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Documentation for the Machine-Readable Version of OAO 2 Filter Photometry of 531 Stars of Diverse Types

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DOCUMENTATION FOR THE MACHINE-READABLE VERSION OF *OAO 2* FILTER PHOTOMETRY OF 531 STARS OF DIVERSE TYPES

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SECTION 1 - INTRODUCTION

This document describes the magnetic tape version of the ultraviolet photometry of 531 stars observed with the Wisconsin Experiment Package aboard the *Orbiting Astronomical Observatory (OAO 2)*. The data were obtained with medium band interference filters and have been reduced to a uniform magnitude system. They represent a subset of partially reduced data currently on file at the National Space Science Data Center and described in NSSDC/WDC-A document 74-02.

The ultraviolet magnitudes contained in the tape file have bee.. published by Code, Holm and Bottemiller (1980). While the published tables contain eleven tabulated magnitudes, the tape file includes data for a twelfth filter (S2F2 at 2945 Å).

Although this document is intended to enable users of the tape file to read and process the data without problems or guesswork, the reference publication should always be consulted for technical details concerning the observations, instrumentation limitations and interpretation of the data. A copy of this document should be distributed with any machine-readable version of these *OAO 2* photometric data.

Reference

Code, A. D., Holm, A. V., and Bottemiller, R. L. 1980, *Astrophys. J. Suppl.* 43, 501.

SECTION 2 - TAPE CONTENTS

A byte-by-byte description of the contents of the logical records in the tape file is given in Table 1. The suggested format specifications can be modified depending upon usage, but care must be exercised when using integer and real format specifications in place of character (A) formats because many data fields contain blanks when data are absent. Also, since magnitudes and colors can have zero values, it is suggested that the records be read as characters or buffered in and magnitude fields tested for blanks (or decimal points) before processing. Alternate format specifications are given in parentheses.

Table 1. Tape Contents. *OAO 2* Filter Photometry

Byte(s)	Description	Suggested Format
1- 6	*Henry Draper Catalogue* (HD) number (blank if not present)	I6
7- 9	Additional HD number in the form /X or /XX if > 1 HD star included in observation; otherwise blank	A3
10- 13	Number (BS = HR) in the Yale *Catalogue of Bright Stars* (Hoffleit 1964) (blank if not present)	I4
14- 16	Additional HR number in the form /X or /XX if > 1 HR star included in observation; otherwise blank	A3
17- 24	Name of star	2A4 (A8)
25- 37	Spectral type from miscellaneous sources 25-26 luminosity class for Mt. Wilson types; W in byte 26 for W-R types 27-30 temperature class and subclass (generally uniform except that Q will be found for HD174107 = V603 Aql; N and C for W-R types) 31-37 additional spectral-type information; e.g., luminosity classes, abundance indicators, emission (e) and peculiar (p) symbols, and additional components (e.g. + dG5)	11A1 (2A4,A3)

Table 1. (continued)

Byte(s)	Description	Suggested Format
38- 42	V or m_V from various sources (data present for all stars, but magnitudes of lower accuracy are indicated by reporting data to 1 or 0.1 mag only, in which case higher accuracy places are blank, e.g., 9. , 9.1)	F5.2
43- 47	$B-V$ from various sources (blank if no data)	F5.2
48- 52	$U-B$ from various sources (blank if no data)	F5.2
53- 54	Reference codes for spectral types and photometry (see Table 2)	A2
55- 60	Remarks codes. The remarks are reproduced from the paper of Code, Holm and Bottemiller (1980) in Table 3. Codes are for remarks pertaining to: D for visual double or multiple system, SB for spectroscopic binary, V for variable, and * for miscellaneous remarks.	A6
61- 65	Magnitude at 4250 Å All ultraviolet magnitude fields are blank if no data are present	F5.2
66	Colon (:) for uncertain data	A1
67- 71	Magnitude at 3320 Å	F5.2
72	Colon (:) for uncertain data	A1
73- 77	Magnitude at 2980 Å	F5.2
78	Colon (:) for uncertain data	A1
79- 83	Magnitude at 2945 Å	F5.2
84	Colon (:) for uncertain data	A1
85- 89	Magnitude at 2460 Å	F5.2
90	Colon (:) for uncertain data	A1
91- 95	Magnitude at 2380 Å	F5.2
96	Colon (:) for uncertain data	A1

Table 1. (continued)

Byte(s)	Description	Suggested Format
97-101	Magnitude at 2035 Å	F5.2
102	Colon (:) for uncertain data	A1
103-107	Magnitude at 1910 Å	F5.2
108	Colon (:) for uncertain data	A1
109-113	Magnitude at 1680 Å	F5.2
114	Colon (:) for uncertain data	A1
115-119	Magnitude at 1550 Å	F5.2
120	Colon (:) for uncertain data	A1
121-125	Magnitude at 1430 Å	F5.2
126	Colon (:) for uncertain data	A1
127-131	Magnitude at 1330 Å	F5.2
132	Colon (:) for uncertain data	A1

