

Using ADS and SIMBAD in Astronomical Research

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September 5, 2010

Answering Fundamental Questions

ADS and SIMBAD can help answer these questions:

- What are the basic properties of the object?
- What research has been done on the object?
- People/Institutions who have worked/are working on the object?
- Where can you can get data on the object?*
- Basic ideas / open research questions on objects.

*Not always in electronic format.

SIMBAD

Set of Identifications, Measurements and Bibliographic Astronomical Data:

SIMBAD <http://simbad.u-strasbg.fr/simbad>

- Several Query Modes (see image)
 - Query around objects/coordinates
 - Integration with ADS and CDS
 - Sampling with a set of physical criteria
 - Display charts for list of objects resulting from coordinates query
 - Links to other CDS data services including data
 - Integration with the Virtual Observatory
-
- Main Site: <http://simbad.u-strasbg.fr/simbad>
 - US Mirror: <http://simbad.harvard.edu/simbad>



Query Results

Basic data :

V* **eps Aur** -- Eclipsing binary of Algol type

Other object types: **R1*** () , *
 (*, AG, ALS, BD, CSI, FKS, GC, GCRV, GEN
 , IR (IRAS, IRC, 2MASS, RAFGL) , ** ,

ICRS coord. (ep=2000): **05 01 58.1341 +43 49 23.910** (~)
 ICRS coord. (ep=2000): **075.4922254 +43.8233003** (~) [
 FK4 coord. (ep=1950 eq=1950): **04 58 22.52 +43 45 05.4** (~) [
 Gal coord. (ep=2000): **162.7803 -01.1705** (~) [**9.53 6**
 Proper motions *mas/yr* [error ellipse]: **0.18 -2.31 [1.06 0.60 65]** **R 1997**
 Radial velocity / Redshift / cz: **V(km/s) -2.5 [0.9]** / *z(-)* -0.000
 Parallaxes *mas*: **1.60 [1.16]** **R 1997AGA...32H...49**
 Spectral type: **R0Iab: C ~**
 Flares (6): **U 3.06 [-] D 2003hJ...125.253H**
B 3.527 [-] C ~
V 3.039 [-] C ~
J 1.880 [0.290] C 2003yCat..2246.
H 1.702 [0.170] C 2003yCat..2246.
K 1.533 [0.214] C 2003yCat..2246.

Identifiers (44) :

| | |
|--------------------------|--------------------------|
| V* eps Aur | GC 6123 |
| * eps Aur | GCRV 2970 |
| * 7 Aur | GENJ +1.00031964J |
| BDS 3605 A | GSZ 02907-01275 |
| RG+43 552 | HD 31964 |
| RLS 8131 | HIC 23416 |
| BD+43 1166 | HIP 23416 |
| CCDM J05020+4350A | HR 1605 |
| CSI+43 1166 1 | IDS 04548+4341 A |
| EM* CDS 456 | IRRS 04583+4345 |
| FK5 183 | IRC +40109 |

- Coordinates
- Proper Motion
- Radial Velocities
- Magnitudes*
- Alternative Identifiers

* Investigate cited catalog before using magnitudes in research

Example Query: **eps Aur**

Bibliographic Integration

- Every search result is linked to bibliographic info.
- Cross referenced with ADS and CDS

References (422 between 1850 and 2010)

Simbad bibliographic survey began in 1950 for stars (at least bright stars) and in 1983 for all other objects (outside the solar system).

display

reference summary

from: 1850 to:

\$currentYear

[2010IHVS.5937...1C](#)

IAU Inform. Bull. Var. Stars, 5937, 1 (2010)

A new ephemeris and an orbital solution of epsilon Aurigae.

CHADIMA P., HARMANEC P., YANG S., BENNETT P.D., BOZIC H., RUZDIAK D., SUDAR D., SKODA P., SLECHTA M., WOLF M., LEHY M. and DUBOVSKY P.

Comments & notes:

flags: (abstract)

[2010Natur.464.842G](#)

Nature, 464, 842 (2010)

Stellar astrophysics: Shrouded in a dusty disk.

GUINAN E.

[2010Natur.464.870K](#)

Nature, 464, 870-872 (2010)

Infrared images of the transiting disk in the (epsilon) Aurigae system.

KLOPPENBORG B., STENCEL R., MONNIER J.D., SCHAEFER G., ZHAO M., BARON F., McALISTER H., TEN ERUMMELAAR T., CHE X., FARRINGTON C., PEDRETTI E., SALLAVE-GOLDFINGER P.J., STURMANN J., STURMANN L., THUREAUX N., TURNER N. and CARROLL S.M.

Data Integration

Useful data sources:

- Spectral Types
- Radial Velocities
- Proper Motion
- Positions (historical)
- Rotational Velocity
- Variable Star Parameters

Measurements (16 types) :

Jbet1 : 5 IRAS : 1 ISO : 4 IUE : 486 JP11 : 3 MK : 14 orb
 J2 : 12 PLX : 5 PM : 3 pos : 3 ROT : 4 SAO : 1
 ID1 : 1 UVV : 8 wby1 : 4 v* : 1

[mk](#) (14)

| ids/mssl | Spectral type | reference |
|----------|---------------|----------------------|
| m P / | FOIa | 1955ApJ...121..653S |
| l / | FO IA P,E,SB | 1958GCVS2.C.....OK |
| l / | A8Ia | 1951ApJ...113..304B |
| IG / | FOIa | 1950ApJ...111....JK |
| IP / | FOIa | 1943MNRAS...4....OH |
| OP/ | FOIa | 1959PASP...4...52B |
| l / | A8Ia | 1953AnAp...16..321F |
| IP / | FOIap | 1960MNRAS.120..287G |
| l / | FOIap | 1958PASP...70..561K |
| l / | A8Iae | 1954ApJS...1..175B |
| IP / | FOIap | 1956ApJ...123..440S |
| IG / | FOIap | 1956ApJ...123..210D |
| OP/ | FSIa | 1947ApJ...106...20W |
| l / | F2Iab: | 1975MnRAS...79..131R |

