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PART VII

FOURTH CATALOG OF
ORBITS OF VISUAL BINARY STARS

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It may be noted that, aside from the period, other elements have a selective influence on the grade, in particular high eccentricities and/or inclinations which limit the positionally observable arc, thus rendering a highgrade solution more difficult to obtain.

In cases where the difference of magnitude is small and there is doubt regarding the quadrant interpretation, so that two or more widely differing sets of elements are possible, the ambiguity is indicated by the symbol A preceding the grade. For example, for ADS 450 (A 111) two solutions have been offered with periods of 10.755 and 21.30 years, each graded A3, and each grade being assigned on the assumption that the ambiguity has been resolved. (Thus these grades do not indicate if and which one of the alternatives is more likely). In a few cases the possibility of ambiguity has been indicated even though the alternative interpretation has not been tested by orbit computation.

DESCRIPTION OF THE CATALOG

Table 2 lists the orbit catalog, where most of the data presented are identifiable by the column headings. Each orbit requires two lines of data arranged in 11 columns. A brief explanation of the items follows:

Column 1	line 1	The Right Ascension for 1900.
	2	The name(s) of the star, and the components involved.
2	1	The Declination for 1900. An asterisk following this value indicates a Note.
	2	(Continuation of the name, or components, if necessary).
3	1	The ADS number.
	2	(Continuation of the name, or components, if necessary).
4	1	The magnitude of component A.
	2	The spectral type of component A.
5	1	The magnitude of component B.
	2	The spectral type of component B. An asterisk following this value indicates that the spectral types have been inferred from a combined spectrum and a known magnitude difference, as previously discussed.
6	1	The period in years, P.
	2	The time of periastron passage, T.
7	1	The semi-major axis, a, in seconds of arc.
	2	The eccentricity, e.
8	1	The inclination, i.
	2	The longitude of periastron, ω, reckoned from the node as listed.
9	1	The node, Ω. An identified ascending node is indicated by an asterisk following the value.
	2	The equinox (if any) to which the node refers.
10	1	The grade, as previously discussed, followed by the date of the last observation used in the computation, when known.
	2	Inclusive dates for which an ephemeris is given by the author.
11	1	The computer of the orbit.
	2	The reference.

The notes following the catalog are mainly concerned with multiplicity, variability, and spectroscopic motions or sub-motions.

The closing date for this catalog is 1 July, 1982. It contains 928 orbits of 847 systems (counting triples as two systems). There are 23 orbits of unresolved systems. Of the non-ambiguous orbits, 62 are grade 1, 118 grade 2, 263 grade 3, 266 grade 4, and 131 grade 5.

Table 2.

