Documentation for the Machine-Readable Version of the Catalogue of Stars Within 25 Parsecs of the Sun

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DOCUMENTATION FOR THE MACHINE-READABLE VERSION OF THE *CATALOGUE OF STARS WITHIN 25 PARSECS OF THE SUN*

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SECTION 1 - INTRODUCTION

The *Catalogue of Stars within twenty-five parsecs of the Sun* (Woolley, Epps, Penston and Pocock 1970) was constructed at the Royal Greenwich Observatory in order to enlarge the *Catalogue of Nearby Stars* compiled by Gliese (1957). The catalogue contains data on stars nearer than 25 pc which are not included in Gliese's catalogue, plus additional information published since 1957 on stars in the Gliese compilation.

The machine-readable version of the *Catalogue of Stars within twenty-five parsecs of the Sun* contains essentially all information given in Table Ia of the published catalogue, plus positional data and all cross references to other catalogue numbers given in Table IIa. Not included from Table Ia are the flags (asterisks appended to catalogue numbers) indicating notes in the published catalogue, nor are the notes in machine-readable form. Omitted from Table IIa are the finding chart identifiers (Lowell G numbers or notes reference) and miscellaneous cross identifications to other names and catalogue identifiers. Tables Ib and IIb, containing 21 systems originally included in Gliese's (1957) catalogue, but for which revised parallaxes have placed them farther than 25 pc, are not included in the machine-readable version. A useful extension to the present machine-readable catalogue would be the addition of the cross identifiers and the creation of a separate file containing the notes.

This document describes the machine-readable version of the subject catalogue currently available on magnetic tape from the Astronomical Data Center. Although it should enable users to read and process the tape file without difficulty, and to interpret the data to some extent, the additional information given in the data descriptions and the notes in the published catalogue make it advisable to consult the latter when analyzing and/or intepreting the data in the machine version.

SOURCE REFERENCE

Woolley, R., Epps, E. A., Penston, M. J. and Pocock, S. B. 1970, *Catalogue of Stars within twenty-five parsecs of the Sun, Roy. Obs. Ann.*, No. 5.

SECTION 2 - TAPE CONTENTS

A byte-to-byte description of the contents of the logical records in the *Catalogue of Stars within twenty-five parsecs of the Sun* is given in Table 1. The suggested format specifications are presented in order to clarify the units and data types, and they can be modified depending upon usage; however, care must be exercised when using integer and real format specifications in place of character (A) formats because some data fields contain blanks when data are absent. All tape data are recorded as integers, but real (F) format specifications are suggested when more appropriate and to show decimal point locations. Since data fields are blank for missing data, records should be buffered in or fields tested in some way to distinguish between blanks and zero. Alternate specifications are given in parentheses. For complete data descriptions, the user should consult the published catalogue referenced on page 1-1.

Table 1. Tape Contents, *Catalogue of Stars within 25 parsecs of the Sun*

Byte(s)	Units	Suggested Format	Description
1- 4	---	I4	Star number. Numbers in Gliese's (1957) catalog retained; newly added stars have numbers starting at 9001 and increasing with α_{1950}, but since numbering of extension, new parallaxes have removed 9419 and added two new stars: 9849, 9850 (both at $\alpha_{1950} = 4^h\ 19^m$), The Sun (first record) has number 0.
5	---	A1	Component identification (A, B, ...) for stars having the same number. Stars with separately published parallaxes have generally been assigned separate numbers. Components are given for extension stars when they are known or suspected to form a physical system.
6- 8	"	F3.3	Parallax (π). The main sources of trigonometric parallaxes are the Yale *General Catalogue of Trigonometric Stellar Parallaxes* and its supplement (Jenkins 1952, 1963). Some spectroscopic parallaxes are included and indicated by the probable error code following.

Table 1. (continued)

