

UBVRI CATALOGUE OF DWARF NOVAE

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RESUMEN

La fotometría *UBVRI* de setenta y cinco novae enanas compilada de la literatura se presenta en este catálogo. El catálogo contiene una lista de observaciones de cada objeto para propósitos estadísticos.

ABSTRACT

UBVRI photometry of seventy-five dwarf novae compiled from the literature is presented in this catalogue. The catalogue lists observations for each object per night per observer for statistical purposes.

Key words: PHOTOMETRY – STARS-DWARF NOVAE

I. INTRODUCTION

A statistical analysis of thirty-six dwarf novae based on a compilation of *UBVRI* photometry by Echevarría (1983) has been published by Echevarría and Jones (1983, 1984). As the number of observed dwarf novae has doubled since the compilation by Echevarría (1983) and as a list of the data is still unavailable, it seemed appropriate to present a complete version of the catalogue. Further analysis of the catalogue will be presented elsewhere (Echevarría 1984).

The catalogue contains seventy-five dwarf novae in quiescence or in outburst and includes only one entry per night per observer. In those cases where more than one observation was made during the same night, mean values were taken. This procedure ensures a more compact version of the data without losing critical information for statistical purposes. An extended version including all measurements is available on tape.

II. THE CATALOGUE

Photoelectric photometry in the *UBVRI* bands of seventy-five dwarf novae, compiled from the literature, is presented here. The catalogue is arranged as follows:

Column 1. Name.

Column 2. *V* magnitude (Johnson 1964).

Columns 3-4. (*B* - *V*) and (*U* - *B*) color indices (Johnson 1964).

Columns 5-6. (*V* - *R*) and (*R* - *I*) color indices. The *R* and *I* magnitudes are from three different color systems: Johnson (1966) with effective wavelengths at 7000 and 9000 Å respectively, Kron-Cousins (Cousins 1976) with effective wavelengths at 6400 and 7900 Å respectively (marked with an *), and Sandage-Smith (1963) with ef-

fective wavelengths at 6800 and 8100 Å respectively (marked with a #).

Column 7. Stage of variable. Codes are as follows: Q = quiescence, R = rise, M = maximum, SM = supermaximum, D = decline, S = standstill, e = eclipse. If the stage of the object is not well known the code O = outburst is used. A question mark is used in this column whenever the state of the variable is not well defined.

Column 8. Date of observation: DDMMYY.

Column 9. References: 1. Barwig *et al.* 1982. 2. Barwig and Schoembs 1983. 3. Bond, Kemper, and Mattei 1982. 4. Bruch 1980. 5. Bruch 1983a. 6. Bruch 1983b. 7. Bruch and Beuermann 1984. 8. Chlebowski, Halpern, and Steiner 1981. 9. Chuvayev 1962. 10. Echevarría 1983. 11. Echevarría *et al.* 1981. 12. Eggen 1967. 13. Grant and Abt 1959. 14. Haefner, Schoembs, and Vogt 1979. 15. Klare *et al.* 1982. 16. Kraft, Krzeminski, and Mumford 1969. 17. Krzeminski 1965. 18. Krzeminski and Smak 1971. 19. Lyutyi 1976. 20. Marino and Walker 1972. 21. Marino and Walker 1978. 22. Marino and Walker (in Bateson and Jones 1979). 23. Mumford 1966. 24. Mumford 1967a. 25. Mumford 1967b. 26. Mumford 1971. 27. Mumford and Krzeminski 1969. 28. Paczynski 1963. 29. Patterson 1979. 30. Patterson 1981. 31. Pugach 1974. 32. Shafter and Szkody 1983. 33. Sherrington and Jameson 1983. 34. Szkody 1974. 35. Szkody 1976a. 36. Szkody 1976b. 37. Szkody 1977. 38. Verbunt *et al.* 1984. 39. Vogt 1982. 40. Vogt 1983. 41. Vogt 1984. 42. Vogt and Breysacher 1980. 43. Vogt and Semeniuk 1980. 44. Walker 1957. 45. Walker and Chincarini 1968. 46. Walker and Marino 1978. 47. Wargau, Drechsel, and Rahe 1982. 48. Wargau, Rahe, and Vogt 1983. 49. Zuckermann 1961.