Table 2. References for Codes in Bytes 51-52

Spectral Types (byte 51)	*UBV* Photometry (byte 52)
1. Morgan and Keenan 1973	A. Johnson *et al.* 1966
2. Johnson and Morgan 1953	B. Cousins 1971
3. Hiltner, Garrison and Schild 1969	C. Johnson and Morgan 1953
4. Lesh 1968	D. Cruz-González *et al.* 1974
5. Cruz-González *et al.* 1972	E. Jaschek *et al.* 1972
6. Jaschek *et al.* 1972	F. Berger and Greenstein 1963
7. Berger and Greenstein 1963	O. See Remarks for source
8. Greenstein and Eggen 1966	
9. Joy 1956	
0. See Remarks for source	

Table 3. Remarks to Catalog

HD 358.—SB 2. B8+B8.5 and $\Delta m = 1.35$.

HD 432.—Variable type δ Sct. $A = 0.06$ mag. These observations were obtained at JD 2,441,099.54, JD 2,441,099.61, JD 2,441,142.77, and JD 2,441,142.84.

HD 886.—Variable type βC. $A = 0.07$ mag. Mean UV magnitudes.

HD 1337.—Variable type EB. $A = 0.15$ mag. This observation obtained at $\phi = 0.70$ and JD 2,441,442.812.

HD 1522.—IDS. $\Delta m(AC) = 4.8$.

HD 3369.—ADS 513. $\Delta m(AB) = 4.26$ and SP(B) = F0 V. 3369 A is a SB 2. B5+B5 and $\Delta m = 3.1$.

HD 4614.—ADS 671. $\Delta m(AB) = 4.07$, $\Delta m(AH) = 3.0$, and SP(B) = dM0.

HD 4727.—SB 2. B5+B6 and $\Delta m = 0.76$.

HD 5394.—Prototype γC variable. $A = 1.4$ mag. These magnitudes represent a mean of one observation on JD 2,440,763, three observations on JD 2,441,142, one observation on JD2,441,338, and one observation on JD 2,441,435. There is no strong indication of UV variability.

HD 5737.—The UV variability reported for this star by Bernacca and Molnar 1972 disappears when the observations are corrected for optical degradation.

HD 8518.—Variable type EA?. $A = 0.08$ mag. These magnitudes represent a mean of observations obtained at $\phi = 0.09$, 0.14, and 0.64.

HD 10783.—Variable type αCVn. $A = 0.22$ mag. The *OAO* observations were obtained at $\phi = 0.34$, 0.45, 0.49, 0.50, 0.52, 0.54, and 0.57.

HD 13161.—SB 2. A6+A6 and $\Delta m = 1.19$.

HD 13174.—IDS. $\Delta m(AB) = 3.6$, $\Delta m(AC) = 2.6$, and SP(B) = F2.

HD 15089.—ADS 1860. $\Delta m(AB) = 2.25$, $\Delta m(AB-C) = 3.89$, SP(B) = F5, and SP(C) = dG4. ADS 1860 A is a variable of type αCVn. $A = 0.03$ mag. The magnitudes reported here are for $\phi = 0.35$, ultraviolet maximum. The degradation corrections for the magnitudes at 1550 A and 1430 A were derived from A2 stars.

HD 16582.—Variable type βC. $A = 0.06$ mag. This observation obtained at JD 2,441,155.848.

HD 18622/3.—IDS. $\Delta m(AB) = 1.11$ and SP(B) = A2. The visual binary is also a spectroscopic binary.

HD 21291.—ADS 2544. $\Delta m(AB) = 4.3$.

HD 21455.—ADS 2560. $\Delta m(AB) = 4.6$.

HD 21641.—IDS 2579. $\Delta m(AB) = 3.84$.

HD 23288.—Double from lunar occultation. $\Delta m = 2.02$.

HD 23302.—Double from lunar occultation. $\Delta m \geq 1.0$.

HD 23338.—IDS. $\Delta m(AB) = 3.7$.

HD 23401.—IDS. $\Delta m(AC) = 3.9$.

HD 23850.—ADS 2786. $\Delta m(AB) = 1.68$.

HD 23862.—BU Tau. Variable type γC. $A = 0.4$ mag. This observation was obtained at JD 2,441,153.08.

HD 24534.—Variable type γC. $A = 0.6$ mag. These observations were obtained at JD 2,440,259.90 and JD 2,441,394.07. There is no indication of UV variability from these observations.

HD 26965/76.—o^2 Eri = ADS 3093. $\Delta m(AB) = 5.09$, $\Delta m(BC) = 1.6$, $\Delta m(Ba) = 2.5$, $\Delta m(Bb) = 2.8$, SP(C) = dM4.5e. The magnitudes representing 40 Eri B alone are the average of one observation offset to exclude ADS 3093A with two observations corrected to remove the contribution of ADS 3093A. No corrections were made for components C, a, and b.

