (arXiv:1503.03088) [Mar 10, 2015]
- Sergey E. Koposov, Vasily Belokurov, Gabriel Torrealba et al., “Beasts of the Southern Wild: Discovery of nine Ultra Faint satellites in the vicinity of the Magellanic Clouds” (arXiv:1503.02079) [Mar 6, 2015]
- Jiri Liska, Marek Skarka, Reinhold Friedrich Auer et al., “Possible candidates for multiple occurrence of variable stars in the VSX catalogue” (arXiv:1503.01614) [Mar 5, 2015]
- D.J. Sand, D. Crnojević, P. Bennet et al., “A Comprehensive Archival Search for Counterparts to Ultra-Compact High Velocity Clouds: Five Local Volume Dwarf Galaxies” (arXiv:1503.00720) [Mar 2, 2015]
- R. Brahm, A. Jordán, J.D. Hartman et al., “HATS-9b and HATS-10b: Two compact hot Jupiters in field 7 of the K2 mission” (arXiv:1503.00062) [Feb 28, 2015]
- David H. Hathaway, “The Solar Cycle” (arXiv:1502.07020) [Feb 25, 2015]
- J. Sitarek, W. Bednarek, R. Lopez-Coto et al., “Very high energy gamma-ray follow-up observations of novae and dwarf novae with the MAGIC telescopes” (arXiv:1502.05853) [Feb 20, 2015]
- Akito Tajitsu, Kozo Sadakane, Hiroyuki Naito et al., “Explosive lithium production in the classical nova V339 Del (Nova Delphini 2013)” (arXiv:1502.05598) [Feb 19, 2015]
- T. Shanks, N. Metcalfe, B. Chehade et al., “The VLT Survey Telescope ATLAS” (arXiv:1502.05432) [Feb 18, 2015]
- G.M. De Silva, K.C. Freeman, J. Bland-Hawthorn et al., “The GALAH Survey: Scientific Motivation” (arXiv:1502.04767) [Feb 17, 2015]

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SCIENCE SUMMARY CONTINUED...

- D. Pulley, G. Faillace, D. Smith, C. Owen, “The eclipsing binary HS0705+6700 and the search for circumbinary objects” (arXiv:1502.04366) [Feb 15, 2015]
- K. Lind, S. E. Kopusov, C. Battistini et al., “The Gaia-ESO Survey: A globular cluster escapee in the Galactic halo” (arXiv:1502.02481) [Feb 13, 2015]
- H. Bouy, E. Bertin, L.M. Sarro et al., “The Seven Sisters DANCe. I. Empirical isochrones, Luminosity and Mass Functions of the Pleiades cluster” (arXiv:1502.03728) [Feb 12, 2015]
- M. Damasso, L. Gioannini, A. Bernagozzi et al., “New Variable Stars Discovered by the APACHE Survey. II. Results After the Second Observing Season” (arXiv:1502.03651) [Feb 12, 2015]
- Maria Charisi, Imre Bartos, Zoltán Haiman et al., “Multiple periods in the variability of the supermassive black hole binary candidate quasar PG1302-102?” (arXiv:1502.03113) [Feb 10, 2015]
- C.T. Britt, T.J. Maccarone, M. L. Pretorius et al., “The Relationship Between X-ray Luminosity and Duty Cycle for Dwarf Novae and their Specific Frequency in the Inner Galaxy” (arXiv:1502.01743) [Feb 5, 2015]
- Berry Holl, Nami Mowlavi, Isabelle Lecoeur-Taïbi et al., “Automated eclipsing binary detection: applying the Gaia CU7 pipeline to Hipparcos” (arXiv:1502.01165) [Feb 4, 2015]
- A. C. Rizzuto, M. J. Ireland, A. L. Kraus, “New Pre-main-Sequence Stars in the Upper Scorpius Subgroup of Sco-Cen” (arXiv:1501.07270) [Jan 28, 2015]
- Hiroki Onozato, Yoshifusa Ita, Kenji Ono et al., “A Study of Mid-Infrared Sources that Dramatically Brightened” (arXiv:1501.05721) [Jan 23, 2015]
- Brian D. Metzger, Thomas Finzell, Indrek Vurm et al., “Gamma-ray novae as probes of relativistic particle acceleration at non-relativistic shocks” (arXiv:1501.05308) [Jan 21, 2015]
- D. Lorenzetti, S. Antonucci, T. Giannini et al., “A long-lasting quiescence phase of the eruptive variable V1118 Ori” (arXiv:1501.05287) [Jan 21, 2015]
- A.D. Schwöpe, F. Mackebrandt, B.D. Thinius et al., “Multi-epoch time-resolved photometry of the eclipsing polar CSS081231:J071126+440405” (arXiv:1501.05217) [Jan 21, 2015]
- Stefan Huemmerich, Sebastian Otero, Patrick Tisserand and Klaus Bernhard, “The Curious Case of ASAS J174600-2321.3: an Eclipsing Symbiotic Nova in Outburst?” (arXiv:1501.05154) [Jan 21, 2015]
- Woojin Park, Soojong Pak, Hyunjin Shim et al., “Photometry Transformation from RGB Bayer Filter System to Johnson-Cousins BVR Filter System” (arXiv:1501.04778) [Jan 20, 2015]
- John G. Holland and Hans Böhringer and Gayoung Chon and Daniele Pierini, “Optical and X-ray profiles in the REXCESS sample of galaxy clusters” (arXiv:1501.04286) [Jan 18, 2015]
- Ian J. M. Crossfield, Erik Petigura, Joshua Schlieder et al., “A nearby M star with three transiting super-Earths discovered by K2” (arXiv:1501.03798) [Jan 15, 2015]
- Boris Safonov, “Visible light polaroastrometry of astronomical objects” (arXiv:1501.03807) [Jan 15, 2015]
- R. Zamanov, G. Latev, S. Boeva et al., “Optical Flickering of the recurrent nova RS Ophiuchi: amplitude - flux relation” (arXiv:1501.02628) [Jan 12, 2015]
- Andrew W. Mann, Gregory A. Feiden, Eric Gaidos et al., “How to Constrain Your M Dwarf: measuring effective temperature, bolometric luminosity, mass, and radius” (arXiv:1501.01635) [Jan 7, 2015]
- M. Damasso, K. Biazzo, A.S. Bonomo et al., “The GAPS Programme with HARPS-N@TNG V. A comprehensive analysis of the XO-2 stellar and planetary systems” (arXiv:1501.01424) [Jan 7, 2015]
- F. Gran, D. Minniti, R. K. Saito et al., “Bulge RR Lyrae stars in the VVV tile b201” (arXiv:1501.00947) [Jan 5, 2015]
- R.-D. Scholz, U. Heber, C. Heuser et al., “An ancient F-type subdwarf from the halo crossing the Galactic plane” (arXiv:1501.00929) [Jan 5, 2015]
- T. Danilovich, G. Olofsson, J. H. Black et al., “Classifying the secondary component of the binary star W Aquilae” (arXiv:1501.00863) [Jan 5, 2015]
- Colin Littlefield, Peter Garnavich, Katrina Magno et al., “High-Amplitude, Rapid Photometric Variation of the New Polar MASTER OT J132104.04+560957.8” (arXiv:1412.08328) [Dec 29, 2014]
- Se-Hyung Cho, Jaeheon Kim, and Youngjoo Yun, “First detection of 22 GHz H₂O masers in TX Camelopardalis” (arXiv:1412.08251) [Dec 29, 2014]
- S. Antipin, A. Belinski, A. Cherepashchuk et al., “Resolved photometry of the binary components of RW Aur” (arXiv:1412.07661) [Dec 24, 2014]
- N. Kameswara Rao, and David L. Lambert, “Mid-Infrared Variations of R Coronae Borealis Stars” (arXiv:1412.07623) [Dec 24, 2014]
- Ashish Raj, D. P. K. Banerjee, N. M. Ashok et al., “Near-infrared studies of nova V5584 Sgr in the pre-maximum and early decline phase” (arXiv:1412.07600) [Dec 24, 2014]
- Greg J. Schwarz, Steven N. Shore, Kim L. Page et al., “Pan-chromatic observations of the remarkable nova LMC 2012” (arXiv:1412.06492) [Dec 19, 2014]
- D. Nardiello, L. R. Bedin, V. Nascimbeni et al., “Variable stars in two open clusters within the Kepler 2-Campaign-0 field: M 35 and NGC 2158” (arXiv:1412.05688) [Dec 18, 2014]
- David Boyd, “Photometric and spectroscopic observations of the 2014 eclipse of the complex binary EE Cephei” (arXiv:1412.05127) [Dec 16, 2014]
- S. V. Jeffers, M. Min, L. B. F. M. Waters et al., “Surprising detection of an equatorial dust lane on the AGB star IRC+10216” (arXiv:1412.05063) [Dec 16, 2014]

We thank the above researchers for including the AAVSO and its resources in their work, and for acknowledging the AAVSO in their publication. We urge all those writing for publication to include the word “AAVSO” in their list of keywords. ★

Ed. note: following is the Spanish language text of Arne's Director's message.

MENSAJE DEL DIRECTOR STELLA KAFKA

“La misión de la AAVSO es hacer posible que cualquier persona, esté donde esté, participe en el descubrimiento científico a través de la astronomía de estrellas variables.” Mientras comenzamos nuestro viaje juntos, di un pequeño paso atrás para examinar lo que la AAVSO representa: colaboración entre astrónomos profesionales y aficionados, compartir conocimiento, igualdad de oportunidades para todos, una Asociación que une a la gente a través de la astronomía. En principio, la AAVSO es una comunidad de astro-entusiastas que se esfuerza por estudiar y entender algunos de los fenómenos más dinámicos, impredecibles y entretenidos del cielo nocturno.

Los datos de la AAVSO están en todas partes: en papers científicos, en comunicados de prensa, en respuestas a alertas observacionales y en proyectos de ciencia ciudadana. Las herramientas de procesamiento que acompañan la base de datos permiten que cualquiera se “ensucie” las manos con análisis

e interpretación de curvas de luz y que publique sus resultados en *JAASO*. Cursos y seminarios proveen el conocimiento de fondo necesario para todos, especialmente para los observadores nuevos. Encuentros y foros online son otra gran oportunidad de aprender, como así también de encontrarse con otros y compartir ideas con observadores experimentados. La AAVSO está más allá de las fronteras, es una colaboración internacional multicultural, tal como lo es la ciencia. Muchos astrónomos profesionales dieron sus primeros pasos en la AAVSO. Y, gracias a la AAVSO, muchos astrónomos no profesionales forman parte de proyectos de elevado perfil.

Comencé mi mandato como nueva Directora de la AAVSO en febrero, tras haberme mudado a la hermosa (¡y fría!) Boston un par de semanas antes. Tras recibir una cálida bienvenida por parte de Arne y el staff de HQ, ya estamos todos concentrados en continuar el trabajo de la AAVSO. En el futuro haremos foco en hacer más fuerte nuestra comunidad y seguir atendiendo sus necesidades, mientras nos ocupamos de nuestros valores centrales y mejoramos nuestros servicios. Esta tarea es todo un desafío, ya que vivimos en una época de cambios rápidos en la cual la tecnología, los medios de comunicación y el intercambio de información están evolucionando

rápidamente. Comenzamos este año participando en el Año Internacional de la Luz—IYL 2015. Esta es una iniciativa de elevado perfil de las Naciones Unidas con el objetivo de “crear conciencia de cómo las tecnologías ópticas promueven el desarrollo sustentable y soluciones a desafíos mundiales en áreas como la energía, la educación, comunicaciones, salud y sustentabilidad” (<http://www.light2015.org/>). También es una ocasión muy apropiada para que celebremos las múltiples facetas de la AAVSO. Honramos más de un siglo de duro trabajo de miles de miembros y observadores, cientos de miles de estrellas observadas, millones de puntos en nuestra base de datos, miles de millones de fotones recolectados. Celebramos las colaboraciones científicas, los descubrimientos geniales, nuestros objetos favoritos que nunca dejan de sorprendernos y nuestro trabajo colectivo en pos de entenderlos, utilizando la luz como nuestra única herramienta. Atesoramos y reconocemos nuestro pasado, abrazamos nuestro presente y esperamos con expectativa un excitante futuro. Por favor, suscribanse a nuestro e-mail mensual AAVSO Communications, cuyo objetivo es acercarles rápidas actualizaciones sobre proyectos y eventos del momento. Y por favor, únense a mí en nuestras actividades de este año y en nuestro viaje en los años venideros. ★

Ed. note: following is the Spanish language text of Jenó's President's message.

