

COMMISSIONS 27 AND 42 OF THE IAU  
 INFORMATION BULLETIN ON VARIABLE STARS  
 Number 4578

Konkoly Observatory  
 Budapest  
 6 April 1998  
*HU ISSN 0374 – 0676*

**Var 61 Her, Var 62 And, KUV 23012+1702:  
 NEW DWARF NOVAE ON MOSCOW PLATES**

S.V. ANTIPIN

Sternberg Astronomical Institute, 13, Universitetskij Prosp., Moscow 119899, Russia,  
 e-mail: antip@sai.msu.su

Three new UG-type stars (Var61, Var62 and KUV 23012+1702) were discovered in the course of the search for new variables on Moscow archive plates. The coordinates of new dwarf novae, taken from the USNO A1.0 catalogue, are presented in Table 1. The finding charts are shown in Figure 1.

Standard sequences SA62 and SA44 (Priser, 1974) were used to obtain *B*-band magnitudes of comparison stars for Var 61 and Var 62, respectively. Estimates of KUV 23012+1702 were based on the USNO A1.0 catalogue *B*-band scale. The magnitudes of comparison stars are given in Table 2.

All new variable stars are blue on the Palomar prints.

Table 1. Coordinates of New Variables

Var	$\alpha$ (J2000.0)	$\delta$ (J2000.0)
Var 61	$18^{\text{h}}05^{\text{m}}46^{\text{s}}.4$	$+31^{\circ}40'18''$
Var 62	00 11 07.3	+30 32 36
KUV 23012+1702	23 03 41.8	+17 17 55

**Var 61 Her.** The star was estimated on 188 plates taken with the equatorial camera in Moscow and the 40-cm astrograph in Crimea for the interval JD 2415288–49634. Seven outbursts have been observed. The new dwarf nova is bright enough, the range of variability on our plates is  $13^{\text{m}}5 - <18^{\text{m}}0$ . The blue magnitude of the star in the USNO A1.0 catalogue is  $19^{\text{m}}3$ , so the amplitude of variability, perhaps, is more than  $5^{\text{m}}8B$ . Outbursts (JD24...):

#1	30607.197	< 15.20	#3	37842.490	14.42	#6	43803.254	< 17.00
	30617.214	13.76					43814.217	16.83
	30664.122	< 14.28	#4	40014.488	15.94		43815.196	17.6
#2	34517.389	< 15.20	#5	43045.244	15.20	#7	45230.283	< 17.6
	34534.387	13.53		43047.292	17.6		45232.271	13.56
	34534.405	13.58		43050.290	17.8		45234.249	13.46
							45251.237	< 17.6
							45258.225	18.0

