

COMMISSION 27 OF THE I. A. U.  
INFORMATION BULLETIN ON VARIABLE STARS

Number 2631

Konkoly Observatory  
Budapest  
26 November 1984  
HU ISSN 0374 - 0676

NEAR-INFRARED LIGHT ELEMENTS OF 13 VERY COOL MIRA VARIABLES

Near-infrared narrow-band photoelectric photometry of unidentified sources in the Two Micron Sky Survey ("IRC") has led to the discovery of 13 new Mira variables. The observations were made between 1969 and 1975. These stars all attain photometric spectral types later than M9.5 at minimum light, which makes them the coolest Miras known whose photospheres are directly observable. Their mean periods and amplitudes at  $1.04 \mu$  substantially exceed the mean amplitudes and periods of previously observed visually bright Miras that reach M9.5 (Lockwood 1985). Light elements at  $1.04 \mu$  and observed characteristics of these stars are given in Table 1.

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Reference: Lockwood, G. W. (1985). *Astrophys. J. Suppl.*, in press.

Table 1. New Mira Variables.

Designation	IRC	$\alpha(1950)^{\dagger}$	$\delta(1950)^{\dagger}$	I-K	104 max	104 amplitude	V max	V amplitude	Spectral type	Period	Adopted epoch	n
	-30023	2 <sup>h</sup> 35 <sup>m</sup> 08 <sup>s</sup>	-27°11'4	5.22	2 <sup>m</sup> 53	1 <sup>m</sup> 84	9 <sup>m</sup> 8	5 <sup>m</sup> 0	M7.8-10.1	480±30	2,441,340	5
	-30217	14 10 37	-29 40.5	5.20	1.46	1.46	12.1	3.7	M8.6-10.1	450±20	2,442,566	11
	+00102	6 19 22	-3 50.3	6.59	6.10	2.39	-	-	M8.0-10.7	490±20	2,441,125	10
	+00266	15 26 17	+3 59.8	5.45	5.28	1.65	13.1	-	M6.5-9.9	470±20	2,441,737	14
V2108 Oph	+10322	17 11 56	+8 59.3	6.31	3.85	2.25	13.6	-	M8.5-10.2	580±30	2,441,834	13
V1111 Oph	+10365	18 34 59	+10 23.0	6.08	2.99	1.76	11.8	3.6	M8.9-10.4	460:	2,441,402	5
	+10525	22 59 37	+10 20.0	5.73	4.92	2.20	14.5	-	M8.4-10.3	520±30	2,441,251	8
	+30021	1 08 30	+30 22.0	6.10	5.29	2.83	14.7	-	M8.5-11.0	560±20	2,441,655	20
V697 Her	+30292	16 25 59	+34 54.6	6.34	5.54	2.54	15.3	-	M8.5-9.6	520±20	2,442,566	12
KU And	+40004	0 04 17	+42 47.9	6.59	5.41	3.21?	15.2	-	M5.0-9.8	660:	2,442,345	
NV Aur	+50137	5 07 20	+52 48.8	6.57	9.73	1.04	-	-	M8.2-9.6	635*	2,441,221	6
	+60092	2 31 43	+64 56.6	5.47	4.82	2.21?	12.8	-	M8.4-10.3	600:	2,441,221	8
	+60169	6 30 02	+60 58.9	6.26	2.89	1.62?	10.9	3.8	M8.5-9.5	440±30	2,441,340	9

\*Period from GCVS.

†Positions from the Two Micron Sky Survey.