MENSAJE DEL PRESIDENTE JENO SOKOLOSKI

En 2006, cuando la nova recurrente RS Oph entró en erupción, vi como una fugaz explosión estelar convertía una colección dispersa de astrónomos individualistas, a veces competitivos, con horarios completos y una amplia gama de intereses, en una proverbial máquina bien engrasada. Compartimos ideas, distribuimos tareas y nos comunicamos rápidamente para asegurarnos que no perderíamos los secretos que RS Oph tenía para contar. Pero, ¿cómo puede un grupo de amigos y colegas trabajar juntos de manera efectiva sin el impulso de la rara y emocionante erupción de una nova recurrente, en pos de un objetivo a largo plazo, tal como el buen gobierno de la AAVSO? En mi primera columna para esta Newsletter, en enero de 2014, presenté las 10 responsabilidades básicas de un consejo de gobierno, que repito a continuación. En el resto de esta columna, describo cómo el Consejo intenta llevar a cabo estas responsabilidades.

1. Determinar la misión y propósito.
2. Seleccionar al jefe ejecutivo.

3. Apoyar y evaluar al jefe ejecutivo.
4. Asegurar una planificación eficaz.
5. Supervisar y reforzar los programas y servicios.
6. Asegurar los recursos financieros adecuados.
7. Proteger los activos y proporcionar una supervisión financiera adecuada.
8. Construir un consejo competente.
9. Asegurar la integridad legal y ética.
10. Mejorar la imagen pública de la organización.

Muchos de ustedes, los que asisten a las reuniones de miembros son, probablemente, conscientes de que el Consejo se reúne, cara a cara, dos veces al año, normalmente, antes de cada reunión general. Gran parte del trabajo del Consejo, sin embargo, se logra fuera de estas reuniones cara a cara. En 2012, para conducir a AAVSO más en línea con las mejores prácticas aceptadas para las organizaciones sin fines de lucro, formamos varias comisiones permanentes: un Comité de Gobierno, un Comité de Programas, un Comité de Presupuesto y un Comité de Inversiones. Las listas siguientes muestran la composición actual de las comisiones permanentes, y los nombres de sus conductores están señalados con un asterisco. El Director y el Presidente son miembros ex-officio de todos los comités.

Gobierno

*Roger Kolman (ex officio [Vicepresidente 2°])
Kristine Larsen
Barbara Harris
Doug Welch

Presupuesto

*Bill Goff
Richard Sabo
Rodney Howe

Programas

*John Martin
Roger Kolman
Dave Turner
Katrien Kolenberg
Arlo Landolt (asuntos relacionados con *JAASO*)

Inversiones/Finanzas

*Gary Walker
Bill Goff
Doug Welch
Joe Patterson

Pero, ¿qué es lo que hacen, realmente, estos comités?

CONTINUED ON NEXT PAGE

MENSAJE DEL PRESIDENTE CONTINUED...

El Comité de Gobierno es responsable de trabajar con el director y el resto del Consejo para establecer objetivos concretos tanto para el Director como para el Consejo. También, debe evaluar, periódicamente, al Director y al propio Consejo. En este tiempo relativamente corto, desde que se establecieron estos comités permanentes, el Comité de Gobierno ha llevado a cabo una autoevaluación del Consejo y de los objetivos negociados y un proceso de evaluación para el nuevo Director. La Comisión de Gobierno también está revisando los Estatutos Sociales y el Manual de Políticas y Procedimientos. Además, supervisa actividades tales como garantizar que existan instrucciones claras para guiar al presidente de la Comisión de Nombramientos en la selección de los mejores candidatos posibles para el Consejo. Dada su competencia, el Comité de Gobierno ayuda al Consejo en sus responsabilidades de evaluar al jefe ejecutivo (# 3), en la planificación eficaz (# 4) y en lograr un Consejo competente (# 8).

El objetivo principal del Comité de Programas es evaluar periódicamente los programas existentes. En 2013, este Comité elaboró un informe completo sobre los programas de AAVSO (basado, en gran parte, en las encuestas dirigidas por el ex-consejero Kevin Paxson), que se puede encontrar en nuestro sitio web en (<http://www.aavso.org/program-committee-report-membership-february-2015>). Este informe proporcionó alimento para muchas conversaciones notables y valiosas en la búsqueda de un nuevo director, durante este último año. En el futuro, Stella utilizará este informe para que la ayude a tomar decisiones sobre el fortalecimiento de los programas y servicios (responsabilidad # 5).

En la Newsletter de octubre de 2014, Gary Walker, Bill Goff y quien suscribe, dimos una breve descripción del proceso de presupuestación y cómo el Consejo invierte los fondos. Estas actividades las lleva a cabo los Comités de Presupuesto y Inversiones/ Finanzas, respectivamente. Estos comités, obviamente, contribuyen para las responsabilidades # 6 y # 7, sobre los recursos financieros y su supervisión.

Los comités ad hoc también nos permiten realizar tareas finitas. El único comité ad hoc activo es el Comité de Transición, cuya responsabilidad es apoyar al nuevo Director (responsabilidades # 2 y # 3; véase también la Newsletter de abril de 2014). Este comité fue presidido, inicialmente, por Kristine Larsen y ahora es dirigido por Rebecca Turner. El Comité de Búsqueda de Director (presidido por Kevin Marvel) proporcionó al Consejo una lista de candidatos para la Dirección. En 2012, el Comité de Declaración de la Misión (presidido por Bob Stine) volvió a examinar la misión de AAVSO, tal como recomiendan los expertos en gobernabilidad de entidades sin fines de lucro que debe realizarse cada 5 años, aproximadamente. Por último, cada año se convoca a un comité de nominaciones para construir una lista de candidatos para el Consejo (responsabilidad #8). El Presidente nombra a los presidentes de los comités (con el aporte del resto del Consejo) y también, a menudo, ayuda a los responsables en la selección de los miembros del comité. Aunque las comisiones permanentes están, por lo general (pero no siempre), compuestas, en su totalidad, por miembros del Consejo, los comités ad hoc, normalmente, contienen una mezcla de consejeros y de otros miembros de AAVSO. Los estatutos especifican que los 3 integrantes del Comité de Nominaciones deben ser miembros que no estén en el Consejo.

Sin embargo, si los comités son las partes de nuestra máquina, entonces, la comunicación es el aceite. Para facilitar la interacción entre los concejales, sostenemos reuniones previstas y disfrutamos de una discusión no programada en una lista especial de correo electrónico del Consejo. Hace tres años, hemos decidido añadir una teleconferencia ordinaria del Consejo de medio día entre las reuniones anuales cara a cara. Además, normalmente, los comités conversan entre sí cuando es necesario, a través de correo electrónico y/o teleconferencia, y los responsables informan al plenario del Consejo, en cada reunión. La sede también mantiene una lista de correo electrónico del Consejo, a través

de la cual podemos discutir problemas que puedan surgir, realizamos el seguimiento de los temas que surgieron durante las reuniones e intercambiamos actualizaciones sobre las tareas. Por último, me parece útil contactarme con los responsables de los comités (y con Stella) por teléfono, una vez al mes. Si todos nos mantenemos en contacto a pesar de nuestra separación geográfica y de nuestras vidas ocupadas, podemos mantener la continuidad y trabajar eficientemente.

Al mantener un contacto estrecho con nuestros comités y asegurarnos que las líneas de comunicación estén abiertas, mi objetivo ha sido ayudar a que el Consejo desempeñe sus obligaciones, y a disfrutar haciéndolo. No debemos necesitar una explosión estelar para que nos empuje a la acción cuando se trata de gobernar la AAVSO. ★

A NOTE ON THE TRANSLATIONS

We are grateful to Sebastian Otero and Jaime García for providing, respectively, the Spanish language versions of the Director's and President's messages. We hope that readers of the *Newsletter* will enjoy this feature.

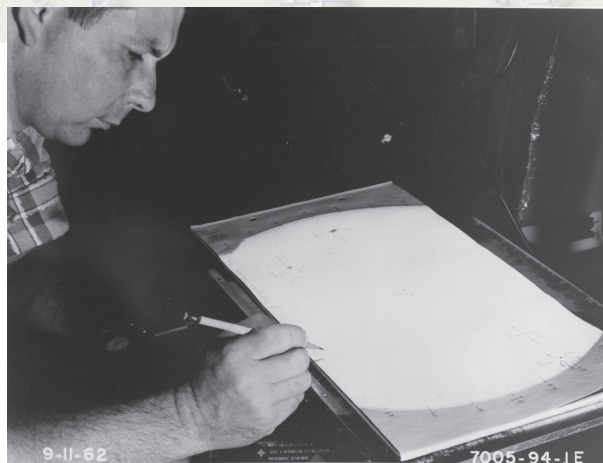
THOMAS CRAGG AND THE AAVSO AMERICAN RELATIVE SUNSPOT NUMBER INDEX 1947-2010

RODNEY HOWE (HRHA), AAVSO SOLAR SECTION CHAIR

Thomas A. Cragg joined the AAVSO in 1945 at age 17, when he was working as an assistant at the Mt. Wilson Observatory in California. He made an impressive total of over 157,000 variable star observations (AAVSO Observer Initials CR), but he was equally dedicated to his daily solar observing (AAVSO Solar Initials CR), which spanned the years 1947 through 2010. Each sunspot count recorded in his observing journal included a drawing of the group and spot configurations.

Cragg lived in Los Angeles until he was about 48, when he moved to Australia and worked at the Siding-Spring Observatory, as well as continuing his observing. After his death in 2011, his wife Mary sent all of his solar (and variable star) records to AAVSO Headquarters for the AAVSO archives. Mike Saladyga and Sara Beck have entered these data into the SunEntry solar database at Headquarters.

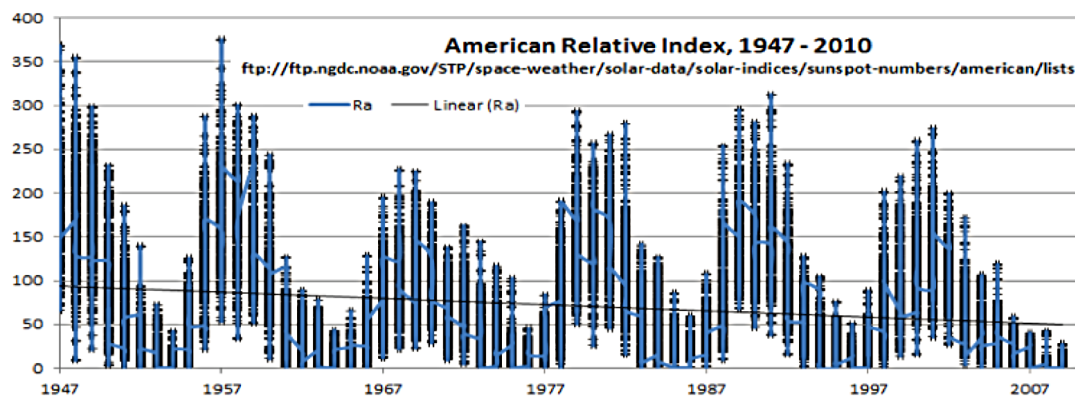
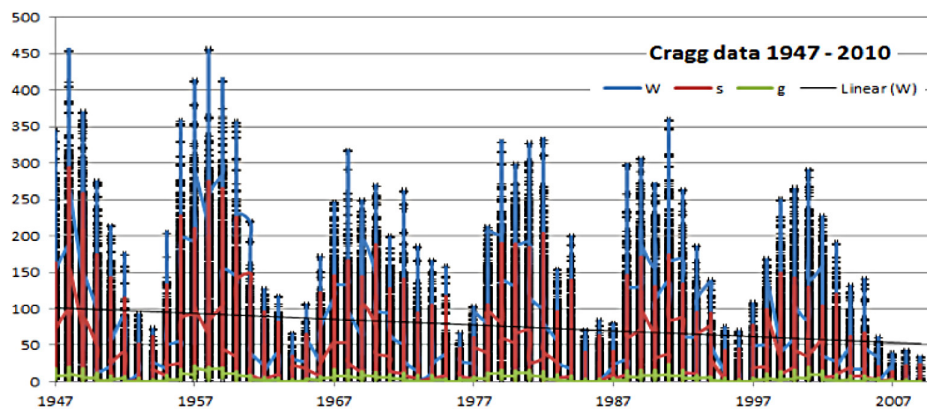
In 1947 the AAVSO began collecting sunspot data from 23 observers, including Cragg, all of whom contributed to the American Relative Sunspot Number Index (R_a) generated using the data submitted to the AAVSO. This was the start of the AAVSO's Solar Division (now Solar Section). At that time (and until recently), the paper report forms containing observers' raw data were not saved once the R_a number had been generated. Without the paper forms, and with no way to save the data electronically for many years, the AAVSO historical solar raw data were lost.