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REFERENCES

- Barwig, H., Hunger, K., Kudritzki, R.P., and Vogt, N. 1982, *Astr. and Ap.*, 114, L11.
- Barwig, H. and Schoembs, R. 1983, *Astr. and Ap.*, 124, 287.
- Bond, H.E., Kemper, E., and Mattei, J.A. 1982, *Ap. J.*, 260, L79.
- Bruch, A. 1980, *Inf. Bull. Var. Stars*, No. 1805.
- Bruch, A. 1983a, *Inf. Bull. Var. Stars*, No. 2286.
- Bruch, A. 1983b, *Inf. Bull. Var. Stars*, No. 2287.
- Bruch, A. and Beuermann, K. 1984, preprint.
- Chlebowski, T., Halpern, J.P., and Steiner, J.E. 1981, *Ap. J.*, 247, L35.
- Chuvayev, K.K. 1962, *Izr. Krymskij Astrofiz. Obs.*, 28, 141.
- Cousins, A.W.J. 1976, *Mem. R.A.S.*, 81, 25.
- Echevarría, J. 1984, in preparation.
- Echevarría, J. 1983, D.Phil. Thesis, University of Sussex.
- Echevarría, J. and Jones, D.H.P. 1983, *Rev. Mexicana Astron. Astrof.*, 5, 301.
- Echevarría, J. and Jones, D.H.P. 1984, *M.N.R.A.S.*, 206, 158, 589.
- Echevarría, J., Jones, D.H.P., Wallis, R.E., Mayo, S.K., Hassall, B.J.M., Pringle, J.E., and Whelan, J.A.J. 1981, *M.N.R.A.S.*, 197, 565.
- Eggen, O.E. 1967, *Mem. R.A.S.*, 70, 111.
- Grant, G. and Abt, H.A. 1959, *Ap. J.*, 129, 323.
- Haefner, R., Schoembs, R., and Vogt, N. 1979, *Astr. and Ap.*, 77, 7.
- Johnson, H.L. 1964, *Bol. Obs. Tonantzintla y Tacubaya*, 3, 305.
- Johnson, H.L. 1966, *Ann. Rev. Astr. and Ap.*, 4, 193.
- Klare, G., Krautter, J., Wolf, B., Stahl, O., Vogt, N., Wargau, W., and Rahe, J. 1982, *Astr. and Ap.*, 113, 76.
- Kraft, R.P., Krzeminski, W., and Mumford, G.S. 1969, *Ap. J.*, 158, 589.
- Krzeminski, W. 1965, *Ap. J.*, 142, 1051.
- Lyutyi, V.M. 1976, *Soviet Astr. Lett.*, 2, 45.
- Marino, B.F. and Walker, W.S.G. 1972, *Var. Star Sect. R. Astr. Soc. New Zealand*, Cir. No. 184.