HD 26976.—o^2 Eri B = ADS 3093B. $\Delta m(BA) = -5.09$, $\Delta m(BC) = 1.6$, $\Delta m(BA) = 2.5$, $\Delta m(Bb) = 2.8$, SP(A) = K1 V, and SP(C) = dM4.5e. Two of the three observations averaged here included ADS 3093A (HR 1325) in the field of view. Corrections were made to remove the contribution of ADS 3093A, but no corrections were made for components C, a, and b.

HD 27290.—Variable type δ Sct?. $A = 0.06$ mag. This observation was obtained at JD 2,441,510.13.

HD 27376.—Visual double? $\Delta m(AB) = 1.0$? Duplicity doubtful (Jeffers *et al.* 1963).

HD 29139.—Variable type Lb. $A = 0.20$ mag. This observation was obtained at JD 2,440,262.97.

HD 31964.—Variable type EA. $A = 1.04$ mag. This observation was obtained at JD 2,441,220.46 ($\phi = 0.57$).

HD 32343/57.—IDS. $\Delta m(AB) = 1.0$ and SP(B) = gG5.

HD 33949.—ADS 3800. $\Delta m(AB) = 2.9$.

HD 34029.—SB2. G5 III+G0 III and $\Delta m = 0.25$.

HD 34078.—ADS 3843. $\Delta m(AB) = 3.3$. ADS 3843 A is a variable of type Ina. $A = 0.7$ mag. These magnitudes represent a mean of observations obtained at JD 2,440,834.77, JD 2,440,837.28, and JD 2,441,035.84.

HD 35149.—ADS 3962. $\Delta m(AB) = 2.19$ and SP(B) = B3 Vn.

HD 35411.—ADS 4002. $\Delta m(AB) = 1.39$. ADS 4002A is a SB2. B1 V+B2: and $\Delta m = 0.47$. It is also a variable of type EB. $A = 0.21$ mag. The *OAO* measurements were obtained at JD 2,440,264.98, JD 2,440,284.90, and JD 2,440,284.98.

HD 35439.—IDS. 25 Ori is component C. $\Delta m(CA) = 3.4$, $\Delta m(CB) = 3.6$, SP(A) = A, and SP(B) = A0.

HD 35671.—ADS 4038. $\Delta m(AB) = 4.8$ and SP(B) = F8 V.

HD 35921.—ADS 4072. $\Delta m(AB) = 1.5$. ADS 4072 A is LY Aur, an EB type variable. $A = 0.67$ mag. These magnitudes were obtained at $\phi = 0.40$, 0.42, and 0.54. Cruz-González *et al.* 1974 give $V = 7.30$ after correction for the companion.

HD 36485/6.—ADS 4134. $\Delta m(AC) = 4.62$ and SP(C) = B2 V.

HD 36591.—ADS 4141. $\Delta m(AB) = 4.5$.

HD 36861/2.—ADS 4179. $\Delta m(AB) = 2.02$ and SP(B) = B0.5 V.

HD 37020/42.—ADS 4186 and ADS 4188 (whose components are distinguished here by primes). ADS 4186 C has the spectral type O6e4p and is used here as the reference star. $\Delta m(CA) = 1.59$, $\Delta m(CB) = 2.83$, $\Delta m(CD) = 1.57$, $\Delta m(CA') = -0.05$, $\Delta m(CB') = 1.26$, $\Delta m(CC') = 2.5$, SP(A) = B0.5 Vp, SP(B) = B3, SP(D) = B0.5 Vp, SP(A') = O9.5 Vp, SP(B') = B0.5 V. ADS 4186A is θ^1 Ori A, an EA variable with $A = 1.0$ mag. ADS 4186 is BM Ori, an EA variable with $A = 0.7$ mag.

HD 37043.—ADS 4193. $\Delta m(AB) = 4.53$ and SP(B) = B8. ADS 4193A is a SB2. 08.5+08.5 and $\Delta m = 1.99$.

Table 3. (continued)

HD 37202.—Variable type γC. $A = 0.13$ mag. *OAO* observations were obtained at JD 2,440,261.51, JD 2,440,261.64, JD 2,440,436.58, JD 2,441,034.17, JD 2,441,034.24, JD 2,441,034.31, and JD 2,441,039.39.

HD 37468.—ADS 4241. $\Delta m(AB) = 2.0$, $\Delta m(AB-C) = 5.03$, $\Delta m(AB-D) = 2.86$, $\Delta m(AB-E) = 2.89$, SP(C) = A2 V, SP(D) = B2 V:, and SP(E) = B2 Vp.

HD 37742/3.—ADS 4263. $\Delta m(AB) = 2.11$ and SP(B) = B0 III.

HD 37903.—This photometry includes a portion of the H II region NGC 2023.