AAVSO member/observer Tom Cragg at work in the Mt. Wilson Solar Observatory, September 1962

Recovery of original sunspot data is possible, however, when observers' solar observing journals are made available for digitization. Longtime solar observer Herbert Luft's nearly 70 years' of sunspot data were recovered from his journals at the AAVSO by visiting researcher Leif Svalgaard (see story at <http://www.aavso.org/herb-lufts-notebooks-new-science-aavso-archives>). Now, we have the Thomas Cragg drawings digitized in the SunEntry database as a continuous record of group, sunspot counts, and Wolf numbers.

The first graph shows Cragg's sunspot and group counts and Wolf numbers. The second graph shows the American R_a for the same years. In both graphs, notice that the trend lines show a negative slope which appears to match closely. Both graphs also have error bars on the Wolf number and R_a index values, respectively, with the R_a index error bars being smaller and less variable as a result of multiple observers' data being combined. ★



REDUCING SYSTEMATIC ERRORS IN PEP OBSERVATIONS: PART 1. TRANSFORMATIONS

JIM KAY (KJMB), SHELBURNE, VERMONT

Single channel PEP observations have a niche in the highly accurate measurement of bright stars that is not filled by either visual or CCD observations. However, the systematic errors in our PEP observations are significantly higher than the capability of the technology. Minimization of these errors will increase our contributions in campaigns requiring high accuracy (e.g. low amplitude variables). These systematic errors can be reduced by the refinement of our techniques with a modest investment of time and attention. I propose a series of articles and campaigns to reduce our systematic errors, along with identification of science campaigns that leverage the PEP observer niche. To get the ball rolling, I would like to discuss issues with our standard method of determining transformation coefficients using blue/red star pairs, and to encourage participation in the **PEP Observers Transformations campaign** proposed by Tom Calderwood (<http://www.aavso.org/pep-observers-transformations>), and the **PEP campaign on alpha Comae Berenices** that I proposed to baseline our non-transformation related systematic errors (<http://www.aavso.org/pep-campaign-alpha-coma-berenices>).

PEP observers typically transform their V instrumental magnitudes to the UB_V photometric system of Johnson and Morgan using the linear transformation below:

$$V_X = V_C + \Delta v + \epsilon \Delta(B-V)$$

where

V_X = Magnitude of variable in the standard system

V_C = Magnitude of comparison star in the standard system

Δv = Difference between comparison star and variable in the instrumental system

ϵ = Transformation Coefficient

$\Delta(B-V)$ = Difference in color index between the variable and comparison star in the standard system

This linear transformation has enabled observations from multiple sources to be combined into standard light curves. The accuracy of the transformation depends upon multiple factors, including the internal consistency of the underlying UB_V standards as well as the accuracy to which we determine epsilon. This discussion will be limited to the variability in estimating the value of epsilon using measurements on blue/red pairs. I would like to challenge the PEP community to reduce systematic errors due to the determination of epsilon to 0.003 magnitude. Since the difference in color index is typically around 0.5 to 1 for comparison/variable stars in the PEP program, and a typical value of epsilon would be -0.04, we see that the transformation correction is of the order of -0.03 mag. So if we want to reach the 0.003 mag goal we must determine epsilon to an accuracy of 10% or better.

Epsilon could be determined through observation of a number of standard stars, but this requires photometric nights, and accurate correction for extinctions over a large area of the sky. The blue/red pair method originally proposed by Dr. D.S. Hall uses measurements of two closely spaced stars with a significant difference in their color index (i.e., large difference in B-V) to determine epsilon. This method reduces extinction and atmospheric issues, but is very sensitive to the accuracy to which we know the standard magnitudes of these stars. See the AAVSO web page at <http://www.aavso.org/obtaining-your-pep-epsilon-coefficient> for details.

The sensitivity of this method to the accuracy of the catalog magnitudes and color indices of the pairs is demonstrated in the table below, which shows the results for my system using several of the suggested star pairs. The “Constellation” column identifies the constellation in which the pair appears. See the web page referenced earlier for identification of the specific stars. “Catalog Error %” contains the sensitivity of the calculation with respect to the catalog values of the star magnitudes and color indices. It is the worst case percentage by which epsilon would vary if each of the two stars were allowed to vary by up to 0.005 mag in either or both of their V and B catalog magnitudes.

Date	Constellation	Epsilon Catalog Error %
05-05-2013	Her	-0.0394 17
05-05-2013	Her	-0.0384 18
08-25-2014	Her	-0.0380 18
09-04-2014	Peg	-0.0466 47
09-25-2014	Oph	-0.0298 26
01-14-2015	Per	-0.0261 27
01-21-2015	LMi	-0.0423 22
01-26-2015	Ori	-0.0465 16
01-29-2015	Ori	-0.0402 19
01-29-2015	LMi	-0.0442 21
02-11-2015	Per	-0.0273 25
02-11-2015	LMi	-0.0422 22
03-13-2015	LMi	-0.0428 21

Review of the data indicates that the value of epsilon varies by more than 25% depending upon which pair is used, although the consistency of the results using the same pair is generally good. Further analysis of the data shows that the desired goal of determining epsilon to an accuracy of better than 10% would require knowing the catalog magnitudes and colors of pairs to 1 or 2 millimag. Most of these stars are not measured to that accuracy. However, it appears that historically the PEP community has high confidence in the Leo Minor pair. In discussing this issue with Tom Calderwood he shared the following information:

“1980s correspondence I received from observer Russ Milton indicates that LMi was considered highly reliable. To quote Howard Landis, long-time section head: ‘I have always accepted the 27–28 Leo Minor pair without question because the people at Dyer Obs. beat down the errors and give the magnitude to 0.001. Any time I used another pair, then immediately tried another, there was a greater difference [in eV] than the standard error of the observations would indicate.’”

The night-to-night consistency of epsilon measures using the Leo Minor pair is also very good. Based upon this consistency and the accurate catalog values, Tom Calderwood has proposed a campaign for PEP observers to use this pair to re-determine their epsilon. I encourage PEP observers to measure their epsilon on several different nights and share this information with the community. Standardizing on this pair for transformations will allow us to reduce the systematic errors between observers. For those in the southern hemisphere I suggest the Orion pair, as my observations indicate it agrees closely with Leo Minor.

Stay tuned for additional discussion on other systematic errors, and hopefully a more extensive discussion of epsilon once more observers provide data. Once we demonstrate consistency we can identify science campaigns that play to the unique strengths of highly accurate single channel PEP. ★

AA TAU

HANS MORITZ GUENTHER (KAVLI INSTITUTE FOR ASTROPHYSICS AND SPACE RESEARCH, MASSACHUSETTS INSTITUTE OF TECHNOLOGY)

Note: An AAVSO observing campaign was held in 2013–2014 at the request of Dr. Guenther and colleagues (please see AAVSO Alert Notice 488 (<http://www.aavso.org/aavso-alert-notice-488>) for details). He offered to write a report regarding their findings so that the AAVSO observers may see how valuable their observations are.

AA Tau is a classical T Tauri star that is surrounded by an accretion disk. We see this disk nearly edge-on, such that the starlight passes through the upper atmosphere of the disk. AA Tau has long been a favorite target of variable star observers, because for many years it showed a period around 8 days, where the inner edge of the disk, which has an orbital period of eight days, partially eclipsed the star at one point in the orbit. In classical T Tauri stars the magnetic field of the star connects to the disk. These magnetic field lines can carry mass from the disk that falls onto the star. It is accelerated to around 400 km/s and when it hits the star it forms a strong shock wave that produces a hot spot. So, the periodic signal is a combination of a hot spot on the star and an absorption from the disk when the “warp” passes in front of the star.

One important parameter to understand how star and disk interact is the composition of this infalling material. Is it mostly gas (and leaves the dust in the disk so that it can clump to form earth-like planets) or how much dust is in there?

We can answer this question if we look at X-rays (which are absorbed by the gas) and optical or infrared light (which is absorbed by the dust) at the same time. The result is that this inner material has an unusually high gas-to-dust ratio. This can be interpreted in two ways: (1) AA Tau evaporates most of the dust particles when they come this close to the star, or (2) the inner disk does not have much dust, because it is already clumped up into rocks and boulders that will later form an earth-like planet.

So far, so good! But AA Tau has more surprises: In 2012 it got suddenly dimmer by about 2 magnitudes.

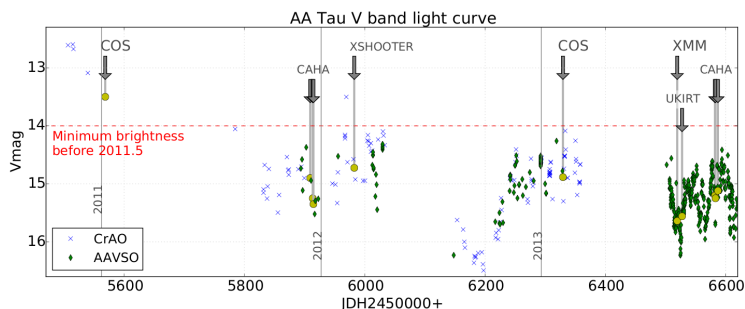


Figure 1. Light curve of AAVSO and Crimean Observatory (CrAO) data. We also mark the times when additional observations were taken with NASA’s Hubble Space Telescope Cosmic Origin Spectrograph (COS), Calar Alto Observatory in Spain (CaHa), ESO’s VLT/X-Shooter, ESA’s XMM-Newton satellite, and the UK Infrared Telescope (UKIRT).

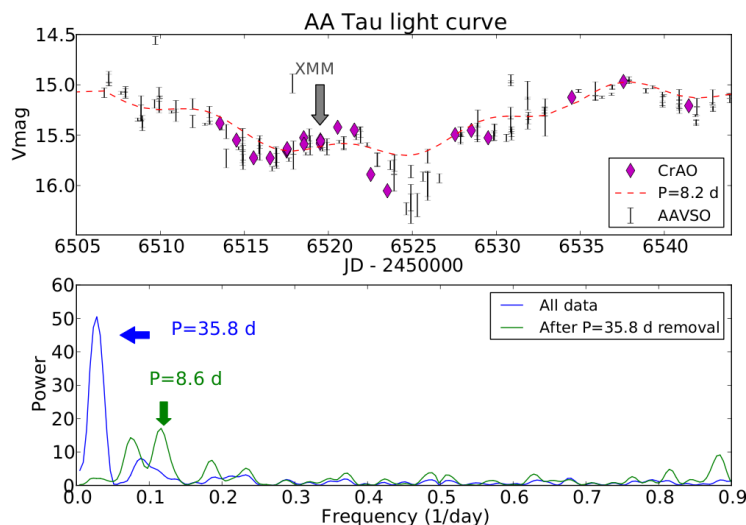


Figure 2. upper: Light curve of AAVSO and Crimean Observatory (CrAO) data. An arrow marks the time of the XMM-Newton X-ray observation. lower: Periodogram with two periods at ~ 36 and ~ 8.6 days.