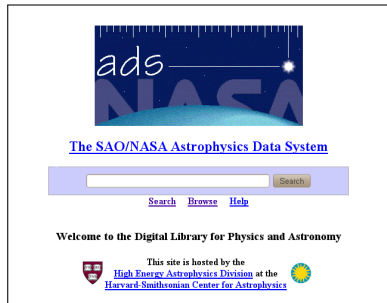
[orb](#) (12)

| RVel. | Q (Nmas) | Rem. | Or Dis | reference |
|-------|---------------|------|--------|--------------------|
| m | -2.5 Å (393) | ## | | 1953GCRV..C.....OW |
| l | +0.1 (3) | | | 1900ApJ...11..414. |
| l | +3 ? (611V | | | 1904AnJ...21..101 |

SAO/NASA The Astrophysics Data System (ADS)

Astrophysics Data System (ADS), <http://adsabs.harvard.edu>

- A Digital Library portal for research
- Three Bibliographic Databases
 - Astronomy and Astrophysics
 - Physics and Geophysics
 - arXiv e-prints
- Search and Browse Functionality
- Points to Articles, data catalogs and archives.
- myADS Update Service



What can ADS do?

Browsing

- Journal/Volume/Page**
 Find a record in ADS cited by journal, volume and page
- Table of Contents from major Journals**
 View the latest tables of contents from the major journals
- Articles**
 View and print scanned pages of publications digitized by ADS.
- Scanned Historical Literature**
 View and print scanned pages of Historical Observatory Publications digitized by ADS
- Selected Scanned Books**
 View and print selected books digitized by the ADS.

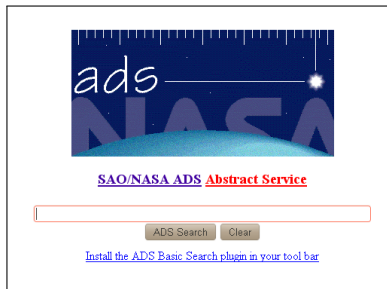


Sometimes need to look up Journal Abbreviations:

- Example of J/V/P: Annals of Harvard College Observatory, v.69 1913

What can ADS do?

Searching



- **Entire Bodies of Literature**
Searches the entire body of literature
- **Astronomy and Astrophysics (advanced search)**
Searches the entire Astronomy Database
- **Physics and Geophysics**
Searches the Physics Database
- **arXiv Preprints**
Searches all papers published on arXiv (a preprint server)
- **Science Education Search**
A basic interface to the literature in Science Education Research and related publications
- **Topics Search (beta)**
An experimental interface providing users with capability of finding the most relevant, most recent, most important, most popular, most useful and most instructive papers on a particular topic.

Astronomy and Astrophysics Searching

Abstract Service

- In/exclude Author Name(s)
- Publication Date Range
- Title and Abstract Words
- Astronomical Object
- Both simple logical and Boolean Search options

The screenshot shows the SIMBAD Advanced Search Form. At the top, there are buttons for "Send Query", "Return Query Form", "Store Default Form", and "Clear". Below these are checkboxes for "Databases to query": Astronomy, Physics, and arXiv e-prints.

The "Authors" section includes a label "(Last, First M, one per line)", checkboxes for SIMBAD, NED, and ADS Objects, and options for Exact name matching, Require author for selection, and Object name/position search, Require object for selection. It also features radio buttons for "simple logic" and "boolean logic" and a "Combine with:" section with radio buttons for OR and AND.

The "Publication Date" section has fields for "between" and "and" with sub-fields for (MM) (YYYY) and (MM) (YYYY).

The "Enter Title Words" section includes a checkbox for "Require title for selection" and radio buttons for "simple logic" and "boolean logic".

The "Enter Abstract Words/Keywords" section includes a checkbox for "Require text for selection" and radio buttons for "simple logic" and "boolean logic".

At the bottom, there are input fields for "Return" (set to 200) and "items starting with number" (set to 1).

- Link: [Advanced Search Form](#)
- Example: Find Iben's 1967 paper entitled *Stellar Evolution Within and off the Main Sequence*

Bibliographic Options

• [Find Similar Abstracts](#) (with [default settings below](#))

• [Full Refereed Journal Article \(PDF/Postscript\)](#)

• [Full Refereed Scanned Article \(GIF\)](#)

• [References in the article](#)

• [Citations to the Article \(621\)](#) ([Citation History](#))

• [Refereed Citations to the Article](#)

• [Also-Read Articles](#) ([Reads History](#))

•

• [Translate This Page](#)

Title: Stellar Evolution Within and off the Main Sequence
Authors: [Iben, Icko, Jr.](#)
Publication: Annual Review of Astronomy and Astrophysics, vol. 5, p.571 ([Annual Reviews Homepage](#))
Publication Date: 00/1967
Origin: [ADS](#)
DOI: [10.1146/annurev.aa.05.090167.003035](#)
Bibliographic Code: [1967ARA&A...5..571I](#)

- Find Similar Abstracts
- Look the the paper in PDF or GIF form
- Read the arXiv paper (if applicable)
- Look up references IN the article
- Find citations TO this article
- Links to Catalog(s) and/or associated articles
- Suggested Reading

- Article: [Stellar Evolution Within and off the Main Sequence \(Iben, 1967\)](#)
- Catalog: [Torun catalog of post-AGB and related objects \(Szczerba, 2007\)](#)