HD 38392/3.—ADS 4334. $\Delta m(AB) = 2.55$ and SP(B) = K2 V.

HD 39801.—Variable type SRc. $A = 0.88$ mag. This observation was obtained at JD 2,440,263.94.

HD 40183.—Variable type EA. $A = 0.09$ mag. These observations were obtained at JD 2,441,397.76, JD 2,441,397.83, JD 2,441,398.04, and JD 2,441,398.95. SB2. A2 IV and $\Delta m = 0.13$.

HD 40312.—ADS 4566. $\Delta m(AB) = 4.51$ and SP(B) = G.

HD 42087.—ADS 4751. $\Delta m(AB) = 4.1$.

HD 42933.—Variable type EB. $A = 0.23$ mag. *OAO* observations were obtained at $\phi = 0.40$, 0.52, and 0.62.

HD 44743.—Variable type βC. $A = 0.07$ mag. These observations were obtained at JD 2,440,265.55, JD 2,440,265.82, and JD 2,441,023.02.

HD 45542.—ADS 5103. $\Delta m(A-BC) = 3.79$ and SP(BC) = A2 V.

HD 45546.—IDS. $\Delta m(AB) = 4.2$ and $\Delta m(AC) = 4.2$.

HD 45725/7.—ADS 5107. $\Delta m(AB) = 0.46$, $\Delta m(AC) = 0.82$, and SP(B) = B3.

HD 45910.—Probable mass exchange binary. $A = 0.28$ mag. SB 2. B3nn + gK0 This observation was obtained on JD 2,440,497.29.

HD 46150.—ADS 5165. $\Delta m(AC) = 5.0$, $\Delta m(AE) = 2.7$, and SP(E) = B2 V. This photometry includes a portion of the H II region NGC 2237-9.

HD 46328.—Variable type "βC". $A = 0.06$ mag. This observation was obtained at JD 2,441,175.08.

HD 47129.—SB 2. O8 + O8 and $\Delta m = 0.78$.

HD 47839.—ADS 5322, ADS 5325 (whose components are distinguished here by primes), and Σ 952. ADS 5322A is the brightest component and is used here as the reference star. $\Delta m(AB) = 3.03$, $\Delta m(AD) = 5.0$, $\Delta m(AF) = 3.0$, $\Delta m(AK) = 3.5$, $\Delta m(AG) = 3.5$, $\Delta m(Ad) = 5.0$, $\Delta m(AA') = 4.25$, and SP(B) = B7. ADS 5322A is S Mon, a Variable of type Ia?. $A = 0.4$ mag. These observations were obtained at JD 2,440,501.89, JD 2,440,874.19, and JD 2,441,412.11.

HD 50877.—Variable type Lc. $A = 0.21$ mag. This observation was obtained at JD 2,441,606.54.

HD 50896.—Variable type E?. $A = 0.01$ mag. The observations of this star have been described in Holm and Cassinelli 1977.

HD 52877.—Variable type Lc. $A = 0.06$ mag. This observation was obtained at JD 2,441,606.75.

HD 53705/6.—IDS. $\Delta m(AB) = 1.29$, $\Delta m(AC) = 3.15$, SP(B) = K0 V, and SP(C) = K5 V.

HD 56139.—Variable type γC. $A = 0.22$ mag. This observation was obtained at JD 2,441,421.09.

HD 56986.—ADS 5983. $\Delta m(AB) = 4.63$ and SP(B) = dK6.

HD 57061.—ADS 5977. $\Delta m(AD) = 3.7$.

HD 58350.—IDS. $\Delta m(AB) = 4.5$ and SP(B) = A0.

HD 68243/73.—IDS. $\Delta m(AB) = 2.44$ and SP(B) = B1 V. HD 68273 is a SB 2. O9 I + WC8 and $\Delta m = 1.4$ with the O9 I component being the brighter (Conti and Smith 1972).

HD 68351.—BM Cnc. Variable type αCVn. $A = 0.12$ mag. The *OAO 2* observations were obtained at $\phi = 0.38$, 0.86, and 0.90.

HD 68457.—ADS 6680. $\Delta m(AB) = 3.7$ and $\Delta m(AC) = 4.03$.

HD 70930.—IDS. $\Delta m(AB) = 1.4$.

HD 74198.—IDS. $\Delta m(AB) = 4.0$.

HD 78316.—Variable type αCVn. $A = 0.05$ mag. These observations were obtained at $\phi = 0.24$ and 0.27.

HD 78418.—IDS. $\Delta m(AB) = 3.1$ and $\Delta m(AC) = 4.3$.

HD 81809.—IDS. $\Delta m(AB) = 0.9$.

HD 88230.—IDS. $\Delta m(AB) = 2.2$ and $\Delta m(AC) = 3.3$.

HD 91465.—Variable type γC. A = 0.17 mag. This observation was obtained at JD 2,440,798.92.