- Marino, B.F. and Walker, W.S.G. 1978, *Publ. Var. Star Sect. R. Astr. Soc. New Zealand*, Vol. No. 6.
- Mumford, G.S. 1966, *Ap. J.*, 146, 411.
- Mumford, G.S. 1967a, *Ap. J. Suppl.*, 15, 1.
- Mumford, G.S. 1967b, *Pub. A.S.P.*, 79, 283.
- Mumford, G.S. 1971, *Ap. J.*, 165, 369.
- Mumford, G.S. and Krzeminski, W. 1969, *Ap. J. Suppl.*, 18, 429.
- Paczynski, B. 1963, *Pub. A.S.P.*, 75, 278.
- Patterson, J. 1979, *A.J.*, 84, 804.
- Patterson, J. 1981, *Ap. J. Suppl.*, 45, 517.
- Pugach, A.F. 1974, *Peremenny Zvezdy.*, 19, 319.
- Sandage, A.R. and Smith, L.L. 1963, *Ap. J.*, 137, 1057.
- Shafter, A.W. and Szkody, P. 1984, *Ap. J.*, 276, 305.
- Sherrington, M.R. and Jameson, R.F. 1983, *M.N.R.A.S.*, 205, 265.
- Szkody, P. 1974, *Ap. J.*, 192, L75.
- Szkody, P. 1976a, *Ap. J.*, 207, 824.
- Szkody, P. 1976b, *Ap. J.*, 210, 168.
- Szkody, P. 1977, *Ap. J.*, 247, 577.
- Verbunt, F., Pringle, J.E., Wade, R.A., Echevarría, J., Jones, D.H.P., Argyre, R.W., Schwarzenberg-Czerny, A., la Dous, C., and Schoembs, R. 1984, to appear in *M.N.R.A.S.*
- Vogt, N. 1982, *Ap. J.*, 252, 653.
- Vogt, N. 1983, *Astr. and Ap. Suppl.*, 53, 21.
- Vogt, N. 1984, *Astr. and Ap.*, in press.
- Vogt, N. and Breyssacher, J. 1980, *Ap. J.*, 235, 945.
- Vogt, N. and Semeniuk, I. 1980, *Astr. and Ap.*, 89, 223.
- Walker, M.F. 1957, in *IAU Symposium No. 3, Non-Stable Stars*, ed. G.H. Herbig (Cambridge: University Press), p. 46.
- Walker, M.F. and Chincarini, G. 1968, *Ap. J.*, 154, 157.
- Walker, W.S.G. and Marino, B.F. 1978, *Publ. Var. Star Sect. R. Astr. Soc. New Zealand*, 6, 73.
- Wargau, W., Drechsel, H., and Rahe, J. 1982, *Proc. Third European IUE Conf.*, p. 215.
- Wargau, W., Rahe, J., and Vogt, N. 1983, *Astr. and Ap.*, 117, 283.
- Zuckermann, M.C. 1962, *Ann. d'Ap.*, 24, 431.