Byte(s)	Units	Suggested Format	Description
9- 10	"	A2	Probable error of a trigonometric π. The two bytes given are the least significant digits in a number of the form ±0.0XX which, for pure numbers, could be read in format F2.3; however, for spectroscopic π, byte 9 is blank and byte 10 contains "S".
11	---	I1 (A1)	"8" if p.e. (π) < 15% "9" if p.e. (π) < 10% blank otherwise
12- 16	s yr^{-1}	F5.4	Annual proper motion μ_α in seconds of time; blank if not present. Note that most data are given to a precision of $0^s.0001$; however, many values are only quoted to $0^s.001$. In the latter case, byte 16 is blank, hence precision can be ascertained by reading the field in an A format and testing for a blank in byte 16.
17- 22	" yr^{-1}	F6.3	Annual proper motion μ_δ in arcseconds; blank if not present. See note on precision for μ_α above.
23- 27	km s^{-1}	F5.1	Radial velocity taken from the GCRV (Wilson 1953), unmodified for Wilson codes a and b, revised for codes c and d if additional measures were available. Observed velocities are given for white dwarfs (uncorrected for gravitational redshift). Additional unpublished velocities from various observations are included where needed. Field blank if no datum present; if datum present, sign always in byte 23.
23	---	I1 (A1)	Radial velocity code: 1 if mean value of combined components of binary (symbol J in published catalogue); 3 if velocity variable (symbol V in published catalogue); otherwise blank.

Table 1. (continued)

Byte(s)	Units	Suggested Format	Description
29- 32	km s^{-1}	I4	*U* component of space velocity relative to Sun (blank if no data).
33- 36	km s^{-1}	I4	*V* component of space velocity relative to Sun (blank if no data).
37- 40	km s^{-1}	I4	*W* component of space velocity relative to Sun (blank if no data).
41- 45	---	F5.4	Box orbit parameter, $\tilde{\omega}$, the distance of the epicenter of the box from the Galactic center (see Woolley and Candy 1968). Note that the quantities $\tilde{\omega}$, *e* and *i* are normalized to the solar distance from the Galactic center and the unit of velocity is the Sun's circular velocity, taken to be 250 km s^{-1}. The solar motion used is u_o = +10 km s^{-1}, v_o = +10 km s^{-1}, w_o = +7 km s^{-1}, while the Oort's constants adopted are *A* = +14.6 km s^{-1} kpc^{-1}, *B* = -11.5 km s^{-1} kpc^{-1}. For multiple systems $\tilde{\omega}$, *e* and *i* have been computed for the first component only using available values of *u*, *v*, and *w*. Field blank if no datum.
46- 49	---	F4.4	Box orbit parameter, *e*, the eccentricity of the orbit; blank if no data.
50- 53	---	F4.4	Box orbit parameter, *i*, the box angle; blank if no data.
54	---	I1 (A1)	Luminosity class code (MK or Mt. Wilson): 1 - I or c; 2 - II or c; 3 - III or g; 4 - IV or sg; 5 - V or d; 6 - VI or sd; 7 - D or wd. Blank for no data. Note: Intermediate luminosity classes have no codes; e.g., 4 is given for class IV-V.
55- 57	---	A3	Spectral type (MK where available, mostly from Jaschek *et al.* 1964; preference given to Wilson 1953 for remaining types). Peculiarity indicators (n, e, etc.) given in upper case.

Table 1. (continued)

Byte(s)	Units	Suggested Format	Description
58	---	I1 (A1)	Spectral-type code: 1 - MK; 2 - combined MK type for multiple system; 4 - combined non-MK; blank - non-MK.
59- 62	mag	F4.2	Magnitude V, m_v or m_{pg}. V preferred, sometimes weighted means. Photoelectric data are given to $0^m.01$ precision, Mv and Mpg to $0^m.1$ precision (byte 62 blank). Data always present except for Sun (first record).
63	---	I1 (A1)	Magnitude code: 1 - combined light value for multiple system (symbol J in published catalogue); 2 - photographic magnitude (P in published catalogue); 3 - variable magnitude (V in published catalogue); otherwise blank.
64- 67	mag	F4.2	B-V color. Field blank if no data; sign always in byte 64 if value present.
68- 71	mag	F4.2	U-B color. Field blank if no data; sign always in byte 68 if value present.
72- 75	mag	F4.2	Absolute visual magnitude M computed from apparent magnitude and parallax: $M = m + 5 + 5 \log \pi$, reported to $0^m.01$ if both probable error of $\pi < 10\%$ and V magnitude given to $0^m.01$.
76- 77	hours	I2	α_{1900}
78- 80	min	F3.1	α_{1900}
81	---	A1	Sign of δ_{1900}
82- 83	°	I2	δ_{1900}
84- 85	'	I2	δ_{1900}

Table 1. (continued)

