

Useful Lists of Double Stars

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Abstract: The study of double stars often involves searching through several references in order to obtain information. This time consuming process could be greatly shortened if the information were summarized into spread sheets from which data could be easily extracted. To that end, I have prepared four lists: a catalog of 4,765 double stars, a single list of the entire OAG and all of its supplements, a summary of the Washington Double Star Catalog, and a partial cross reference of identifiers.

Objectives

In my studies of double stars, it is often necessary to search through several sources to find information, which is a very slow process. Two approaches to improving this situation were taken. The first objective was the compilation of a double star catalog with information and major identifiers for a large number (4,765) of double stars. The second objective was to organize existing catalogs into a more useful format.

The Carro Double Star Catalog

1. Description

The Carro Double Star Catalog contains the names of 4,765 double stars along with four major identifiers, namely the Bonner Durchmusterung number (BD), the Discoverer Code (DC), the Smithsonian Astrophysical Observatory (SAO) number, and the Washington Double Star (WDS) identifier. The BD, DC, and WDS numbers were taken from the Washington Double Star Catalog. The SAO number was taken from the SIMBAD web site. Some other references were consulted.

2. Method

All of the information was copied, not transcribed, from original sources, and mounted into an Excel book consisting of 93 sheets, and saved in the 2010 and the 97-2003 format. All of the data is unmodified, and presented as shown in the original source, however, the reader should note that when data is copied, Excel often omits leading and trailing zeroes. The absence of data merely means that no data was available from the original source.

The magnitude of the primary star will be 12 or brighter, making it possible to view these stars with small telescopes. Star selections were made from each of the 88 constellations. Links to the data files were placed on the Home Page of the Journal of Double Star Observations. The files may be downloaded from that web site (<http://www.jdso.org/>), and freely distributed.

3. Organization

The star names are displayed in the following order: number designation (2 CAS), Greek letter (iota CAS), number and Greek letter (24, eta CAS), number, Greek letter and traditional name (18, alpha CAS)

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Schedar). A name such as 18 alpha CAS Schedar means that the star may be found in other catalogs by its number (18 CAS), its Greek letter designation (alpha CAS), or its traditional name (Schedar). If no such nomenclature existed, the discoverer code was used (such as BU 1094). Greek letters are shown in lower case, and constellation abbreviations are shown in upper case. There is some inconsistency in the names as they were taken from several sources, not all of which agree with each other.

The following information is given for each entry: star name, SAO number, WDS identifier, discoverer code and number, Bonner Durchmusterung number, components, date of first satisfactory observation, date of most recent satisfactory observation, number of observations, position angle at observation 1, position angle at observation 2, separation at observation 1, separation at observation 2, magnitude of first component, magnitude of second component, spectral type primary/secondary, primary proper motion (RA1), primary proper motion (DE1), secondary proper motion (RA2), secondary proper motion (DE2), right ascension J2000, and declination J2000.

Within the Excel book there is a sheet for each constellation, and those sheets are sorted in alphabetical order. Within each constellation sheet, the star names are sorted in alphabetical order. A diagram of each constellation accompanies the star data. Each star name is also a link to the SIMBAD web site from which additional information is available.

At the end of the catalog will be found tables which were sorted by 1) constellation and then star name, 2) star name, 3) Washington Double Star identifier, and 4) Right Ascension. Two other tables were included, namely a list of some colored stars, and the best viewing times for the constellations. See Figures 1 and 2.

4. Sources

The primary sources for this work included the Washington Double Star Catalog (edited by Brian Mason), the SIMBAD web site which is maintained by Centre de Données Astronomiques de Strasbourg (Cécile Loup, web master), the Eagle Creek Observatory web site (Kevin Muenzler web master), and the Bright Star Catalog. Some of the star data was obtained from other sources.

The Washington Double Star Catalog

The United States Naval Observatory is the agency charged with the task of maintaining the WDS Catalog,

and their web site has four pages on which the double star information is given. This fact means that searching for information often means looking at more than one page. Furthermore, the data was mounted in text format with all of the data in a single string which requires conversion into other formats.

All four pages were combined into a single spreadsheet using Excel version 2010. This format makes any search easier, and the table can be resorted in accord with the wishes of the investigator. This flexibility gives any investigator the opportunity to sort based on criteria that are under study.

The Observatorio Astronómico de Garraf

This catalog was coordinated by Tofol Tobal and Jaume Planas of the Garraf Astronomical Observatory, Barcelona, Spain, and is available from the web site of the United States Naval Observatory. On that site, the original catalog and 26 supplements can be found. The fact that there are 27 pages makes data searches awkward and slow because there is no way to know on which page a star might be listed.

The original list and all of the supplements were combined into a single Excel spreadsheet, which was then sorted by the WDS coordinates, a fact which greatly facilitates any search.

Identifier Cross Reference

A partial list of 12 identifiers linked to the WDS identifier was compiled. No attempt was made to include all of the identifiers as there are currently up to 74 identifiers for a given star.

Use

Due to the fact that the lists were prepared using Excel version 2010, the data is also available in an easily managed format. Any portion of the data may be copied and exported to other programs such as Microsoft Word, electronic mail software, or other spreadsheet software. Once imported into a local spreadsheet, new sheets may be created, and operators will be able to keep unique portions of the data on separate sheets.