TABLE 1

THE CATALOGUE OF DWARF NOVAE

Name	V	B-V	U-B	V-R	R-I	Sta	Date	Ref.	Name	V	B-V	U-B	V-R	R-I	Sta	Date	Ref.
RX And	10.77	0.00	-0.69			::	06JUL64	023	VZ Aqr	18.4	0.2	-0.51			Q	31AUG78	040
	12.59	0.15	-0.89			D	20OCT65	023		16.51	0.78	-0.32			Q	13SEP79	005
	12.55	0.06	-0.84			D	21OCT65	023	UU Aql	16.07	0.22	-0.95			Q	01AUG78	040
	11.04	0.64	-0.70			H	17SEP73	034		16.56	0.16	-1.01			Q	02AUG78	040
	10.35	0.00	-0.67			H	18SEP73	034		16.66	0.71	-1.23			Q	13SEP79	005
	11.20	0.10	-1.07	0.02#	0.25#	::	MAY1973	035	DU Aql	19.25	-0.09	-0.62			Q	31AUG78	040
	11.45	0.08	-0.58	0.10#	0.05#	::	1973	035	FG Aql	15.19	0.44	-0.46			Q	01AUG78	040
	11.83	0.07	-0.72	0.23#	0.12#	o	1973	035		15.65	0.25	-0.50			Q	02AUG78	040
	11.93	0.05	-0.80	0.20#	0.10#	c	1973	035		15.69	0.46	-0.62			Q	03AUG78	040
	12.95	0.06	-1.05	0.35#		o	TO 1973	035		14.30	0.36	-0.57			Q	04AUG78	040
										14.67	0.40	-0.55			Q	30AUG78	040
	13.20	0.15	-1.05	0.47#	0.18#	o	1973	035		15.06	0.34	-0.56			Q	31AUG78	040
	13.33	0.10	-1.03	0.43#		q	1973	035		13.37	0.66	-0.52			Q	20JUL79	040
	13.50	0.13	-1.08	0.52#	0.38#	q	1973	035		16.57	0.66	-0.53			Q	12SEP79	035
	13.55	0.08	-0.95	0.40#	0.40#	q	AUG1973	035	V725 Aql	15.79	1.52	0.60			?	14SEP79	005
	13.43	0.02	-1.07	0.43#	-0.13#	q	28JUL75	037	AT Ara	15.32	0.57	-0.67			Q	26APR74	040
	11.93	0.05	-0.80	0.20#	0.10#	D	13JUL76	037		15.20	0.72	-0.79			Q	29APR74	040
	13.21	0.25	-1.13	0.31*	0.42*	R	22NOV79	010		15.04	0.59	-0.80			Q	30APR74	040
	12.99	0.29	-1.00	0.30*	0.36*	R	23NOV79	010		13.20	0.12	-0.59			Q	27APR77	040
	12.39	0.25	-0.73	0.25*	0.18*	R	25NOV79	010		12.30	0.12	-0.58			Q	28APR77	040
	13.70	0.38	-1.07	0.41*	0.73*	Q	03AUG80	010		12.62	0.08	-0.70			Q	29APR77	040
										14.70	0.83	-0.55			Q	30AUG78	040
	11.13	0.02	-0.79	0.06*	0.10*	Q	05AUG80	010		14.25	0.82	-0.69			Q	15SEP79	005
	13.34	0.24	-1.14	0.38*	0.48*	D	10AUG80	010	BF Ara	14.24	0.01	-0.72			H		006
	11.77	0.10	-1.02			S	04SEP81	033		14.71	0.12	-0.97			Q	17JAN64	023
	13.21	0.21	-0.98	0.47	0.49	R	08AUG82	038		14.66	0.17	-1.14			Q	08OCT64	023
	13.11	0.25	-0.94	0.46	0.46	R	09AUG82	038		14.73	0.05	-1.07			Q	20OCT65	023
	12.16	0.18	-0.55	0.26	0.21	R	12AUG82	038		14.81	0.03	-0.72			Q	21OCT65	023
	11.17	0.01	-0.65	0.10	0.06	M	13AUG82	038		14.55	0.23	-1.13			Q	22OCT65	023
	11.29	0.04	-0.74	0.15	0.10	D	15AUG82	038	Z Cam	12.76	0.27	-0.79			o	23APR71	031
	11.51	0.06	-0.72	0.19	0.17	D	16AUG82	038		11.22	0.09	-0.44			o	17MAY71	031
	11.81	0.11	-0.72	0.20	0.20	D	17AUG82	038		10.84	-0.02	-0.87			o	02MAR72	031
AR And	12.67	0.06	-0.74	0.16#	0.07#	o	20NOV79	010		10.78	-0.02	-0.83			o	03MAR72	031
DX And	13.63	0.31	-0.57	0.26#	0.31#	o	14NOV79	010		10.94	0.00	-0.81			o	04MAR72	031
	13.36	0.27	-0.54	0.24#	0.27#	o	20NOV79	010		10.45	0.00	-0.70	0.12#	0.10#	o	MAY1973	035
VY Aqr	17.11	-0.32	-1.29			Q	01AUG78	040		10.93	0.00	-0.75	0.10#	0.05#	o	1973	035
	17.52	-0.12	-1.09			Q	31AUG78	040									
	17.08	-0.18	-0.80			Q	14SEP79	005									

TABLE 1 (CONTINUED)