Byte(s)	Units	Suggested Format	Description
86- 87	hours	I2	α_{1950} taken, in order of preference, from the *Smithsonian Astrophysical Observatory Star Catalog* (SAO 1966), the lists of Giclas *et al.* (1959-1969) and the *General Catalogue* (GC, Boss 1937). Positions precessed from those given in parallax references in other cases.
88- 89	min	I2	α_{1950}
90- 91	sec	I2	α_{1950}
92	---	A1	Sign of δ_{1950}
93- 94	°	I2	δ_{1950}
95- 97	'	F3.1	δ_{1950}
98-102	---	A4, A1	Number in *General Catalogue of Trigonometric Parallaxes* (Jenkins 1952, 1963). For GCTP numbers form XXXX.X, the decimal point lies between bytes 101 and 102; i.e., the numbers can be read with format F5.1, but the field is blank when there is no value given.
103-108	---	I6 (A6)	*Henry Draper* (HD) catalogue number. Blank for no data.
109-110	---	I2 (A2)	DM zone. Signs are present in byte 109 only when |DMZ| < 10°; in other cases, the sign should be taken from the declination (byte 81 or byte 92). The HD convention of DM assignment is followed: BD north of -23°, CD -23° > δ zone > -52°, CPD south of -52°.
111-115	---	I5 (A5)	DM number. DM field is entirely blank for no data.
116-120	---	I5 (A5)	Number in the GCRV (Wilson 1953). Blank if not present.

Table 1. (continued)

Byte(s)	Units	Suggested Format	Description
121-126	---	A6	Other proper-motion catalogue designations; byte 121 or bytes 121-122 can contain the following letter codes: L - Luyten LTT catalogues (1957, 1961, 1962); C - Cincinnati Publ. No 18 (Porter *et al.* 1915); CC - Cincinnati Publ. No. 20 (Porter *et al.* 1930). A pure numerical designation implies a GC number. Priority is GC, CC, C, LTT. Field blank when no data.
127-130	---	I4 (A4)	YBS = HR number from *Catalogue of Bright Stars* (Hoffleit 1964). Blank for missing number.
131-133	---	I3 (A3)	Numbers in red-dwarf lists of Vyssotsky and collaborators (1943, 1946, 1952, 1956) and in supplementary list (Vyssotsky 1958). Blank for missing data.
134	---	A1	Remarks code: Code Abbrev. 2 SB spectroscopic binary 3 ST spectroscopic triple 4 D unresolved double, unknown nature 5 UV UV Ceti flare star 6 EB eclipsing binary 7 SR semi-regular variable 8 AB astrometric binary 9 PL NEB planetary nebula
135	---	A1	Remarks code as above. Two bytes are used to allow for at least two remarks for the same star.

SECTION 3 - TAPE CHARACTERISTICS

The information contained in Table 2 is sufficient to enable a user to read the machine version of the catalogue. Information for the entire catalog is given in the table, but parameters which are easily varied from installation to installation, such as block size (physical record length), blocking factor (number of logical records per physical record), total number of blocks, tape density, and coding (EBCDIC, ASCII, BCD, etc.) are not included. This information should always be supplied if secondary copies of the machine-readable catalogue are transmitted to other users or installations.

Table 2. Tape Characteristics. *Catalogue of Stars within twenty-five parsecs of the Sun.*

NUMBER OF FILES	1
LOGICAL RECORD LENGTH (BYTES)	135
RECORD FORMAT	FB*
TOTAL NUMBER OF LOGICAL RECORDS	2150

*Fixed length blocks (last block may be short)

SECTION 4 - REMARKS, MODIFICATIONS AND REFERENCES

A magnetic tape version of the *Catalogue of Stars within twenty-five parsecs of the Sun* was received from the Centre de Donnees Stellaires, Strasbourg (CDS catalogue number 5004). As received the logical record length was 160 bytes and the file had been recorded in 026 character code. The file was converted to 029 code (& converted to + signs, etc.) and reformatted to eliminate all unnecessary blank characters, thus resulting in the current 135-byte logical record length. The remarks coding (bytes 134-135) originally included seven codes (2-8), as defined in Table 1; however, one star (9785) in the published catalogue (Table Ia) contains the note "PL NEB", which had not been assigned a remarks code. The code 9 has been assigned to the planetary nebula category and entered into byte 134 of the record for star 9785.