What causes this dimming? Again, we turn to the accretion disk of AA Tau, but since this dimming now lasts much longer (> 2 years), the warp that moved into our line-of-sight must have a much larger orbital period and thus a much larger distance to the star; 25 AU is a good guess based on the data we currently have.

In September 2013 we thus started a new campaign to measure the composition of the outer disk and we are very thankful for the dense series of photometry that the AAVSO has given us.

With these new data in Figure 2 we immediately can make two important observations:

1) The period of around eight days that was observed before 2012 is still there. It’s just harder to see, because AA Tau is now fainter. This confirms that the new absorption is unrelated to the inner disk - the inner disk keeps accreting and looks essentially as it did in 2012 and before.

2) The eight-day period does not repeat exactly. In some cycles the minima are a little shallower, in others they are a little higher. If this behavior is periodic, it would be 36 days long, but it’s a little hard to tell if this pattern repeats. We don’t really know what causes this pattern, but again, the longer time scale indicates that it happens at a larger distance from the star.

Based on the AAVSO data, we know now that AA Tau was not behaving in any special way during the X-ray observations with the XMM-Newton satellite. Thus, we can now continue the experiment and compare the X-ray absorption with the optical and IR absorption. In contrast to the inner disk, we find that the outer disk has a gas-to-dust ratio similar to the interstellar medium (ISM); not much has been going on with this material since it concentrated from the larger Taurus molecular cloud into the disk of AA Tau. ★

NORTHERN HEMISPHERE PEP TUNE-UP

TOM CALDERWOOD (CTOA), BEND, OREGON

In the spirit of the CCD “quality” campaigns for XZ Cet and EE Cep, it is time to organize a project to improve the quality of PEP data. Neither of the above stars was well-suited to PEP with modest apertures, so we had hoped to piggyback this work on the now-defunct alpha Com eclipse program. Undaunted, we propose to continue with alpha Com as a first target.

The fact that the star is not expected to change is actually an advantage during the spring. We will all be dodging weather systems for a few months, and it will be hard to coordinate and closely compare measurements of a varying target. In addition, the comparison star magnitudes for alpha Com have been well-validated, with closely matched color indexes. This should allow us to identify major systematic problems, without simultaneously debugging transformation errors or uncertainties in the comps.

PHOTOELECTRIC PHOTOMETRY PROGRAM UPDATE

**ELIZABETH O. WAAGEN, SENIOR TECHNICAL ASSISTANT
(SCIENCE OPERATIONS)**

The first quarter of 2015 (ending March 31) was another productive one for AAVSO PEP observers, with seven observers making 617 observations of 41 different stars.

Gerald Persha (PGD) continued to be very active with his ongoing intensive monitoring program of B- and V-band time-series observations on two short period variables (SZ Lyn and V376 Per), many B and V observations of the campaign target b Per, B and R observations of the IR campaign target W Ori, and BVRc photometry of 15 other stars as well; he submitted a total of 497 observations. PEP section chair Jim Fox (FXJ) contributed 46 observations of 20 different stars, including B- and V-band monitoring of b Per. Carl Knight (KCD) is using one of the AAVSO’s SSP-4 IR photometers at his observatory in New Zealand, and submitted a total of 34 J- and H-band observations of alpha Ori (Betelgeuse and Mintaka). James Kay (KJMB) submitted a total of 26 H- and J-band observations of R Leo and the IR campaign target W Ori. Frank Melillo (MFR) submitted a total of 6 V-band observations of campaign stars alpha Com (campaign cancelled; see *AAVSO Special Notice #395*) and b Per. Charles Calia (CCB) contributed 4 V-band observations of RS Cnc. AAVSO Councilor John Martin (UIS01) contributed a total of 2 B- and V-band observations of alpha Ori.

The sixteen most-observed stars this quarter were: b Per (100), SZ Lyn (86), V376 Per (70), epsilon Aur (32), alpha Ori (32), W Ori (28), RS CVn (26), Y CVn (24), RV Mon (24), SX Mon (24), RT Cnc (18), FX Cnc (18), CK Ori (18), RT Cnc (18), X Cnc (14), R Leo (14), and T Cnc (12). Other notable stars include HD 23514 (8), RS Cnc (6), delta Ori (6), Z Psc (6), RT Vir (6), BK Vir (6), RZ Ari (5), V442 And (4), and rho Per (4).

The observing campaign that began in January to monitor the predicted eclipse in the triple-star system b Per has concluded. In March a new campaign began

Observers who prefer not to transform could also participate. V band data can be reduced via WebPEP on the AAVSO site, but B band observations are also encouraged (alf Com is not bright enough in the infra-red to cause a significant leak in the old Optec B filters).

This is an opportunity not only to evaluate the quality of your raw data, but also the reliability of homebrewed reduction software. As better weather rolls around, the plan is to switch to more challenging targets. More details and discussion will be available on the mailing list: peptalk at cantordust dot net (join at <http://lists.cantordust.net/listinfo.cgi/peptalk-cantordust.net>)

I believe that the active southern hemisphere PEP observers are working in J and H at the moment. Suggestions for a quality campaign in those bands are welcome. ★

to study dust production in developing planetary systems. At $V=6.95$, one of its targets, HD 15407A, is suitable for PEP observing. Please see *AAVSO Alert Notice 511* for details on the campaign and observing instructions. In the last newsletter, AAVSO Science Director Matthew Templeton wrote an excellent article launching a new campaign he and John Martin are carrying out on the longest-period variable stars. While most of the targets are too faint in V and B for PEP, they are IR-bright and are very well suited to observation with the SSP-4 IR photometer (and with CCDs in the V and Ic bands). The first set of targets includes IK Tau, R Lep, TX Cam, W Ori, and CW Leo; see *AAVSO Newsletter 63* for campaign details and comparison and check star information. Finally, the campaigns on CH Cyg, eps Aur, and P Cyg continue.

Thanks go to everyone for your contributions, with special thanks to those who contributed to observing campaigns this quarter. We encourage observations of these campaign stars and all others in the AAVSO PEP Program.

As noted by Matthew Templeton in the last newsletter, errors in the values of $\Delta(B-V)$ [var-comp] were corrected for W Boo and lambda And. Observers using PEPObs on the AAVSO website do not need to adjust any data submitted, but observers who reduce their own data may need to recalculate their transformed magnitudes. Also, please make sure you are using the current comparison stars for these objects: SAO 83427 for W Boo and SAO 53355 for lambda And. Contact Matthew by email (matthewt@aaavso.org) with any questions.

Opportunities for online discussion about PEP continue with the AAVSO’s online photometry forum:

<http://www.aaavso.org/forums/variable-star-observing/photometry>

and Tom Calderwood’s community mailing list (to which the AAVSO subscribes and is participating in) hosted on his personal server:

<http://lists.cantordust.net/listinfo.cgi/peptalk-cantordust.net>

Clear skies, and Good observing! ★

LOOKING AT LEGACY STARS

STARS OBSERVED RECENTLY AND RECOMMENDATIONS FOR THE NEXT FEW MONTHS

ELIZABETH O. WAAGEN (WEO), AAVSO SENIOR TECHNICAL ASSISTANT (SCIENCE OPERATIONS)

SARA J. BECK (BSJ), AAVSO TECHNICAL ASSISTANT

This column, introduced in *AAVSO Newsletter 54* (October 2012), is a quarterly summary of popular and important targets of the previous quarter as observed by the AAVSO community. This will help keep observers up to date on the observations being submitted to the AAVSO archives, and more importantly on what stars may need improved coverage by the community.

We encourage observers to keep a smaller subset of variables at the top of their observing planning via the Legacy and Program lists for LPVs and CVs (see <https://sites.google.com/site/aavsolpsection/Home/lpv-files> for the LPV lists, and <https://sites.google.com/site/aavsovcvsection/aavso-legacy-cvs> for the CV list). These lists were established to provide guidance on which stars had the best-observed light curves and thus had greatest potential for science

if those stars continued being observed. There are thousands of other stars that are still regularly observed, and many objects not on the lists above remain worthy targets for variable star observers, visual and CCD alike.

Target lists for observers vary throughout the year, and the number of observations received changes depending upon a star's observability in a given season as well as whether there is special interest—for example, an observing campaign or recent notable activity. Quarterly totals also help to highlight what new and interesting data sets the AAVSO now holds.

Below are the most- and least-observed stars of the LPV and CV Legacy lists, showing the number of visual and CCD observers ($N(vo)$ and $N(co)$) along with the total number of nights observed ($N(von)$ and $N(con)$).

Top sixteen best-covered stars of the LPV Legacy program, as measured (mainly) by number of nights observed, 2014 December 16 through 2015 March 15:

Name	Con	R.A.(J2000)	Dec.(J2000)	$N(vo)$	$N(von)$	$N(co)$	$N(con)$
Z UMa	UMa	11:56:30.22	+57:52:17.6	60	83	2	16
R Leo	Leo	09:47:33.48	+11:25:43.7	74	82	5	13
alf Ori	Ori	05:55:10.3	+07:24:25.4	59	82	1	26
T Cep	Cep	21:09:31.78	+68:29:27.1	51	80	1	4
CH Cyg	Cyg	19:24:33.06	+50:14:29	49	80	7	27
S UMa	UMa	12:43:56.67	+61:05:35.4	44	76	2	4
RX Lep	Lep	05:11:22.84	-11:50:57.1	38	75	1	6
R Lep	Lep	04:59:36.34	-14:48:22.5	49	74	2	6
R UMa	UMa	10:44:38.46	+68:46:32.7	40	74	4	4
R Cas	Cas	23:58:24.87	+51:23:19.7	46	73	3	4
eta Gem	Gem	06:14:52.66	+22:30:24.5	45	73	2	5
U Ori	Ori	05:55:49.16	+20:10:30.6	47	73	5	59
RY UMa	UMa	12:20:27.32	+61:18:34.6	24	73	1	4
W Ori	Ori	05:05:23.71	+01:10:39.3	50	72	2	8
R Gem	Gem	07:07:21.27	+22:42:12.7	48	71	6	17
omi Cet	Cet	02:19:20.78	-02:58:39.5	41	70	3	9

$N(vo)$ = number of observers making visual observations

$N(von)$ = number of nights with visual observations

$N(co)$ = number of observers making CCD observations

$N(con)$ = number of nights with CCD observations

Twenty least-observed stars of the LPV Legacy program during the quarter 2014 December 16 through 2015 March 15:

Name	Con	R.A.(J2000)	Dec.(J2000)	$N(vo)$	$N(von)$	$N(co)$	$N(con)$
khi Cyg	Cyg	19:50:33.91	+32:54:50.6	13	24	0	0
X Oph	Oph	18:38:21.12	+08:50:02.7	12	23	0	0
RS UMa	UMa	12:38:57.54	+58:29:00.2	11	23	5	16
R Aqr	Aqr	23:43:49.45	-15:17:04.1	9	21	2	5
RS Her	Her	17:21:42.35	+22:55:15.9	6	21	0	0
S Her	Her	16:51:53.91	+14:56:30.6	6	21	1	1
TZ Cyg	Cyg	19:16:04.06	+50:09:36.6	9	20	0	0
alf Her	Her	17:14:38.85	+14:23:25.1	4	20	0	0
R Peg	Peg	23:06:39.17	+10:32:36	11	20	2	2
W Per	Per	02:50:37.89	+56:59:00.3	13	20	3	6
Z Pup	Pup	07:32:38.05	-20:39:29.2	4	20	1	15
SS Vir	Vir	12:25:14.4	+00:46:10.9	11	20	2	10
TU Cyg	Cyg	19:46:10.67	+49:04:24.4	11	17	1	1
T Her	Her	18:09:06.2	+31:01:16.2	8	17	0	0
R Ser	Ser	15:50:41.73	+15:08:01.1	4	15	1	3
S Del	Del	20:43:04.87	+17:05:17.3	10	14	0	0
R Vul	Vul	21:04:22.5	+23:49:18	7	12	0	0
V CrB	CrB	15:49:31.31	+39:34:17.9	3	9	1	3
S Aql	Aql	20:11:37.47	+15:37:14.5	5	6	0	0
S Boo	Boo	14:22:52.91	+53:48:37.2	5	6	3	11

Observations are strongly encouraged as these stars become observable. Observers should consider adding any of these stars to their observing programs to improve coverage of the legacy stars.