HD 105435.—IDS. $\Delta m(AB) = 1.82$, $\Delta m(AC) = 3.72$, SP(B) = B2 IIIne, and SP(C) = B9. δ Cen is a variable of type γC with $A = 0.14$ mag. The magnitudes given here are means from observations at JD 2,440,985.51, JD 2,441,524.26, and JD 2,441,524.33.

HD 108903/25.—IDS. $\Delta m(AB) = 4.79$ and SP(B) = A2.

HD 111123.—Interferometric double. $\Delta m = 2.9$. Variable type βC. $A = 0.06$ mag. These observations were obtained at JD 2,440,413.10, JD 2,440,986.89, and JD 2,440,987.03.

HD 112412/3.—ADS 8706. $\Delta m(AB) = 2.71$ and SP(B) = F0 V. ADS 8706A is the prototype αCV variable with $A = 0.03$ mag. The data presented here are from $\phi = 0.0$.

HD 113001.—ADS 8734. $\Delta m(AB) = 0.6$ and SP(B) = 09.

HD 116658.—SB2. B2V + B2V and $\Delta m = 1.49$. ($\Delta m = 2.0$ according to Herbison-Evans *et al.* 1971). Variable type "Ell(βC)" with $A = 0.07$ mag. These observations were obtained at JD 2,440,253.29, JD 2,440,255.04, and JD 2,440,359.61.

HD 118716.—Variable type βC. $A = 0.01$ mag. These observations were obtained at JD 2,440,805.96 and JD 2,440,987.25.

HD 120324.—Variable type γC with $A = 0.5$ mag. This star was observed by *OAO 2* once on JD 2,440,323, three times on JD 2,440,807, once on JD 2,441,178, once on JD 2,441,179, and twice on JD 2,441,180.

HD 120709/10.—IDS. $\Delta m(AB) = 1.38$ and SP(B) = B8 V.

HD 121263.—SB2. $\Delta m = 0.5$.

HD 122451.—IDS. $\Delta m(AB) = 3.2$.

HD 125823.—V761 Cen = Bidelman's helium variable. $A = 0.05$ mag. These magnitudes represent a mean of observations obtained throughout period. The spectral type varies from B2 V to B7 IV (Jaschek *et al.* 1968). The UV energy distribution is compatible with the earlier spectral type (Molnar 1974).

HD 127762.—Variable type δ Sct. $A = 0.05$ mag. These observations were obtained at JD 2,441,135.11, JD 2,441,135.18, JD 2,441,135.26, JD 2,441,135.33, JD 2,441,135.73, and JD 2,441,135.81.

HD 128620/1.—IDS. $\Delta m(AB) = 1.34$ and SP(B) = K0 V.

HD 129056.—Variable type βC. $A = 0.03$ mag. This observation was obtained at JD 2,440,815.35.

HD 129926.—ADS 9375. $\Delta m(AB) = 1.98$ and SP(B) = dF9.

HD 133029.—ADS 9477. $\Delta m(AB) = 3.19$. ADS 9477A is BX Boo, a variable of type αCVn. $A = 0.08$ mag. These magnitudes are a mean of observations at JD 2,441,271.07, JD 2,441,271.14, and JD 2,441,271.91.

HD 133955.—IDS. $\Delta m(AB) = 0.3$.

HD 135240.—The photometry is contaminated by HD 135160 (B0.5V, $V = 5.73$).

HD 136298.—Variable type βC with $A = 0.03$ mag. The *OAO 2* observations were obtained at JD 2,440,989.83, JD 2,441,182.17, JD 2,441,182.24, and JD 2,441,182.32.

HD 136504.—IDS. $\Delta m(AB) = 1.7$. SB 2.

HD 138485.—Variable type ?. This observation was obtained at JD 2,440,312.27.

HD 138690.—IDS. $\Delta m(AB) = 0.0$.

HD 138749.—IDS. $\Delta m(AB) = 1.5$.

HD 141527.—Prototype R CrB variable with $A = 9$ mag. This observation was obtained at JD 2,441,201.79.

HD 142114.—ADS 9823. $\Delta m(AB) = 2.0$.

HD 142184.—Variable type ?. The *OAO 2* observations were obtained at JD 2,440,316.87 and JD 2,440,997.72.

HD 142883.—Variable type βC?. $A = 0.014$ mag. These magnitudes represent a mean of observations at JD 2,440,316.73, JD 2,440,824.82, JD 2,440,997.55, and JD 2,440,997.62.

HD 142983.—FX Lib. Variable type γC with $A = 0.17$ mag. These magnitudes represent a mean of observations at JD 2,440,316.16 and JD 2,440,311.86.