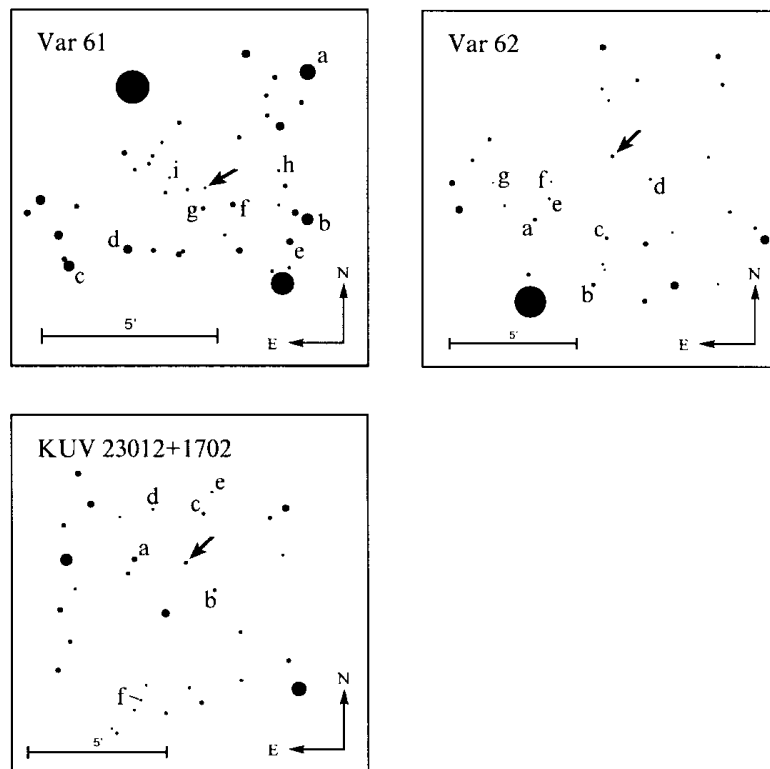


Figure 1. Finding charts

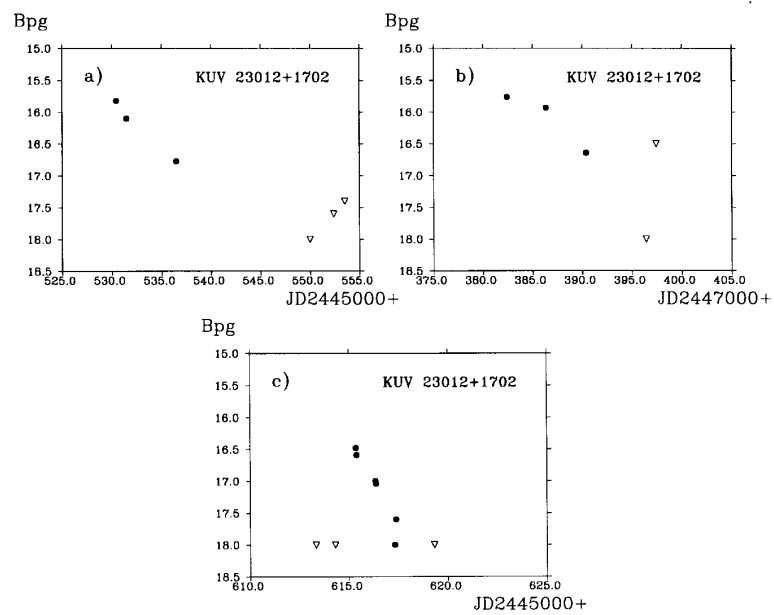


Figure 2. Light curves of KUV 23012+1702: a) and b) bright outbursts; c) faint outburst

Table 2. Comparison Stars

Var	a	b	c	d	e	f	g	h	i
Var 61	13.15	13.63	14.28	15.20	15.65	16.80	17.00	17.6	18.0
Var 62	15.45	15.48	15.97	16.79	17.06	17.54	17.8		
KUV 23012+1702	15.3	16.0	16.5	17.4	17.6	18.0			

**Var 62 And.** The star was investigated on 102 plates taken with the 40-cm astrograph in Crimea (JD 2445266–47835). Five outbursts have been revealed. The range of variability on our plates is  $15^m5- < 17^m8$ . Taking into consideration that, in the USNO A1.0 catalogue, the star is shown at  $20^m3B$ , we can assume the amplitude of variability exceeding  $4^m8B$ .

Outbursts (JD24...):

#1	45613.470	16.79	#2	46296.457	< 17.06	#3	47064.427	< 17.8
	45614.380	16.98		46303.488	< 16.79		47086.399	< 15.97
	45615.464	< 17.8		46324.414	15.58		47091.395	15.65
				46325.480	15.55			
				46327.436	15.60	#4	47383.475	16.63
				46329.485	15.87		47389.506	< 17.54
				46330.412	16.46		47396.502	< 17.8
				46331.485	16.38			
				46332.457	> 16.79	#5	47766.570	< 16.79
				46352.499	< 17.06		47773.551	15.45
				46357.357	< 17.8		47793.472	< 17.54

**KUV 23012+1702.** The star was firstly discovered by Kondo et al. (1984), as a new blue variable object. No classification is given in their work.

I independently discovered variability and estimated this variable on 156 plates taken with the 40-cm astrograph in Crimea (JD2444076–47477). Sixteen outbursts have been revealed. The cycle is (very approximately) 27 days. The range of variability on our plates is  $15^m8- < 18^m0$ . It would be interesting to know the brightness in minimum. In the USNO A1.0 catalogue, the object is shown at  $18^m2B$ , but it is uncertain (because of short cycle) if this really shows the star at minimum light.

The new variable is a good candidate to UGSU-type dwarf novae. Two kinds of outbursts were found: bright ones have  $15^m8B$  in maximum and a duration of more than 8 days (Figures 2a and 2b); faint ones have  $16^m5B$  in maximum and a duration less than 5 days (Figure 2c).

A CCD spectrum of KUV 23012+1702 was obtained by Wegner and Dupuis (1993). According to their work, the spectral type of this object is sdBe, that does not contradict the suggested classification.

## Outbursts (JD24...):

#1	44487.415	16.68	#7	45614.307	< 18.0	#12	46058.219	15.76
	44488.497	16.68		45615.355	16.48			
	44492.409	< 17.6		45615.389	16.59	#13	46289.464	< 17.4
				45616.339	17.00		46293.430	16.68
#2	44852.427	< 17.6		45616.373	17.04		46295.430	< 17.4
	44854.461	17.04		45617.314	18.0			
				45617.376	17.6	#14	46677.439	16.50
#3	45228.475	16.20		45619.310	< 18.0		46679.424	16.91
	45232.444	< 18.0					46681.425	< 18.0
			#8	45642.333	17.13			
#4	45530.443	15.82		45644.278	17.68	#15	47035.492	16.82
	45531.463	16.10		45646.301	< 18.0		47041.485	< 17.6
	45536.497	16.77						
			#9	45695.204	16.00	#16	47382.431	15.76
#5	45553.518	< 17.4					47386.363	15.93
	45558.381	17.27	#10	45936.458	15.79		47390.407	16.64
	45560.494	< 17.4		45943.455	16.82		47396.420	< 18.0
	45562.487	< 18.0		45947.458	< 17.6			
#6	45580.403	17.13	#11	45964.417	< 18.0			
	45581.537	18.0		45965.348	< 17.6			
	45582.499	< 18.0		45972.427	16.73			

The author would like to thank Drs. N.N. Samus and S.Yu. Shugarov for their help and attention to this investigation, and to express gratitude to Mr. J. Manek for the software I used to visualize the USNO A1.0 catalogue. This study was supported in part by the Russian Foundation for Basic Research and the Council of the Program for the Support of Leading Scientific Schools through grants Nos. 97-02-16739 and 96-15-96656.

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