

COMMISSIONS 27 AND 42 OF THE IAU
INFORMATION BULLETIN ON VARIABLE STARS

Number 4603

Konkoly Observatory
Budapest
18 June 1998

HU ISSN 0374 – 0676

**PHOTOMETRY OF STARS IN THE FIELD OF HP ANDROMEDAE
(AND A NEW RED VARIABLE)**

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HP Andromedae ($0^{\text{h}}19^{\text{m}}09^{\text{s}}.07$ $+41^{\circ}27'41''.9$ (2000, USNO–A1.0) is a poorly-studied dwarf nova normally about 18^{m} in quiescence but reaching $10^{\text{m}}.5$ during outbursts. At the request of AAVSO chartmaker Charles Scovil, I observed several stars in the field suitable as comparisons for visual observers while the star is bright. The results have been distributed via the ‘VSNET’ list-server (Skiff 1995a,b), but are published here as a matter of record. Large-scale charts prepared using this sequence have been made available on the Web by the AAVSO (ftp://ftp.aavso.org/pub/charts/and/hp_and).

I measured the stars on several nights in 1992 and 1995 using the Lowell 53cm photometric telescope. Strömgren y and b filters were used through either 19- or 29-arcsec diaphragms. Each observation consisted of at least three 10^{s} integrations on ‘star’ and two 10^{s} integrations on ‘sky’, with more integrations for stars fainter than $V \sim 9^{\text{m}}$. A dozen or more primary and secondary standards were observed each night for calibration to Johnson V and Strömgren $b-y$. Per-star residuals from the linear fits to the standards averaged $0^{\text{m}}.007$ in V and $0^{\text{m}}.005$ in $b-y$.

Results for the stars near HP And are shown in Table 1, sorted in order of decreasing brightness. The stars are identified by HD, BD, or GSC number; positions come from the ACT (Urban *et al.* 1997) or the GSC version 1.2 (STScI 1996). The standard deviations of the mean values in V and $b-y$ are given on the second line of each entry. Tycho BV photometry for the two brightest stars is given in the notes.

Misselt (1996) has also published BVR photometry for stars close to the variable. His results are particularly useful when HP And is faint. As has been noted by Henden & Honeycutt (1997), Misselt’s V magnitudes have a small zero-point offset, amounting to $+0.03-0.04$ (Misselt too faint), similar to what is found here for the few stars in common.

A new red variable

While measuring stars in this field, I found that $\text{BD}+40^{\circ}51 = \text{IRAS } 00163+4120 = \text{GSC } 2790-1851$ ($0^{\text{h}}19^{\text{m}}02^{\text{s}}.6$ $+41^{\circ}37'41''$ [2000]) is very red, with a $b-y$ color corresponding to $B-V \sim 2.3$. Subsequent observations show that the star is variable with a range of nearly a full magnitude. This is probably a semiregular variable with a period near three months. The IRAS identification was easy to make, but the star does not appear in the Dearborn catalogue (Lee *et al.* 1947), so no spectral type is available. My five observations are collected in Table 2.

Table 1: Photometry of Stars in the Field of HP Andromedae

Name	RA (2000)	Dec	V	$b-y$	n	Remarks
HD 1469*	0 19 03.2	+41 26 38	9.230	-0.012	2	A0
			.011	.004		
BD+40°54*	0 19 31.5	+41 37 09	10.270	0.533	3	GSC 2790-1458
			.014	.004		
BD+40°53	0 19 13.6	+41 45 28	10.831	0.711	2	GSC 2790-0356
			.011	.006		
GSC 2790-1158	0 18 42.9	+41 31 19	11.480	0.388	2	
			.004	.009		
GSC 2790-1753	0 19 06.4	+41 28 05	11.739	0.641	2	
			.005	.009		
GSC 2790-1885	0 19 17.1	+41 26 27	14.00	0.43	2	
			.05	.04		

Notes: HD 1469 Tycho V = 9.25 ± 0.02 , B-V = -0.05 ± 0.02 .
 BD+40°54 Tycho V = 10.20 ± 0.04 , B-V = 1.01 ± 0.07 .

Table 2: Photometry of BD+40°51

JD 2400000+	V	$b-y$
48800.9	11.670	1.685
50004.8	10.947	1.549
50010.8	10.967	1.533
50044.8	11.228	1.571
50095.7	10.801	1.491

I would like to thank Margareta Westlund and Karl Gustav Andersson for pointing out an identification error in my original ‘VSNET’ post.

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