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SECTION 5 - SAMPLE LISTING

The sample listing presented on the following pages contains logical data records exactly as they are recorded on the tape. The beginning of each record and the bytes within the record are indicated by the column heading index across the top of each page (digits read vertically). Since each logical record is longer than 115 bytes, the remainder of the record (bytes 116-135) is printed in the following row.

```
          L I S T I N G   O F   R E C O R D S   F R O M   T A P E   F I L E

                     TAPE FILE NAME: STARS < 25 PARSECS

                             RECORDS       1 TO      11

                           TAPE FILE      36

                      RECORD LENGTH     135 BYTES

                        INPUT VOLSER    \    )08

C O L U M N                                                                                                                111111111111111
H E A D I N G               111111111122222222223333333333444444444455555555556666666666777777777788888888889999999999000000000011111
I N D E X          123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890123456789012345


RECORD       1      0S     9                    0   0   010467 559  915G2 1     +066+010 479


RECORD       2      1 225 89+4750- 2332+ 236  -77 -99 -36 67553644 5195M4 1 858 +145+098103423595-3751000228-373625817 2252133715492

                    31     49

RECORD       3      2 094 49+083 - 015 +  02  -36 -21 -15 9517090301055M2   989 +150+118 97600000+4514000232+45306            44 4548

                    34CC    4     216

RECORD       4      3 07712 -032 - 052 + 410   35 -39  -9 87601774  255K5 1 845 +105+103 788 0 02-6822000248-68 62   3     5568 3597

                      CC    5

RECORD       5      4A094 49+0832- 0131+  30  -38 -19 -15 9604 916 1055K6   893 +144+121 880 0 04+4516000302+45322   4     3945 4408

                    39     71     2172

RECORD       6      4B094 49+0832- 0193+  16  -36 -20 -17             5M0   897 +143+120 884 0 04+4516000302+45321   4

                    40     72

RECORD       7   9001A045 8 +0330+  034- 117  -19 -23  -0 9429 628  925G5   5971+068+018 424 0 10+5753 0 338+58 95   7    12357 2865

                    44     88   5

RECORD       8   9001B045 8 +0330+  034- 16   -17 -27  -0             5G8   720 +078+033 547 0 10+5753 0 338+58 95   7

                    45

RECORD       9   9002A049 78+0573-  037+  09  -46 -28  -9 92121305  254G1 1 569 +052      414 0 11-4938 0 344-49212   8    1424914337

                    47     92   6

RECORD      10   9002B049 78                                            115               995 0 11-4938 0 344-49212   8


RECORD      11      5 069 79+0286- 0180-  82  -15 -23 -10 9426 592  385K0 1 614 +075+033 533 0 14+2828000401+28447   9    16628 4704

                    51     95   8
```

```
     L I S T I N G   O F   R E C O R D S   F R O M   T A P E   F I L E

                TAPE FILE NAME: STARS < 25 PARSECS

                       RECORDS   2140 TO   2150

                     TAPE FILE     36

                 RECORD LENGTH    135 BYTES

                  INPUT VOLSER   WHW008

C O L U M N                                                                                                        1111111111111111
H E A D I N G            1111111111222222222233333333334444444444555555555566666666667777777777888888888899999999990000000000111111
I N D E X       1234567890123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890123456789012345

RECORD   2140    911 066 S -004 + 016 + 18     1  15 -15111971247 1035MO  106           97023496-2220235212-22033           22 6219
                               348
RECORD   2141    912 06313 -033 - 035                                 M   1114 +146    101423506- 642235307-0624957791      -6 6318
                     L 9789
RECORD   2142   9845A041 S +026 +  28 + 17   -52  13 -11111051731 1605MO  1076 +130     88223520-17 5235440-16473
                     L 9805    349
RECORD   2143   98458041 S +026 +  28                                     15           130623520-17 5235441-16477
                     L 9806    349
RECORD   2144    913 060 78+0545- 0031+  45  -40 -16 -13 9734 930  785MO   962 +144+119 85123535+4610235607+462705792        45 4378
                15000 33249    214
RECORD   2145   9846 040 S -0091+  030                               5MO  111           91123551- 437235740- 4203           -4 6001
                               871
RECORD   2146   9847 044 S +019 -  19 +  8   -15 -29 -17 9173 833 1345MO  109           91223563-1730235852-17133           17 6862
                     L 9850    350
RECORD   2147   9848 04112 -022 -  61                                 *3  110           90623568+2528235922+254405805
                     CC1472
RECORD   2148    914A084 49+0625- 0988- 362   -9 -74 -33 75282471 436502 1 575 +067+005 53723569+2633235933+264905807  22493026 4734
                15044 333349088
RECORD   2149    914B084 49+0625- 0988                                    875           83723569+2633235933+264905807

RECORD   2150    915 122 89+055 - 067                                7A5 1305 +007-087134823570-4342235934-432615808
                     CC1474
```