CONTINUED ON NEXT PAGE

LEGACY STARS
CONTINUED...

Top sixteen best-covered stars of the CV Legacy program, as measured (mainly) by number of observers and nights observed, 2014 December 16 through 2015 March 15:

Name	Con	R.A.(J2000)	Dec.(J2000)	N(vo)	N(von)	N(co)	N(con)
SS Aur	Aur	06:13:22.47	+47:44:25.6	36	85	12	29
U Gem	Gem	07:55:05.21	+22:00:04.7	48	85	29	84
Z Cam	Cam	08:25:13.18	+73:06:39	39	81	13	35
RX And	And	01:04:35.52	+41:17:57.8	42	80	22	48
SU UMa	UMa	08:12:28.27	+62:36:22.2	24	80	14	57
CH Cyg	Cyg	19:24:33.06	+50:14:29.1	49	80	7	27
SS Cyg	Cyg	21:42:42.78	+43:35:09.8	61	80	8	25
GK Per	Per	03:31:12	+43:54:15.4	30	79	12	44
KT Per	Per	01:37:08.51	+50:57:20.4	16	73	6	27
TZ Per	Per	02:13:50.94	+58:22:52.7	17	72	9	41
T CrB	CrB	15:59:30.16	+25:55:12.6	23	72	2	16
EG And	And	00:44:37.19	+40:40:45.6	27	69	3	21
UV Per	Per	02:10:08.03	+57:11:19.7	14	68	4	11
IR Gem	Gem	06:47:34.51	+28:06:23.5	11	68	2	13
BZ UMa	UMa	08:53:44.15	+57:48:40.6	10	68	5	15
AT Cnc	Cnc	08:28:36.89	+25:20:02.9	12	65	12	59
SY Cnc	Cnc	09:01:03.31	+17:53:56	19	56	13	76

GET THE LATEST
CAMPAIGN NEWS...

Subscribe online to receive AAVSO *Alert Notices* and *Special Notices* directly to your email's inbox. Stay on top of stellar activity and get detailed information on current and upcoming observing campaigns by visiting

<http://www.aavso.org/observation-notification>

to subscribe today!

Sign up for the AAVSO online forums to read about or contribute to discussion on observing campaign targets. Postings will be sent to you by email and will also be available for viewing online. Visit <http://www.aavso.org/forums>

Stars in CV Legacy list with no visual or CCD observations during the quarter 2014 December 16 through 2015 March 15:

Name	Con	R.A.(J2000)	Dec.(J2000)	N(vo)	N(von)	N(co)	N(con)
RR Pic	Pic	06:35:36.05	-62:38:24.2	0	0	0	0
TT Crt	Crt	11:34:47.26	-11:45:30.9	0	0	0	0
EK TrA	TrA	15:14:00.43	-65:05:35.5	0	0	0	0
FQ Sco	Sco	17:08:04.45	-32:42:02	0	0	0	0
V2051 Oph	Oph	17:08:19.11	-25:48:30.3	0	0	0	0
AT Ara	Ara	17:30:33.8	-46:05:58.8	0	0	0	0
MM Sco	Sco	17:30:45.24	-42:11:41.7	0	0	0	0
FV Ara	Ara	17:35:10.05	-63:02:50.3	0	0	0	0
BF Ara	Ara	17:38:21.33	-47:10:41.4	0	0	0	0
V723 Sco	Sco	17:50:05.29	-35:23:57.9	0	0	0	0
MU Ser	Ser	17:55:52.77	-14:01:17.1	0	0	0	0
V1830 Sgr	Sgr	18:13:50.65	-27:42:21	0	0	0	0
V533 Her	Her	18:14:20.51	+41:51:22.6	0	0	0	0
FM Sgr	Sgr	18:17:18.25	-23:38:27.8	0	0	0	0
V441 Sgr	Sgr	18:22:08.09	-25:28:47.3	0	0	0	0
CH Her	Her	18:34:46.32	+24:48:01.6	0	0	0	0
V4021 Sgr	Sgr	18:38:14.88	-23:22:47.1	0	0	0	0
V446 Her	Her	18:57:21.59	+13:14:29	0	0	0	0
FO Aql	Aql	19:16:38.11	+00:07:37.4	0	0	0	0
PW Vul	Vul	19:26:05.04	+27:21:57.7	0	0	0	0
DH Aql	Aql	19:26:10.81	-10:15:28.9	0	0	0	0
NQ Vul	Vul	19:29:14.75	+20:27:59.7	0	0	0	0
V795 Cyg	Cyg	19:34:34.31	+31:32:11.1	0	0	0	0
LV Vul	Vul	19:48:00.7	+27:10:19.5	0	0	0	0
V725 Aql	Aql	19:56:45.03	+10:49:32.6	0	0	0	0
UU Aql	Aql	19:57:18.6	-09:19:19.8	0	0	0	0
V476 Cyg	Cyg	19:58:24.47	+53:37:06.7	0	0	0	0
RR Tel	Tel	20:04:18.54	-55:43:33.2	0	0	0	0
QU Vul	Vul	20:26:46.02	+27:50:43.2	0	0	0	0
KK Tel	Tel	20:28:38.46	-52:18:45.2	0	0	0	0
TU Ind	Ind	20:33:10.55	-45:26:00.8	0	0	0	0
TT Ind	Ind	20:33:37.09	-56:33:44.7	0	0	0	0
V1500 Cyg	Cyg	21:11:36.6	+48:09:02.4	0	0	0	0

As above, observations are strongly encouraged as these stars become observable and observers should consider adding any of these stars to their observing programs to improve coverage of the legacy stars. ★

AAVSO OBSERVING CAMPAIGNS UPDATE

ELIZABETH O. WAAGEN (WEO), AAVSO
SENIOR TECHNICAL ASSISTANT (SCIENCE OPERATIONS)

Each campaign is summarized on the AAVSO Observing Campaigns page (<http://www.aavso.org/observing-campaigns>), which also includes complete lists of all AAVSO Alert and Special Notices issued for each campaign.

Campaigns concluded since January 1, 2015

The campaign by Deanne Coppejans (Ph.D. candidate, Radboud University Nijmegen (Netherlands) and University of Cape Town) and colleagues on searching for radio jets in several Northern dwarf novae concluded in mid-March. Within a month of the campaign's beginning in October 2014, three of the five targets—**RX And**, **Z Cam**, and **YZ Cnc**—went into outburst timed appropriately for VLA to observe. **SU UMa** in superoutburst was completed in late December-early January. The fifth and final target, **U Gem**, finally went into outburst on February 21 and returned to minimum two weeks later; the post-outburst monitoring concluded March 15. As for the other four targets, AAVSO observers' careful monitoring and extremely fast notification when the outburst began enabled the Very Large Array radio telescope network (VLA) observations to be triggered successfully. Coppejans is now analyzing all the data, and we are looking forward to hearing (we hope) exciting results! Be sure to see the next issue of the *AAVSO Newsletter*. (*AAVSO Alert Notice 505*, *AAVSO Special Notice #391*).

Drs. Matthew W. Muterspaugh and Gregory W. Henry's (Tennessee State University) campaign on **alpha Com** had to be called off, unfortunately. They had requested AAVSO observers' assistance in monitoring with precision V and R photometry the possible Algol-like binary before, during, and after the eclipse they had predicted for mid-to-late January (*AAVSO Alert Notice 506*). The campaign got under way in January as alpha Com came out from behind the Sun, and AAVSO observers acquired early baseline observations as they began to help document this never-before observed event. However, Muterspaugh and Henry then discovered an error in data published a hundred years ago. When they corrected the data and performed a new analysis, they found the eclipse date moved to a couple of months earlier, when the target had been behind the Sun. Thus, they recanted their prediction and the campaign was terminated.

The campaign announced in January (see details below under Campaigns Initiated) in response to the request of Dr. Robert Zavala and collaborators for time-series observations of **b Per** (not beta Per) in hopes of catching a predicted eclipse was successfully concluded. 12 observers contributed 3,930 multicolor PEP and CCD and visual observations during this campaign (January–May 2015). The data are now being analyzed, and results will be forthcoming.

Dr. Paula Szkody's campaign on the cataclysmic variable **GW Lib** (see details below) was successfully concluded. AAVSO observations showed GW Lib was at minimum and HST observations were carried out. Analysis of the satellite and AAVSO data is underway.

In response to Dr. Axel Schwöpe's campaign on the magnetic variable **AM Her** (see details below), AAVSO observers swung into action on short notice to provide increased multicolor and visual coverage of this popular star in support of XMM-Newton and NuSTAR observations, as shown in Figure 1. The "high" and "low" states of this prototype of the class of magnetic cataclysmic variables

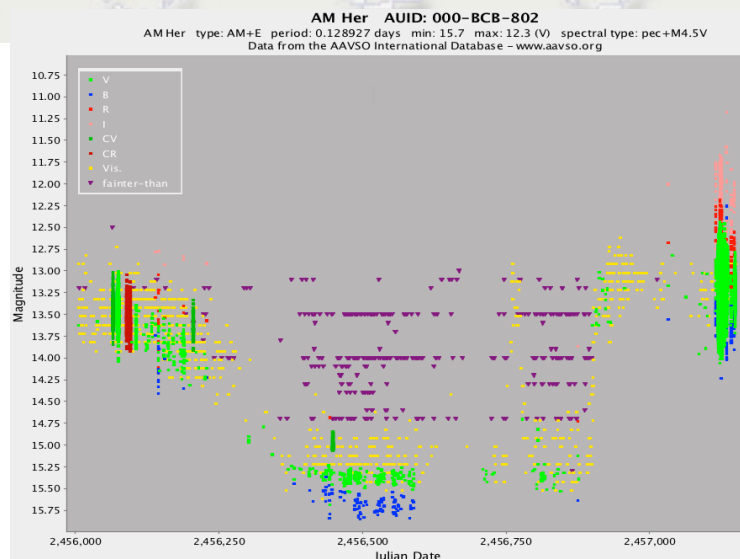


Figure 1. AAVSO light curve of the magnetic variable AM Her JD 2456000–2457147 (13 March 2012–May 2015). 73 observers have contributed 20,206 multicolor observations to this light curve.

known as polars may also be seen in Figure 1. Dr. Schwöpe is analyzing his successfully obtained satellite x-ray and spectroscopic observations and the AAVSO data.

The campaign on the T Tauri star **AA Tau** organized in 2013 (*AAVSO Alert Notice 488*) by Dr. Hans Moritz Guenther (Harvard-Smithsonian Center for Astrophysics) is now over. AAVSO observers provided excellent support for his XMM-Newton observations in 2013, assuring that the satellite could observe AA Tau without risk of damaging the instrumentation. Since then, observers have continued their coverage, as had been requested. Dr. Guenther is very pleased with the AAVSO's support and contribution, and has shared a report of the research team's findings (see page 18 of this newsletter).

Dr. Hans Moritz Guenther's campaign on the T Tauri star **BP Tau** (*AAVSO Alert Notice 493*, *AAVSO Special Notice #378*) is also over. He and his colleagues very much appreciate the observations made during the 2013–2014 and 2014–2015 observing seasons, as they not only allowed correlation with the Chandra observations they obtained but also helped to clarify the rotational modulation and the average fluctuation in the light curve, essential for their X-ray study. Analysis is underway, although it may be some time before the conclusions are reached. He promises a report when the results are in!