Table 3. (continued)

HD 143018.—SB 2. B1 V + B2 and $\Delta m = 1.2$.
HD 143118.—IDS. $\Delta m(AB) = 4.23$ and SP(B) = A3 Va.
HD 143275.—Interferometric double. $\Delta m = 1.9$.
HD 143761.—IDS. $\Delta m(AB) = 3.2$.
HD 144217/8.—ADS 9913. $\Delta m(AC) = 2.29$ and SP(C) = B2 V. ADS 9913A is a SB 2. B0.5V + B and $\Delta m = 1.26$.
HD 145501/2.—ADS 9951. $\Delta m(AB) = 2.5$, $\Delta m(AB-CD) = 2.25$, SP(B) = B9p, SP(C) = B8 V, and SP(D) = B9 Vp.
HD 147165.—Variable type βC with $A = 0.12$ mag. These observations were obtained at JD 2,440,308.86 and JD 2,440,317.43.
HD 147933/4.—ADS 10049. $\Delta m(AB) = 0.43$, $\Delta m(AC) = 2.68$, $\Delta m(AD) = 1.7$, $\Delta m(AE) = 2.9$, SP(B) = B2 V, SP(C) = B6 V, and SP(D) = B5 V.
HD 148184.—Variable type γC with $A = 0.82$ mag. These magnitudes are the mean of one observation at JD 2,440,317.84 and 47 observations obtained between JD 2,440,822.87 and JD 2,440,829.42.
HD 148688.—IDS. $\Delta m(AC) = 4.3$.
HD 150265.—Variable type EA. $A = 1.1$ mag. This photometry was obtained at JD 2,441,217.12 ($\phi = 0.22$). Source of spectral type and visual magnitude is Kukarkin *et al.* (1969).
HD 150680.—ADS 10157. $\Delta m(AB) = 2.58$ and SP(B) = K0 V. The visual binary is also a spectroscopic binary.
BD +13°3224.—Variable of unknown type. $A = 0.1$ mag. This observation was obtained at JD 2,441,386.70.
HD 157056.—Variable type βC. $A = 0.04$ mag. Mean UV magnitudes.
HD 158926.—Variable type βC. $A = 0.06$ mag. Mean UV magnitudes.
HD 160578.—Variable type βC. $A = 0.03$ mag. Mean UV magnitudes.
HD 163506.—V441 Her. Variable type SRd with $A = 0.14$ mag. This observation was obtained at JD 2,440,682.31.
HD 164794.—These magnitudes include a contribution from the H II region M8.
HD 165341.—ADS 11046. $\Delta m(AB) = 1.79$ and SP(B) = dK6. The visual binary is also a spectroscopic binary.
HD 166014.—Variable type Ia?. $A = 0.09$ mag. This observation was obtained at JD 2,440,331.77.
HD 168021.—ADS 11240. $\Delta m(AB) = 0.5$, $\Delta m(AC) = 0.58$, $\Delta m(AE) = 4.2$, and SP(C) = B0.
HD 168905.—IDS. $\Delta m(AB) = 4.6$.
HD 170580.—ADS 11399. $\Delta m(AB) = 4.60$.
HD 173524.—SB2. A0 + A0 and $\Delta m = 0.26$.
HD 174107.—Nova Aquilae 1918. These observations were obtained at JD 2,440,661.49 and JD 2,440,662.53. The photometry has been corrected for the field star BD +0°4022.
HD 176051.—ADS 11871. $\Delta m(AB) = 2.40$.
HD 178911.—ADS 12101. $\Delta m(AB) = 1.38$.
HD 182989.—Variable type RRab. $A = 1.06$ mag. These magnitudes are from observations obtained at JD 2,440,673.187 ($\phi = 0.985$).
HD 186882.—ADS 12880. $\Delta m(AB) = 3.52$.
HDE 226868.—The optical counterpart of Cygnus X − 1. $A = 0.09$ mag. These magnitudes are the mean of observations at JD 2,441,449.91 and JD 2,441,646.00. Corrections have been made for field stars brighter than $m_{pg} = 12.5$.
HD 192577.—ADS 13554. $\Delta m(AC) = 3.19$, $\Delta m(AD) = 1.19$, SP(C) = B5 V, and SP(D) = A2. ADS 13554A is V695 Cyg, an EA variable with $A = 0.11$ mag. These observations were obtained at JD 2,441,268. V695 C,g is also SB 2. K4 Ib + B4 V and $\Delta m = 1.7$ mag.
HD 192909/10.—o² Cyg. Variable type EA with $A = 0.13$ mag. These magnitudes represent a mean of observations obtained on JD 2,440,718.08 and JD 2,440,760.83, when the early-type component was out of eclipse.
HD 193237.—Variable type SD with $A = 3$ mag. These observations were obtained at JD 2,440,941.29, JD 2,440,941.36, JD 2,441,268.43, and JD 2,441,270.17.
HD 193322.—ADS 13672. $\Delta m(AB) = 2.56$.
HD 195556.—ADS 13932. $\Delta m(AC) = 4.5$.
HD 196178.—IDS. $\Delta m(AB) = 4.1$.
HD 196662.—ADS 14099. $\Delta m(AB) = 1.3$.
LI16-79.—Spectral type and photometry from Bell 1962.
198183.—ADS 14296. $\Delta m(AB) = 1.37$.
HD 199081.—SB 2. B3 + B3 and $\Delta m = 0.34$.
HD 200310.—ADS 14549. $\Delta m(AB) = 4.2$.
HD 202214.—ADS 14749. $\Delta m(AB) = 0.58$ and $\Delta m(AC) = 3.1$.
HD 204172.—ADS 14969. $\Delta m(AB) = 4.4$.
HD 205637.—IDS. $\Delta m(AB) = 4.8$. Component A is a variable of type γC. $A = 0.28$ mag. This observation was obtained at JD 2,441,256.17.
HD 206267.—ADS 15184. $\Delta m(AC) = 2.46$, $\Delta m(AD) = 2.38$, and SP(C) = SP(D) = B0 V.
HD 206697.—Variable type UG with $A = 3.9$ mag. These magnitudes represent the mean of three observations obtained during outburst at JD 2,441,669. SB 2. Corrections have been made for field stars.
HD 207129.—IDS. $\Delta m(AB) = 3.11$ and SP(B) = K5 V?.
HD 207757.—Variable type Z And. $A = 3.4$ mag. These observations were obtained at JD 2,440,718.43.
HD 208816.—Variable type EA. $A = 0.81$ mag. This observation was obtained at JD 2,440,717.60. SB 2. $\Delta m = 1.72$.*
HD 208905.—ADS 15499. $\Delta m(AB) = 0.0$.
HD 209339.—IDS. $\Delta m(AB) = 2.0$.
HD 209481.—SB 2. O9.5 + O9.5 and $\Delta m = 0.48$. This star is LZ Cep, a variable of type EB. $A = 0.10$ mag. This observation was obtained at $\phi = 0.92$.
HD 214419.—Variable type EB. $A = 0.49$ mag. This observation was obtained at $\phi = 0.86$.
HD 217675.—Variable type γC. $A = 0.13$ mag. The *OAO 2* observations were obtained at JD 2,440,942.48, JD 2,440,942.54, and JD 2,440,944.49.
HD 217833.—ADS 16474. $\Delta m(AB) = 2.77$ and $\Delta m(AC) = 4.21$.
HD 217906.—Variable type Lb with $A = 0.5$ mag. This observation was obtained at JD 2,440,388.25.
HD 222107.—Variable type SR with $A = 0.39$ mag. This observation was obtained at JD 2,440,416.86.
HD 223640.—ET Aqr. Variable type αCVn with $A = 0.05$ mag. This observation was obtained at JD 2,441,347.78.
HD 224930.—ADS 17175. $\Delta m(AC) = 2.8$.