Name	V	B-V	U-B	V-R	R-I	Sta	Date	Ref.	Name	V	B-V	U-B	V-R	R-I	Sta	Date	Ref.
	15.19	0.17	-0.89			D	23FEB72	040	FQ Sco	12.96	0.17	-0.55			D	01AUG78	040
	13.56	0.07	-0.82			D	05MAR72	040		13.40	0.22	-0.59			D	02AUG78	040
	13.62	0.22	-0.81			D	06MAR72	040		13.76	0.28	-0.60			D	03AUG78	040
	14.11	0.11	-1.01			D	07MAR72	040		16.61	1.19	0.03			Q	31AUG78	040
	14.50	0.05	-0.87			D	08MAR72	040		16.63	0.94	0.1:			Q	20JUN79	040
	14.77	0.26	-0.85			D	09MAR72	040		16.83	1.62	-0.70			Q	14SEP79	005
	15.07	0.41	-0.73			D	10MAR72	040									
	15.12	0.33	-0.77			D	11MAR72	040	V478 Sco	16.27	0.42	-0.67			Q	15SEP79	005
	15.01	0.39	-0.89			D	12MAR72	040									
	15.14	0.37	-0.88			D	13MAR72	040	UZ Ser	16.04	0.51	-0.73			Q	01AUG78	040
										12.81	0.14	-0.57			M	03AUG78	040
	15.48	0.39	-0.69			Q	15MAR72	040		13.20	0.24	-0.68			D	30AUG78	040
	15.9:	0.1:	-0.9:			Q	17MAR72	040		13.74	0.21	-0.63			D	31AUG78	040
	13.80	0.07	-0.82			D	20MAR72	040		15.69	0.14	-0.71			Q	12SEP79	005
	13.86	0.10	-0.84			D	21MAR72	040		13.16	0.20	-0.67	0.15*	0.22*	Q	12AUG80	011
	14.06	0.13	-0.90			D	22MAR72	040		15.53	0.29	-0.91	0.13*	0.32*	Q	15AUG80	011
	14.52	-0.10	-0.81			D	23MAR72	040		12.54	0.18	-0.55	0.12*	0.15*	D	23SEP81	010
	13.52	0.06	-0.79			D	09APR72	040		12.64	0.13	-0.57	0.14*	0.16*	D	24SEP81	010
	13.44	0.17	-0.71			D	10APR72	040		12.79	0.20	-0.53	0.07*	0.12*	D	25SEP81	010
	14.03	0.05	-0.90			D	12APR72	040									
	14.69	0.00	-0.90			D	14APR72	040		12.81	0.18	-0.54	0.15*	0.18*	D	26SEP81	010
										14.23	0.13	-0.70	0.35*	0.51*	D	29SEP81	010
	14.95	0.32	-0.91			Q	16APR72	040		12.73	0.15	-0.60	0.16*	0.21*	M	07AUG82	038
	13.56	0.02	-0.70			R	02MAY72	040		12.84	0.29	-0.53	0.31	0.24	D	08AUG82	038
	13.50	-0.05	-0.88			R	03MAY72	040		12.90	0.26	-0.58	0.30	0.23	D	09AUG82	038
	13.19	0.08	-0.55			M	05MAY72	040		13.41	0.27	-0.64	0.30	0.26	D	10AUG82	038
	13.95	0.19	-0.91			D	10DEC72	040		13.86	0.23	-0.62	0.24	0.18	D	11AUG82	038
	15.26	0.38	-0.89			Q	14DEC72	040		13.82	0.21	-0.59	0.26*	0.21*	D	11AUG82	038
	15.60	0.58	-1.13			Q	18DEC72	040		14.37	0.08	-0.53	0.26	0.27	D	12AUG82	038
	14.78	0.04	-0.18			R?	31DEC73	040		14.53	0.20	-0.65	0.22*	0.26*	D	12AUG82	038
	14.10	0.12	-0.71			R	25APR74	040									
	13.59	0.09	-0.70			R	27APR74	040		15.40	0.34	-0.61	0.04*	0.50*	D	13AUG82	038
										15.94	0.54	-0.83	0.65	0.63	Q	14AUG82	038