Campaigns initiated since January 1, 2015

In January 2015, a campaign was announced in response to the request of Dr. Robert Zavala (USNO-Flagstaff) and collaborators for time-series observations of the bright eclipsing variable **b Per** (not beta Per) for several weeks, in hopes of catching a predicted eclipse on 2015 January 15 UT (*AAVSO Alert Notice 507*). Dr. Zavala wrote: "[W]e wanted to try and involve AAVSO observers in a follow up to our successful detection of the b Persei eclipse [main system components] of Feb 2013 [*AAVSO Alert Notice 476* and *AAVSO Special Notice 333*]. Our goal now is to get good time resolution photometry as the third star passes in front of the close ellipsoidal binary. The potential for multiple eclipses exists. The close binary has a 1.5 day orbital period, and the eclipsing C component requires about 4 days to pass across the close binary pair." This campaign has been concluded—please see above.

CONTINUED ON NEXT PAGE

CAMPAIGNS UPDATE
CONTINUED...

A campaign on the symbiotic nova candidate **ASAS J174600-2321.3** was initiated in January by S. Otero, P. Tisserand, K. Bernhard, and S. Hummerich, and is an extension of the research program discussed in Hummerich et al. (2015, [JAAVSO preprint \(=eJAAVSO\) #295, in press](#)). Both visual and instrumental observations are encouraged through the end of July 2015, to monitor the system before, during, and after the upcoming eclipse of this system predicted to begin in mid-March and last approximately 115 days. As Figure 2 shows, the eclipse is underway.

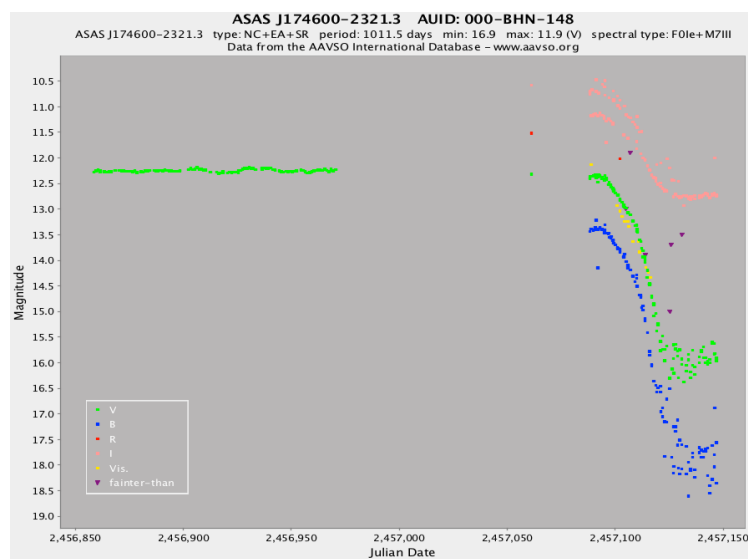


Figure 2. AAVSO light curve of the symbiotic nova candidate ASAS J174600-2321.3 JD 2456857–2457146 (19 July 2014–4 May 2015). 12 observers have contributed 639 multicolor observations to this light curve.

March was a busy month for new campaigns! Dr. George Rieke (University of Arizona) and colleagues requested AAVSO assistance in monitoring four stars with developing planetary systems (*AAVSO Alert Notice 511*)—**RZ Psc**, **HD 15407A**, **V488 Per**, and **HD 23514**. They will be monitored extensively in 2015 with the Spitzer Space Telescope, and Dr. Rieke writes: “A key part of our program is to obtain optical photometry of the same stars that we are observing in the infrared under the Spitzer program. The optical data are needed to verify that any changes we see in the infrared are not just driven by changes in the brightness of the star, but are truly due to changes in the structure or dust content of the debris disk. AAVSO observers provided this support for our previous program...” This campaign is similar to the one conducted in 2013 (see *AAVSO Alert Notice 482*), and two of the target stars in that campaign (HD 15407A and HD 23514) are also targets in this one.

Dr. Paula Szkody (University of Washington) requested our help in monitoring the cataclysmic variable **GW Lib** for Hubble Space Telescope observations to be made during late April (*AAVSO Alert Notice 513*, *AAVSO Special Notice #403*). AAVSO observations were needed to ensure that the object was NOT in outburst when observed with HST. This campaign is part of an ongoing study of the white dwarf in cataclysmic variable; Dr. Szkody also observed GW Lib with HST in March 2011 and March 2010 (see *AAVSO Alert Notices 433* and *417*, respectively). This campaign was successfully concluded (see above).

Dr. Hans Moritz Guenther (Massachusetts Institute of Technology) requested AAVSO observers’ assistance with the classical T Tauri star **RW Aur** (component A) for as long as RW Aur was observable this season. He writes: “RW Aur A is a classical T Tauri surrounded by an accretion disk. It’s a visual binary; the B component is fainter and shows no sign of a disk... In fall 2014 (we don’t know the exact date) RW Aur A become dimmer by about 3 mag in V band.... The current best idea of what causes this dimming is that the secondary component RW Aur B has passed by the disk of RW Aur A and pulled mass out of the disk into a stream or cloud that now covers up part of the light from RW Aur A. The orbit of the binary is > 100 years, so we don’t expect this to happen again any time soon! We want to use this opportunity to measure what this stream is composed of. What is the ratio of gas and dust? What is the size of the dust grains?” RW Aur has been in the AAVSO observing program for many years and well observed; visual and extensive multicolor observations are underway, as Figure 3 shows.



Figure 3. AAVSO light curve of the T Tauri star RW Aur JD 2455806–2457143 (2 September 2011– May 2015). 53 observers have contributed 977 multicolor observations to this light curve.

At the beginning of April Dr. Axel Schwope (Leibniz Institute for Astrophysics Potsdam, Germany) requested AAVSO observers’ assistance in monitoring the magnetic variable **AM Her** in support of XMM-Newton and NuSTAR (Nuclear Spectroscopic Telescope Array) observations scheduled for a few days later. This campaign was successfully concluded (see above).

Also in April, Dr. Fabienne A. Bastien (Hubble Postdoctoral Fellow, Pennsylvania State University) requested AAVSO assistance in monitoring the rare FU Ori object **2MASS J06593158-0405277** as part of a campaign to observe this T Tauri star through May from the optical to the infrared. Dr. Bastien writes: “...At the moment, only about two dozen of these objects are known, and we have very few constraints on what causes them to undergo their eruptions. This is also one of the brightest such objects that we have seen in recent times (K magnitude of 7.6 and V magnitude of 11.4 as of December 2014)... We would like to continue to monitor its behavior from the optical to the infrared (BVRIJHK and/or the equivalent Sloan filters) as it appears to be changing.”

CONTINUED ON NEXT PAGE

CAMPAIGNS UPDATE CONTINUED...

Since the campaign began 12 observers have contributed 390 multicolor and visual observations.

Campaigns in progress

Dr. Robert Stencel (University of Denver Astronomy Program) requested that AAVSO observers monitor **epsilon Aur** through the end of the observing season, carrying out nightly CCD, DSLR, or PEP photometry (V, B, R, U; no time series) rather than visual observations because of the very small amplitude of the expected variations (0.1 magnitude in U, 0.05 in V, timescale 60-100 days). The expected coherent pulsation is occurring, and ongoing data can help deduce whether these events are internal to the F star, or externally-driven by tidal interaction with the companion star. Current observations in the AAVSO International Database show that observers are continuing the excellent multicolor CCD, PEP, and visual coverage. (*AAVSO Alert Notice 504*)

Dr. Margarita Karovska's HST and Chandra campaign on **CH Cyg** (*AAVSO Alert Notice 454* and *AAVSO Special Notices #267, 294, and 320*) has been **extended** and continues at least through the **2015** observing season. As before, Dr. Karovska expresses her gratitude for your ongoing observations, and asks observers please to continue, especially in V and B. **The V and B data are crucial** for detecting certain significant system changes key to her research. Visual observations are also important! Since this campaign began in March 2012, 203 observers have contributed 23,612 visual and multicolor observations. Thank you and please keep on keeping on!

Dr. Margarita Karovska and colleagues' request for AAVSO observer assistance in their campaign on the symbiotic variable **RT Cru**, which varies between 11.2 and 12.6 visual and is a fascinating member of a new class of hard X-ray emitting symbiotic binaries, continues. Your observations are very important to learn more about this star! Weekly or more frequent monitoring (B and V photometry and visual observations) is requested in support of upcoming Chandra observations still to be scheduled (*AAVSO Alert Notice 503*). Since this campaign began in August 2014, 2456871 16 observers have contributed 2,031 multicolor observations of this star through 2015 May 5.

Dr. Eric Mamajek's campaign on **J1407 (1SWASP J140747.93-394542.6)** (*AAVSO Alert Notice 462*) has been extended through 2015. Since the campaign began in July 2012, AAVSO observers have continued to provide excellent coverage and no eclipse has been observed. It is possible that an eclipse occurred during the seasonal gap—it is almost exactly the same length as the 52-day eclipse—but it seems unlikely one would have occurred so precisely placed. Please continue your observations—they are extremely important in helping to solve the puzzle of this interesting and possibly complex system (*AAVSO Alert Notice 462*). 3 observers have contributed 1,808 multicolor observations to date.

Ernst Pollmann's campaign on **P Cyg**, an S Dor (= Luminous Blue Variable) variable (*AAVSO Alert Notice 440*), continues at least through the 2015 season and likely "for several more years." Since May 2011, 99 observers have contributed 4,309 observations to this campaign ideally suited to PEP and DSLR observers. See *Alert Notice 440* for comparison and check star information. Many thanks for your observations, and please keep on observing P Cyg!

Since Dr. Arne Henden suggested the very interesting Mira variable **QX Pup** to AAVSO observers in 2008 as an observing exercise (<http://www.aavso.org/>

[qx-pup](#)), 5 cycles have been observed in I, along with a smattering of fainter-thans and a few R and two V observations (Figure 4). There is a single V observation at/near the minimum shown in I that shows the V minimum is 18.2 or fainter (MZK, K. Menzies, Framingham, Massachusetts). The I coverage has been and continues to be fantastic—thanks to Josch Hamsch (HMB, Mol, Belgium), T. Bohlsen, (BHQ, Armidale, NSW, Australia), G. Di Scala, (DSI, Sydney, Australia), C. Gualdoni, (GCO, Como, Italy), K. Menzies, T. Richards, (RIX, Kangaroo Ground, VIC, Australia), J. Roe, (ROE, Bourbon, MO), and R. Sabo, (SRIC, Bozeman, Montana)—please keep it up! **Wouldn't some observer like to take on QX Pup as a challenge to determine the V range?** Arne's page on QX Pup gives a lot of information about this variable embedded in a reflection nebula (the Rotten Egg Nebula). One correction to the information there: with the excellent I coverage, it is clear the GCVS period of 648: days is not correct—the AAVSO I data show an approximate period of 544 days!