* The 1550, 1430 and 1330 magnitudes are contaminated by the nearby star BD+63°1788 and are unreliable for analysis (A. V. Holm 1982, private communication).

SECTION 3 - TAPE CHARACTERISTICS

The information contained in Table 4 is sufficient for a user to read the machine version of the catalog. Statistics for the entire catalog are given in the table, but data which are easily varied from installation to installation, such as blocksize (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: these parameters should always be supplied if secondary tape copies of the catalog are transmitted to other users or installations.

Table 4. Tape Characteristics, Catalog of OAO 2 Filter Photometry

NUMBER OF TRACKS	9
NUMBER OF FILES	1
LOGICAL RECORD LENGTH (BYTES)	132
RECORD FORMAT	FB
TOTAL NUMBER OF LOGICAL RECORDS	531

SECTION 4 - REMARKS, MODIFICATIONS AND REFERENCES

The Catalog of *OAO 2* Filter Photometry was received on magnetic tape from the Space Astronomy Laboratory, University of Wisconsin, in August 1981. A format description of the Wisconsin tape and a listing of the tape contents were received simultaneously. The following modifications were made to the catalog format in order to save storage space and to make the records easier to process:

1. The Wisconsin tape contained two card images (160 bytes) per star. Elimination of unused bytes and sequence numbers assigned to the original observed objects, and merging of the card images to a single logical record per star resulted in the present 132-byte record length.

2. HD and HR numbers were left justified in the catalog as received. They were converted to right justified integers so that they can be read properly with an integer format specification.

3. The spectral types field was expanded from 11 bytes to 13 bytes (to allow for spacing and uniformity) and temperature classes and subclasses always occur in bytes 27 and 28-30, respectively. The Mt. Wilson and W (Wolf-Rayet) prefixes were moved so that they always occur in bytes 25-26 (the Mt. Wilson luminosity types and other normally lower case characters have been converted from upper to lower case). The spectral type for HD197989 (ε Cyg), which is K0⁻ III, was changed from K0 III to K0 -III.

