Using ADS and SIMBAD in Astronomical Research

Brian Kloppenborg

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

Queries
basic search
by identifier
by coordinates
by criteria
reference query
scripts
options

Query Results

Basic data :

V* eps Aur -- Eclipsing binary of Algol type

Other object types:	**Al* ()** ,**
	(*,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 +43.8233083 (~) [**
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 0.68 65] A 1997**
Radial velocity / Redshift / cz :	**V(km/s) -2.5 [0.9] / z(~) -0.000**
Parallaxes *mas*:	**1.60 [1.16] A 1997A&A...323L..49**
Spectral type:	**A8Iab: C ~**
Fluxes (6) :	**U 3.86 [~] D 2003AJ....125.2531I**
	B 3.527 [~] C ~
	V 3.039 [~] C ~
	J 1.880 [0.298] C 2003yCat.2246.
	H 1.702 [0.178] C 2003yCat.2246.
	K 1.533 [0.214] C 2003yCat.2246.

Identifiers (44) :

V* eps Aur	**GC** 6123
* eps Aur	**GCRV** 2970
* 7 Aur	**GEN#** +1.00031964J
ADS 3605 A	**GSC** 02907-01275
AG+43 552	**HD** 31964
ALS 8131	**HIC** 23416
BD+43 1166	**HIP** 23416
CCDM J05020+4350A	**HR** 1605
CSI+43 1166 1	**IDS** 04540+4341 A
EM* CDS 456	**IRAS** 04583+4345
FK5 183	**IRC** +40109

Example Query: eps Aur

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

* Investigate cited catalog before using magnitudes in research

Bibliographic Integration

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

Data Integration

Useful data sources:

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

SAO/NASA The Astrophysics Data System (ADS)

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

- A Digitial 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
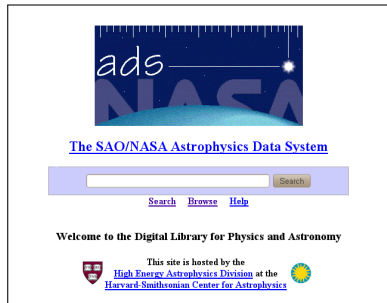
What can ADS do?

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
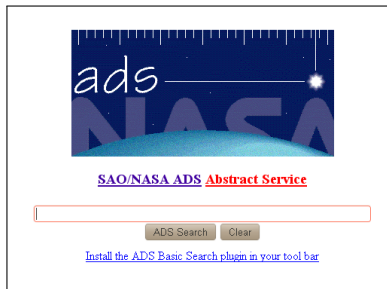 View and print selected books digitized by the ADS.

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

- 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)