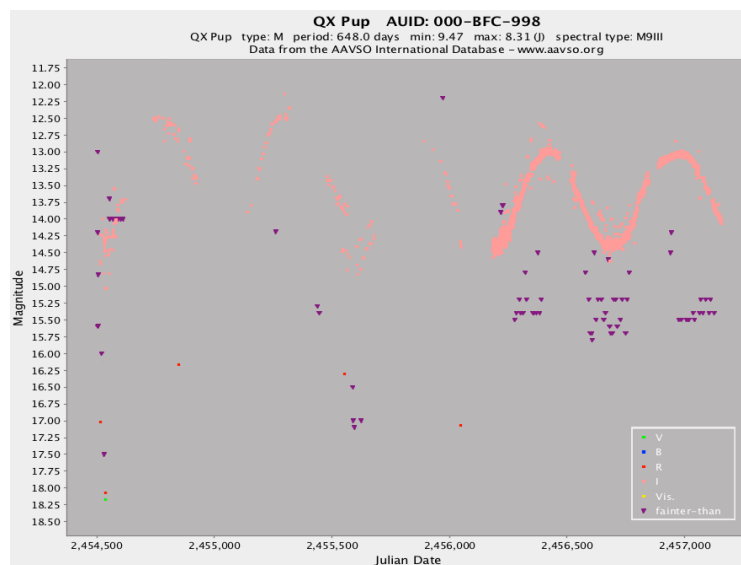


Figure 4. AAVSO light curve of the Mira variable QX Pup JD 2454503–2457148 (6 February 2008–5 May 2015). 19 observers have contributed 1,973 multicolor and visual observations to this light curve. (Zap light curve)

HMXBs and SFXTs—High-Mass X-ray Binaries and Super Fast X-ray Transients, Dr. Gordon Sarty's list (*AAVSO Alert Notices 348, 354, and 377, AAVSO Special Notices #118, #129, #143, #213, and #220*, and description of research program in *JAAVSO*, Vol. 35, p. 327; article viewable at <http://adsabs.harvard.edu/abs/2007JAVSO..35..327S>)

Blazars—Dr. Markus Boettcher's list (*AAVSO Alert Notice 353* at <http://www.aavso.org/aavso-alert-notice-353>)

Novae and Supernovae

A flock of new novae and a fairly bright Type-Ia supernova have kept the skies and observers busy.

Nova Scorpii 2015 (PNV J17032620-3504140) was discovered on 2015 February 11.837 by Tadashi Kojima (Gunma-ken, Japan) at unfiltered DSLR magnitude 8.1 (*AAVSO Alert Notice 508*). Multiwavelength observations made

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CAMPAIGNS UPDATE
CONTINUED...

in February by T. Nelson et al. (*ATel* #7085) “suggest that the nova-producing white dwarf is embedded within the wind of a red-giant companion” and that the object may be a recurrent nova similar to RS Oph, V407 Cyg, and V745 Sco. The nova has been fading and as of April 27.7694 UT it was visual magnitude 14.2 (PEX, A. Pearce, Nedlands, Western Australia) and as of May 6.3936 UT 14.031 V (HMB, J. Hamsch, Mol, Belgium) (Figure 5).

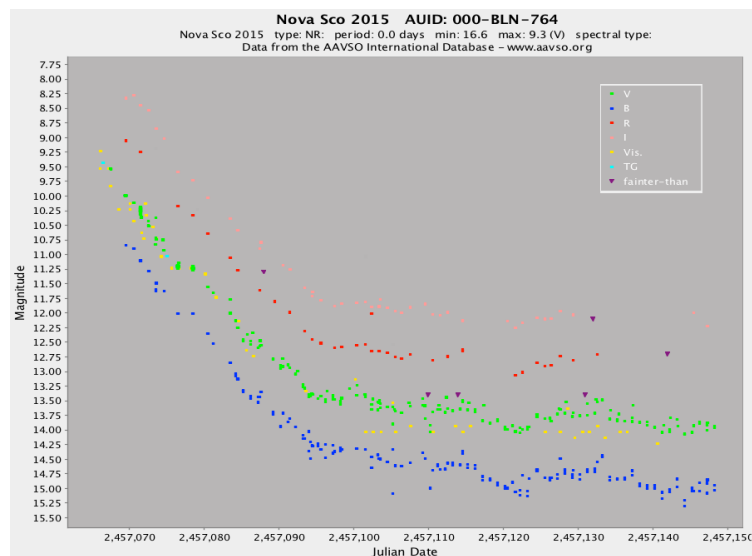


Figure 5. AAVSO light curve of Nova Sco 2015 (PNV J17032620-3504140) JD 2457065–2457148 (11 February–6 May 2015). 19 observers have contributed 573 multicolor observations to this light curve. (Zap light curve)

Nova Sagittarii 2015 (PNV J18142514-2554343), a classical Fe II nova, was independently discovered by Hideo Nishimura (Shizuoka-ken, Japan) on 2015 February 12.840 UT at DSLR magnitude 11.2, and by Koichi Nishiyama (Kurume, Japan) and Fujio Kabashima (Miyaki, Japan) on 2015 February 12.87837 UT at unfiltered CCD magnitude 10.9 (*AAVSO Alert Notice* 509). It reached maximum at 9.6 in mid-February, appeared to have a very brief spike to 9.1 in late February, and has since been oscillating. As of May 6.403 UT it was 12.293 V (HMB, J. Hamsch, Mol, Belgium) and May 6.8389 visual magnitude 12.0 (PEX, A. Pearce, Nedlands, Western Australia) (Figure 6).

Nova Sagittarii 2015 Number 2 (PNV J18365700-2855420), also a classical Fe II nova, was discovered by John Seach (Chatsworth Island, NSW, Australia) on 2015 March 15.634 UT at DSLR magnitude 6.0 (*AAVSO Alert Notice* 512). Presently rising towards its fifth maximum. Its first and second maxima were around magnitude 4.4–4.5; its third and fourth maxima were around magnitude 4.8. As of May 7.4653 UT it was visual magnitude 5.2 (ASA, S. Aguirre, Hermosillo, Mexico) (Figure 7).

Nova Ophiuchi 2015 (PNV J17291350-1846120) an He/N type nova, was discovered by Yukio Sakurai (Ibaraki-ken, Japan) on 2015 March 29.766 UT at unfiltered magnitude 12.2 (*AAVSO Alert Notice* 516). It reached maximum at visual and V magnitude 9.3 on April 14, and as of May 6.3966 UT was 11.872 V (HMB, J. Hamsch, Mol, Belgium) (Figure 8).

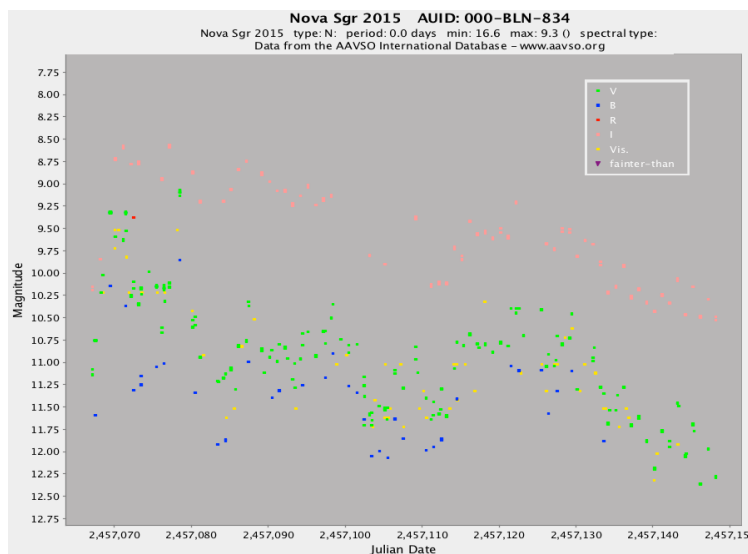


Figure 6. AAVSO light curve of Nova Sgr 2015 (PNV J18142514-2554343) JD 2457066–2457148 (12 February–6 May 2015). 18 observers have contributed 437 multicolor observations to this light curve. (Zap light curve)

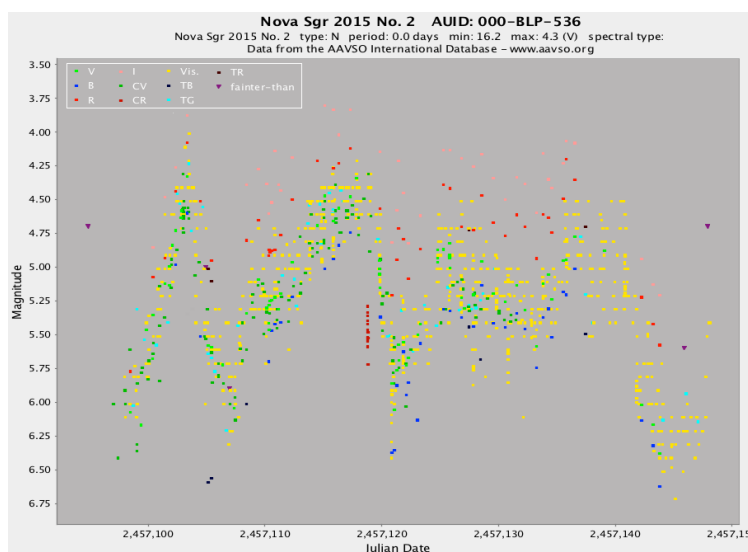


Figure 7. AAVSO light curve of Nova Sgr 2015 Number 2 (PNV J18365700-2855420) JD 2457094–2457149 (12 March–7 May 2015). 98 observers have contributed 1,273 multicolor observations to this light curve. (Zap light curve)

SN 2015F (PSN J07361576-6930230) in NGC 2442 is a Type-Ia supernova discovered before maximum light by Libert A. G. Monard (MLF, Calitzdorp, Western Cape, South Africa) on 2015 March 9.789 UT at unfiltered CCD magnitude 16.8 (*AAVSO Alert Notice* 515). It brightened to maximum magnitude of 13.1 on Mar. 19.752 UT (Monard), and as of 2457148.47836 was 15.254 V (HMB, J. Hamsch, Mol Belgium). 6 observers have contributed 85 multicolor and visual observations to date.

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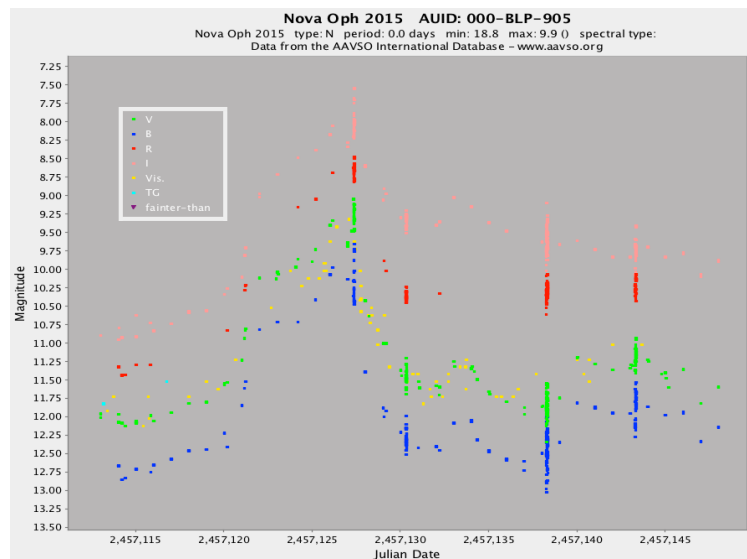
CAMPAIGNS UPDATE
CONTINUED...

Figure 8. AAVSO light curve of Nova Oph 2015 (PNV J17291350-1846120) JD 2457112–2457149 (30 March–7 May 2015). 29 observers have contributed 755 multicolor observations to this light curve. (Zap light curve)

Novae and supernovae that are still within observing range include:

V5666 Sgr = Nova Sagittarii 2014 (PNV J18250860-2236024)—This very interesting nova continues to fade slowly. As of 2015 Apr. 21.7886 UT, V5666 Sgr was 14.33 V (NLX, P. Nelson, Ellinbank, VIC, Australia). 16 observers worldwide have contributed 2,088 observations through 2015 April 21.

V2659 Cyg = Nova Cygni 2014 (PNV J20214234+3103296)—This highly reddened classical Fe II-type nova continues to be very active as it fades. As of 2015 Apr. 23.1181 UT, it was visual magnitude 13.4 (GZN, A. Glez-Herrera, Ferrol, Spain) and as of Apr. 25.3037 UT it was V magnitude 13.82 (DKS, S. Dvorak, Clermont, Florida). 79 observers worldwide have contributed 3,460 observations through 2015 April 25.

V1369 Cen = Nova Centauri 2013 = PNV J13544700-5909080 continues to decline slowly. As of 2015 Apr. 25.1117 UT it was V magnitude 9.691 (8.3808 UT, HMB, J. Hamsch, Mol, Belgium) and as of Apr. 27.766 UT it was visual magnitude 9.8 (PEX, A. Pearce, Nedlands, WA, Australia). 71 observers worldwide have contributed 12,374 observations through 2015 April 27.