R.A. (1900) Name (1)	Dec. (2)	ADS (3)	mA SpA (4)	mB SpB (5)	P T (6)	a e (7)	i omega (8)	Node Equinox (9)	Grade last Ephemeris (10)	Computer Reference (11)
00 00.2 STT 547	+45 16*	48	8.94 dK6	9.04 dM0	362.3 1710.0	6.179 0.52	62.3 276.58	19.07 1950	5 1954 1956-1970	U. Güntzel-Lingner Astron. Nachr. 282, 183; 1955.
					1506.68 1969.44	11.698 0.500	56.59 350.43	174.42 2000	5 1961 1960-2000	J. Hopmann Ann. Sternw. Wien 26, 7; 1964.
00 01.0 STF 3062	+57 53	61	6.43 G3V	7.19	106.83 1943.05	1.432 0.450	44.4 278.8	219.1 *	1 1957 1958-1972	P. Baize J. Observateurs 40, 197; 1957.
00 03.8 STF 2	+79 10	102	6.7 A7IV	7.0	456 1887.3	0.924 0.68	110.3 332.5	170.7 2000	3 1968 1970-1995	W.D. Heintz Astron. J. 76, 277; 1971.
00 06.9 BU 1026	+53 04	148	7.3 A7Vn	8.1 F2V*	68.5 1919.89	0.225 0.79	38 75.0	72.6	3 1961 1962-1985	O.J. Eggen Astron. J. 70, 19; 1965. Orbit 1.
					63.89 1920.39	0.217 0.750	23.47 59.9	81.5	3	J.A. Russell Pub. Astron. Soc. Pacific 47, 222; 1935.
00 08.2 STT 2	+26 26*	161	6.7 G0III	7.5 F2IV	368 1970.5	0.564 0.69	127.5 113.8	15.7 * 2000	3 1978 1978-1996	W.D. Heintz Astrophys. J. Suppl. 41, 549; 1979.
00 10.6 STF 13	+76 24	207	7.0 B8Vnn	7.3	1600 1830.0	1.26 0.50	135.7 304.0	81.0	5 1959	W.D. Heintz Astron. Nachr. 285, 255; 1960.
00 11.5 STT 4	+35 56	221	8.2 F6V	8.9 F9V*	115.049 1908.016	0.363 0.576	158.87 134.67	148.27 2000	3 1981-2000	M. Scardia Astron. Astrophys. Suppl. 47, 167; 1982.
00 12.7 GRB 34	+43 27*	246	8.07 M3V	11.04 M6V	2600 1745	41.15 0.0	61.4 0.0	45.3 2000	5	S.L. Lippincott Astron. J. 77, 165; 1972.
00 15.4 HJ 1018	+67 07	283	8.4 G5	8.9	163.4 1943.0	1.24 0.96	88.5 230.4	84.9	3 1956 1950-1970	P. Muller J. Observateurs 40, 48; 1957.
00 15.5 BU 1015	+11 45	281	8.7 F5	8.9	134.89 1961.68	0.35 0.55	36.1 201.6	102.0	3 1970 1972-1982	P. Baize Astron. Astrophys. Suppl. 13, 65; 1974.
00 15.8 STT 6	+66 27*	293	7.7 B8.5V	8.3	240 1927.0	0.46 0.80	103.0 184.3	147.3	4 1953 1950-1970	P. Muller J. Observateurs 37, 61; 1954.
00 21.3 Alpha Phe Aa-P	-42 51*		2.38 K0III		10.538 1903.236	0.072 0.335	110.4 3	221	1 rev.	H.L. Alden Astron. J. 46, 189; 1938.
00 22.0 A 431	-08 26	363	8.9 G5V	8.9 K0V*	54 1951.0	0.365 0.65	111.2 293.4	21.6	2 1953 1950-1970	P. Muller J. Observateurs 37, 62; 1954.
					53.38 1949.92	0.36 0.65	110.0 295.2	26.6	2 1954-1970	P. Baize J. Observateurs 36, 159; 1953.
00 22.7 HU 1007	+63 11	371	9.7 G8	9.9	198.53 2060.86	0.458 0.473	53.51 103.26	117.03	5 1962 1965-1995	A.S. da Silva, M.C. Balca O Inst. de Coimbra, 131; 1968.
00 23.3 B 1909	-20 53		7.2 G0V	7.2	5.625 1937.95	0.134 0.60	59.7 174.7	119.0	A1 1953 1 rev.	W.H. van den Bos Union Obs. Circ. 6, 279; 1956. Orbit 1.
					5.597 1938.155	0.115 0.744	14.5 139.0	160.6	A1	G.A. Starikova Astron. Tsirk. No. 684, 1972.
					11.25 1940.88	0.214 0.00	69.8 0.0	119.0	A1 1953 1 rev.	W.H. van den Bos Ibid. Orbit 2.
00 26.2 STT 12, Lambda Cas	+53 58	434	5.3 B8Vn	5.6	640 1958.0	0.586 0.0	47.7 0.0	174.4 2000	5 1960 1960-2000	W.D. Heintz Veröff. Sternw. München 5, 247; 1963.
00 26.3 VYS 2 Aa-A	+66 42	440	10.3		15.95 1956.0	0.125 0.05	45 160	167 2000		J.L. Hershey Astron. J. 78, 935; 1973.
Aa-B			10.3	12.8	320 1993.0	4.06 0.0	51 0	168 2000	5	J.L. Hershey Ibid.