	13.50	0.11	-0.82			M?	28APR74	040		16.18	0.52	-0.82	0.63	0.75	Q	15AUG82	038
	13.94	0.16	-0.89			D	30APR74	040		16.18	0.49	-0.97	0.69*	0.51*	Q	15AUG82	038
	14.49	0.16	-0.91			D	01MAY74	040									
	15.17	0.51	-0.81			Q	27APR77	040	KK Tel	19.1:	0.6:	-1.2:			Q	20JUN79	040
	15.13	0.49	-0.88			Q	18FEB78	040									
BX Pup	14.55	0.10	-0.87			D	10DEC72	040	EK Tra	12.90	0.07	-0.72			D	06MAY78	043
	15.41	0.17	-0.95			D	13DEC72	040		12.08	-0.03	-0.70			SM	20JUN79	043
	14.13	0.03	-0.65			O	31DEC72	040									
	15.72	-0.05	-0.75			Q	25APR74	040	SU UMa	14.18	0.04	-1.11			Q?	14JAN64	023
	13.80	-0.01	-0.75			S	30MAR77	040		14.49	0.54	-0.75			Q	20OCT65	023
	13.80	-0.01	-0.79			S	31MAR77	040		14.48	0.17	-1.25			Q	21OCT65	023
	13.81	0.01	-0.82			S	01APR77	040		14.21	-0.04	-1.03			Q?	22OCT65	023
	14.23	0.00	-0.82			D	27APR77	040		14.55	0.23	-1.45	0.36*	0.44*	Q	23NOV79	010
	14.51	-0.03	-0.84			D	28APR77	040		14.68	0.10	-1.30	0.35*	0.46*	Q	24NOV79	010
	15.01	0.03	-0.87			D	29APR77	040		12.15	0.07	-0.85	0.04*	0.04*	M	10FEB80	010
										12.17	0.07	-0.82	0.05*	0.04*	M	13FEB80	010
	14.44	0.08	-0.79			O	30MAY77	040		12.75	0.11	-0.95	0.12*	0.12*	D	14FEB80	010
RZ Sge	16.86	0.56	-0.78			Q	13SEP79	005		13.34	0.20	-1.00	0.15*	0.16*	D	15FEB80	010
	13.32	-0.04	-0.73			SM	03OCT81	003									
WZ Sge	15.3	0.10	-0.90			Q	JUN64?	012		14.57	0.45	-1.55	0.19*	0.16*	Q	16FEB80	010
	14.49	0.00	-1.07			Q	15JUL79	004		14.16	0.17	-1.27	0.34*	0.31*	Q	17FEB80	010
	14.75	0.17	-0.91			Q	17JUL79	004		14.50	0.23	-1.45	0.39*	0.35*	Q	21FEB80	010
										14.96	0.33	-1.33			Q	23MAY81	033
V735 Sgr	14.81	0.89	0.5:			?	03SEP79	040	SW UMa	16.50	0.41	-1.09			Q	27MAY81	033
	14.83	0.78	0.9:			?	04SEP79	040									
V1830 Sgr	12.56	0.01	-0.78			M	26APR75	040	BB VEL	14.66	0.53	-0.31			Q	17FEB69	026
	13.02	-0.02	-0.79			D	27APR75	040		14.12	0.43	-0.38			R?	20FEB69	026
	13.13	0.15	-0.70			D	29MAY77	040									
	13.70	0.23	-0.69			D	30MAY77	040	TW Vir	13.08	0.08	-0.77	0.05*	0.08*	D	17FEB80	010
										15.48	0.27	-1.20	0.35*	0.48*	Q	21FEB80	010
MM Sco	16.20	1.34	0.18			Q	19JUN79	040	FY Vul	14.80	0.53	-0.65			Q	12SEP79	005
	17.2:	0.8:	0.8:			Q	20JUN79	040									
	17.00	1.53	-0.70			Q	15SEP79	005	PS74	13.27	-0.02	-0.80	0.07*	0.15*	O	01JUL82	001

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