Acknowledgements

This research made use of the Washington Double Star Catalog maintained by the United States Naval Observatory, and the SIMBAD data base operated at CDS, Strasbourg, France.

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Double Stars of the Constellation ANTLIA (the Air Pump) ANT Ant-liae

Antlia is a southern constellation which rises in October, sets in June, and is best viewed in February.

To obtain more information about a star, left click on the star name and the SIMBAD site will open.

Star name	SAO	WDS	Disc	DM	Com	First	Latest	Ob	pa1	pa2	Sep1	Sep2	mag1	mag2	Sp Type	RA1	DE1	RA2	DE2	RAJ2000	DEJ2000
ARG 23		09569-2832	ARG 23	-27 7069		1883	1999	4	84	80	57.5	56.1	8.73	11.3	A8/9V	13	-26			09 56 55.11	-28 32 27.4
B 185	177722	09360-2731	B 185	-26 7251	AB	1926	1999	13	204	201	3.7	3.2	7.57	9.66	A4III	-41	9	-41	4	09 36 02.93	-27 31 19.2
BU 215	178157	09541-2800	BU 215	-27 7035	AB	1874	1991	16	340	346	1.5	1.8	7.15	9.32	B4V	-14	-5	-14	-5	09 54 05.14	-27 59 56.4
delta ANT	201442	10296-3036	H N 50	-29 8383	AB	1834	1999	22	235	226	10	10.9	5.56	9.84	B9.5V	-31	6	-29	2	10 29 35.38	-30 36 25.4
eta ANT	200926	09589-3553	HJ 4271	-35 6050		1836	1999	7	313	319	27.5	31.4	5.23	11.3	F1III-IV	-87	-20			09 58 52.34	-35 53 27.4
HJ 4218		09332-3624	HJ 4218	-35 5778		1836	1999	13	27	29	3.5	5.7	7.62	9.78	A1IV	-10	-21	1	-3	09 33 09.84	-36 24 16.8
HJ 4300		10157-3317	HJ 4300	-32 7182		1835	1999	13	106	108	7.5	9	9.5	10.16	F3V F3V	-40	8	-36	9	10 15 41.02	-33 16 46.4
HJ 4304	201293	10202-3308	HJ 4304	-32 7252	AB	1836	2004	12	290	286	12	9.5	7.55	9.78	A3III/IV	-17	9	-24	10	10 20 13.67	-33 07 43.4
HJ 4342		10417-3045	HJ 4342	-30 8634		1834	1999	7	54	55	16.5	25	8.16	10.96	A0V	-6	0			10 41 43.32	-30 45 01.5

Figure 1: Sample page -- condensed to fit on this page

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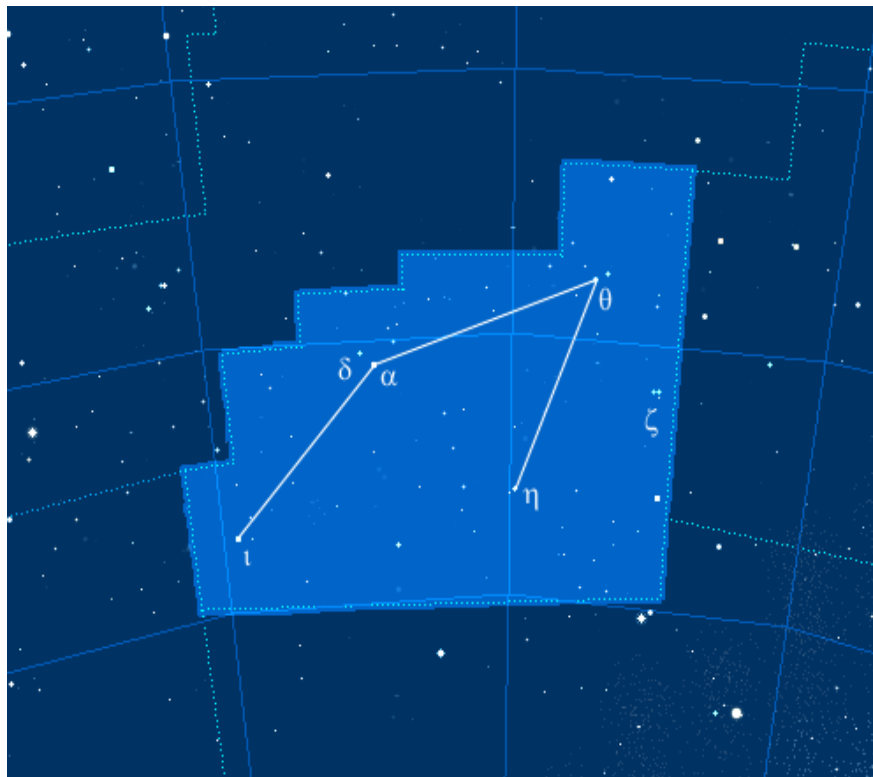


Figure 2: Sample constellation diagram

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References

- Diagrams courtesy of www.dudeman.net.
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