4. The HD number for V1357 Cyg (Cyg X-1) was changed from E226868 to 226868 to eliminate the character from the HD field and to make it uniform. Certain Durchmusterung numbers, which were incomplete, were completed and made uniform within the star name field.

5. One byte following each ultraviolet magnitude field was preserved and those magnitudes having colons in Table 2 of Code, Holm and Bottemiller (1980) were appended with colons in the machine-readable catalog.

The magnetic tape, which was received in 7-track, 800 bpi, BCD coded format, was remade as a 9-track, character coded file.

We express our appreciation to M. R. Meade of the Space Astronomy Laboratory, University of Wisconsin, for supplying the original magnetic tape and format description, and to A. V. Holm for reviewing this document.

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SECTION 5 - SAMPLE LISTING

The sample listing given on the following pages contains logical data records exactly as they are recorded on the tape. Full sets of records for several stars at the beginning and end of the data file are listed. The beginning of each record and bytes with that 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 each record (bytes 116-132) 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: OAO FILTER PHOTOMETRY

                 RECORDS      1 TO     11

               TAPE FILE     39

           RECORD LENGTH    132 BYTES

            INPUT VOLSER   WTS006

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


RECORD     1    358    15   ALF AND   B9  p        2.06-0.11-0.476ADSB2       1.30  1.28                        0.64
              0.20  0.26
RECORD     2    432    21   BET CAS   F2  III-IV   2.27 0.34 0.111ADV*                                          4.32

RECORD     3    886    39   GAM PEG   B2  IV       2.84-0.23-0.871AVD         1.38  1.07        0.53            -0.08     -
              0.67 -0.99 -1.27
RECORD     4   1337    65   AO CAS    O9  IIIn     5.90 0.03-1.014AVSB2  5.22 4.46  4.21        3.86             3.34
              2.91  2.91  2.80
RECORD     5   1522    74   IOT CET   K1.5III      3.55 1.22 1.181ADD         6.24  7.37        9.91

RECORD     6   1581    77   ZET TUC   G0  V        4.23 0.58 0.026A      4.23 4.82  5.39        6.78             8.26

RECORD     7   1671    82   RHO AND   F5  IV       5.18 0.42 0.076E      5.01 5.69  6.14        7.20

RECORD     8   2151    98   BET HYI   G1  IV       2.80 0.62 0.116A           3.60  4.20        5.78             7.48

RECORD     9   2905   130   KAP CAS   B1  Ia       4.16 0.14-0.802A      3.66 3.22  3.15  3.07        3.26  3.22
              2.67  2.75  2.68
RECORD    10   3360   153   ZET CAS   B2  IV       3.66-0.19-0.891A           2.28  2.01  1.95  1.47  1.45  1.11  0.92
              0.39  0.16  0.00
RECORD    11   3369   154   PI AND    B5  V        4.36-0.16-0.554ADDSB2 3.56 3.41  3.21        2.92             2.32  1.95
              1.88  1.78  1.72
```

LISTING OF RECORDS FROM TAPE FILE

TAPE FILE NAME: OAO FILTER PHOTOMETRY

RECORDS 521 TO 531

TAPE FILE 39

RECORD LENGTH 132 BYTES

INPUT VOLSER WTS006

```
COLUMN
HEADING          1111111111222222222233333333334444444444555555555566666666667777777777888888888899999999990000000000111111
INDEX    12345678901234567890123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890123456789012345
```

RECORD 521 217833 8770 B9 6. -0.08-0.566EDD 5.79 5.62 5.52 5.51 5.50 5.50 5.02

RECORD 522 217906 8775 BET PEG M2.5II 2.42 1.67 1.961AVD* 7.78 8.72 10.62

RECORD 523 218045 8781 ALF PEG B9 V 2.48-0.04-0.066A 1.98

RECORD 524 218376 8797 1 CAS B0.5IV 4.86-0.03-0.876A 4.14 3.59 3.41 3.34 3.20 3.28 3.00 2.73
2.12 1.96 1.83

RECORD 525 218804 8825 6 AND F5 IV 5.95 0.44-0.056A 5.77 6.27 6.72 7.72

RECORD 526 221345 8930 14 AND K0 III 5.22 1.02 0.866A 5.80 7.31 8.41 11.02

RECORD 527 222107 8961 LAM AND G8 III-IV 3.82 1.02 0.702AVSBD 4.23 5.58 6.48 8.56

RECORD 528 222404 8974 GAM CEP K1 IV 3.21 1.03 0.941A 5.39 6.48 9.21 12.02

RECORD 529 223640 9031 108 AQR A0 p 5.17-0.13 6AV 4.38 4.45 4.36 4.17 3.77
3.57 3.75

RECORD 530 224930 9088 85 PEG G2 V 5.75 0.67 0.052ADD 5.88 6.50 7.17 8.64 10.46

RECORD 531 225239 9107 G2 V 6.12 0.62 0.096A 6.19 6.84 7.47 8.94