V339 Del = Nova Delphini 2013 = PNV J20233073+2046041—This very fast classical nova (class NA) continues to fade, as of 2015 Apr. 27.167 UT at visual magnitude 13.0 (PYG, G. Poyner, Birmingham, England). 539 observers worldwide have contributed 74,889 multicolor observations through 2015 April 27.

ASASSN-14lp in NGC 4666 was discovered on 2014 December 9.61 UT at 14.3. Determined to be a Type-Ia supernova and reaching a maximum brightness of 11.8 V in late December, it was V magnitude 13.544 on 2015 Apr. 13.9533 UT (NRNA, R. Naves, Cabriels, Spain).

Please keep observing and participating in as many campaigns as your schedule and equipment permit. The astronomers and we at AAVSO Headquarters are grateful to all of you who are participating in AAVSO Observing Campaigns, and we thank you for your contributions. You have been and continue to be a vital part of variable star research! ★

JULIAN DATE / MOON PHASE CALENDARS

2,450,000 plus the value given for each date

APRIL 2015

Sun	Mon	Tue	Wed	Thu	Fri	Sat
			1 	2 	3 	4
5 	6 	7 	8 	9 	10 	11
12 	13 	14 	15 	16 	17 	18
19 	20 	21 	22 	23 	24 	25
26 	27 	28 	29 	30 		

MAY 2015

Sun	Mon	Tue	Wed	Thu	Fri	Sat
					1 	2
3 	4 	5 	6 	7 	8 	9
10 	11 	12 	13 	14 	15 	16
17 	18 	19 	20 	21 	22 	23
24 	25 	26 	27 	28 	29 	30
31 						

JUNE 2015

Sun	Mon	Tue	Wed	Thu	Fri	Sat
	1 	2 	3 	4 	5 	6
7 	8 	9 	10 	11 	12 	13
14 	15 	16 	17 	18 	19 	20
21 	22 	23 	24 	25 	26 	27
28 	29 	30 				

Moon calendars courtesy StarDate online

<http://stardate.org/nightsky/moon/>

THE AAVSO MENTOR PROGRAM

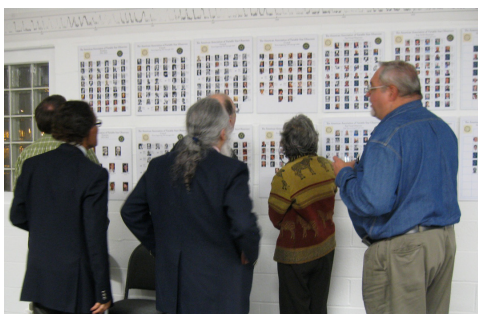
Since the earliest days of the AAVSO, experienced observers have helped new observers by corresponding, answering questions, and even providing personal guidance at the telescope.

If you would like to talk with an experienced variable star observer, contact the AAVSO and we will put you in contact with the mentor program coordinator, Mike Simonsen. Just send us an email (mentor@aavso.org), or call 617-354-0484 to let us know you are interested in this program.

Ideally, Mike will be able to provide you with names, addresses, and phone numbers of active AAVSO observers near you. If there are none located in your area, he can at least provide you with more distant contacts. A simple phone chat with an experienced observer may provide all the feedback you need to continue progressing as an AAVSO observer.

Visit the AAVSO mentor program webpage:

<http://www.aavso.org/mentor-program>



BY POPULAR DEMAND!

A set of twenty pdf centennial posters exhibited at AAVSO Headquarters is available for downloading from our ftp site.

The posters show portraits of the AAVSO's Directors, Presidents, Secretaries, Treasurers, Council members, and Staff from 1911 to 2011, and the top Visual, CCD, PEP, and Photographic/Photovisual observers. For more information go to: <http://www.aavso.org/aavso-100th-anniversary-commemorative-posters>

or use this link:

<http://tinyurl.com/cge9t9s>

THE AAVSO WALTER A. FEIBELMAN SUITE

The Feibelman Suite at AAVSO Headquarters is available to guests who are in the Boston/Cambridge area to perform an AAVSO-related task, that is, the purpose of their visit is to do something for or related to the AAVSO. For details about the suite or making a reservation, please visit

<http://www.aavso.org/walter-feibelman-guest-suite>.



See the following pages for important information about membership renewals and contributions.

JOIN THE AAVSO!

AAVSO 2015 New Member Form

Please send application, first year's dues, and application fee to:

AAVSO, 49 Bay State Road
Cambridge, MA 02138, USA

Date: _____
 Full Name: _____
 Full Address: _____

 Telephone 1: _____ Telephone 2: _____
 E-Mail: _____
 Birth Date: _____ Vocation: _____
 Telescopic Equipment: _____

 Astronomical Experience (if any): _____

 How did you learn about the AAVSO? _____

Types of Membership Offered and Dues

Annual:	Adult	US \$75.00 per year
	Associate (Under 21)/Pension/Limited Income	US \$37.50 per year
Sustaining:		US \$150.00 per year
Developing country [†]	(for members residing in low income countries):	US \$25.00 per year

Membership is prorated through the end of the year, starting with the current month.

All applicants also add a one-time, \$10.00 application fee.

Please consult the following table to find out how much to pay, including application fee.

	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept*	Oct*	Nov*	Dec*
Annual	\$75.00	\$68.75	\$62.50	\$56.25	\$50.00	\$43.75	\$37.50	\$31.25	\$100.00	\$93.75	\$87.50	\$81.25
A/P/LI	\$37.50	\$34.38	\$31.25	\$28.13	\$25.00	\$21.88	\$18.75	\$15.63	\$50.00	\$46.88	\$43.75	\$40.63
Sustaining	\$150.00	\$137.50	\$125.00	\$112.50	\$100.00	\$87.50	\$75.00	\$62.50	\$200.00	\$187.50	\$175.00	\$162.50
Developing Country [†]	\$25.00	\$22.92	\$20.83	\$18.75	\$16.67	\$14.58	\$12.50	\$10.42	\$33.33	\$31.25	\$29.17	\$27.08

*Please note that if joining in September-December, the following year's dues are already being collected, so we request that you pay for the end of this year and for the following year.

[†]Developing countries EXCLUDE Australia, Austria, Belgium, Canada, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Israel, Italy, Japan, the Korean Republic, Luxembourg, the Netherlands, New Zealand, Norway, Poland, Portugal, the Slovak Republic, Slovenia, Spain, Sweden, Switzerland, the United Kingdom, the United States.

Dues (see chart): US \$ _____ Application fee: US \$ 10 _____

Donation (optional): US \$ _____ to _____ fund (see box on right)

Total payment (dues + fee + donation): US \$ _____

Contributions (see last page for descriptions):	
AAVSO General Fund	\$ _____
The Endowment Fund	\$ _____
Annual Campaign Fund	\$ _____
Building Fund	\$ _____
Janet A. Mattei Research Fellowship	\$ _____
Margaret Mayall Assistantship Fund	\$ _____
Solar Fund	\$ _____
AAVSONet Fund	\$ _____
Member Sponsorship Fund	\$ _____
Student Meeting Scholarship Fund	\$ _____
Contributor-Specified Restricted Funds	\$ _____

_____ I have enclosed a check / money order _____ Please charge my credit card (Visa or Mastercard)

Credit card #: _____ Exp. Date: _____ Security Code (on back of card): _____

Cardholder's Name (as on card): _____

Billing address (if different from above): _____

Signature: _____

2015 MEMBERSHIP RENEWAL

On this page is a copy of the AAVSO membership renewal form for 2015. You may also renew your membership online. Safe and secure online payments are possible by visiting <http://www.aavso.org/membership-renew>. If your postal or email address has changed, please also take a minute to update your personal profile online. Simply click "User login" at the upper right of the home page, then go to "My account." In addition to your dues, your contributions to the AAVSO further support the organization's activities and are very much appreciated. Also, on the next page you will find descriptions of the various funds to which you may contribute. *Developing countries EXCLUDE Australia, Austria, Belgium, Canada, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Israel, Italy, Japan, the Korean Republic, Luxembourg, the Netherlands, New Zealand, Norway, Poland, Portugal, the Slovak Republic, Slovenia, Spain, Sweden, Switzerland, the United Kingdom, the United States.*



AAVSO
Membership and Subscriptions
49 Bay State Rd
Cambridge, MA 02138-1203

Name _____
 Address _____
 City _____
 State/Province _____
 Zip/Postal Code _____
 Country _____

Payment and Contact Information

My **check** for \$ _____ is enclosed. *Checks must be in US funds and made payable to AAVSO.*

For payment by **credit card** please complete the section below. *All fields are required.*

__ Visa __ Mastercard Card Number _____ Exp Date: ____ / ____

Card Security Code (3-digit number on the back of your card): ____ Total to be charged: \$ _____

Name on card: _____ Signature: _____

If the billing address for this credit card is different from your address above, please provide it here:

Billing Address _____ City _____

State/Province _____ Zip/Postal Code _____ Country _____

Please make any changes necessary to correct and complete your membership contact information below:

Name: _____

Address: _____

City: _____ State/Province: _____

Zip/Postal code: _____ Country: _____

Phone: _____ Email: _____

2015 Membership Dues Renewal Form

Membership Type *(please check one)*

___ Annual \$75 ___ Sustaining \$150

___ Associate (under 21) \$37.50

___ Pension/Limited Income \$37.50

___ Developing Country \$25

Contributions *(see next page for descriptions)*

AAVSO Building Fund \$ _____

Janet A. Mattei Research Fellowship \$ _____

Margaret Mayall Assistantship \$ _____

Solar Fund \$ _____

AAVSONet Fund \$ _____

Member Sponsorship Fund \$ _____

AAVSO General Fund \$ _____

The Endowment Fund \$ _____

Contributor-Specified Restricted Funds \$ _____

TOTAL ENCLOSED \$ _____

SUPPORT THE AAVSO

In order to sustain the AAVSO and its operations, we rely on the generous support provided by members, sponsors, donors, and staff. Together we are the AAVSO. Your gift is a way for you to say that you believe in what we are doing and that you want it to continue moving forward. Every dollar given and membership purchased benefits the AAVSO in a necessary and unique way.

AAVSO Funds

The following is a list of the specific funds to which you may contribute. If you do not wish to specify how you would like your donation to be used, the AAVSO will determine the fund where it is needed most and place it there.

The General Fund This fund is an unrestricted one and supports the general operations of the Association.

The Endowment Fund This is a professionally managed fund, invested for the perpetuity of the AAVSO. From time to time, transfers from this fund into the General Fund are made as necessary to meet operating deficits of the Association.

The 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 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.

Margaret Mayall Assistantship Fund This fund helps finance a summer student at AAVSO Headquarters who works on variable star-related projects and research while learning about the AAVSO and variable stars in general. Only the accumulated interest and not the principal may be used.

Solar Fund This fund helps to pay the staff costs of running the section, publishing the *Solar Bulletin*, and travel expenses for visiting solar researchers.

AAVSONet Fund This fund pays for refurbishment and maintenance of telescopes, cameras, mounts, computers, software, and hardware required to operate the AAVSO's robotic telescope network.

Member Sponsorship Fund Funds donated to this program pay the membership dues for those active variable star observers who want to become members of the Association but cannot afford the dues.

Student Meeting Scholarship Fund Donations to this fund pay for up to 10 student registrations per annual meeting of the AAVSO.

Contributor-Specified Restricted Funds These are gifts and contributions made to the Association for restricted purposes as specified by the donor thereof. All such restricted funds of the Association shall be administered in strict accordance with the instructions of the donor. The Association is not obliged to accept any assets so offered.

If you wish to contribute to one or more of these funds please fill in the amount on the appropriate line on your renewal form and include it in the total. *All contributions are tax-deductible in the USA.*

You may also donate online at: <http://www.aavso.org/support-aavso>

Thank you for your support of the AAVSO!