

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

Number 5558

Konkoly Observatory
Budapest

24 August 2004

HU ISSN 0374 – 0676

NEW VARIABLE STARS IN THE OPEN CLUSTER M35 (NGC 2168)

KIM, H.-J.¹; PARK, H.-S.¹; KIM, S.-L.²; JEON, Y.-B.²; LEE, H.¹

¹ Department of Earth Science Education, Korea National Univ. of Education, Choongbuk 363-791, Korea;
email:leeho119@boao.re.kr

² Korea Astronomy Observatory, Daejon, 305-348, Korea

Observatory and telescope:	
Mt. Lemmon Optical Astronomy Observatory in USA, 1.0m telescope	
Detector:	KODAK KAF-4301E 2048 CCD camera
Filter(s):	Johnson V
Transformed to a standard system:	yes
Standard stars (field) used:	Landolt (1992)'s SA 98
Availability of the data:	
5558-t2.txt, 5558-t3.txt	
Method of data reduction:	
Standard CCD-frame reduction using the IRAF/DAOPHOT ¹ package.	

Table 1. Photometric parameters of observing stars from the WEBDA (Mermilliod, 1992)

ID_{WEBDA}	ID_{OUR}	RA (J2000)	DEC (J2000)	V	(B–V)	(V–I)
3053	V1	06 ^h 08 ^m 13 ^s .22	+24°18'30".8	16 ^m 43	0 ^m 64	0 ^m 863
3703	V2	06 ^h 09 ^m 03 ^s .31	+24°23'15".6	17 ^m 10	1 ^m 30	1 ^m 395
272	Comp	06 ^h 08 ^m 37 ^s .36	+24°21'57".5	14 ^m 20	0 ^m 96	1 ^m 180
241	Check	06 ^h 08 ^m 44 ^s .30	+24°17'25".2	14 ^m 46	0 ^m 40	0 ^m 607

Ephemeris:			
Star name	E 2400000+	P [day]	Source
V1	53071.755	0.0691	present paper
V2	53071.731	0.3639	"

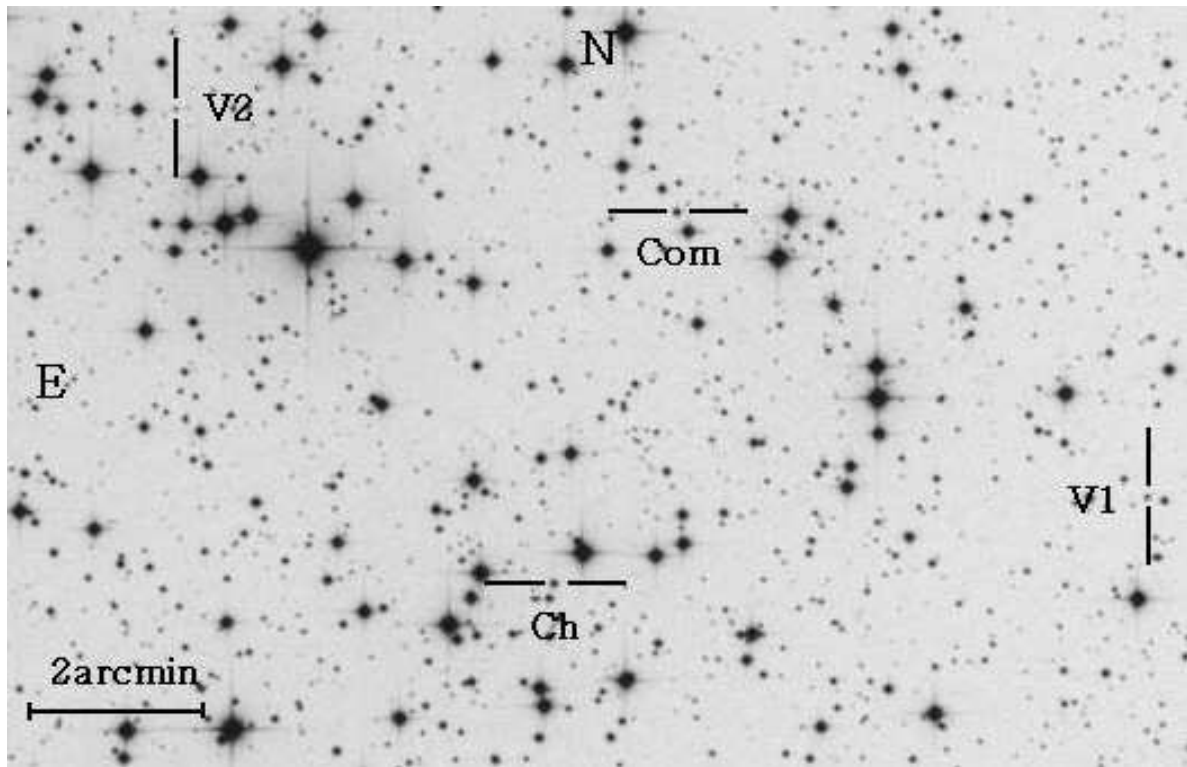


Figure 1. The finding chart of the new variable stars is presented in Fig. 1. New variables are labeled (V1) and (V2). The field is (14'0×9'0), north is at the top and east to the left. The chart is retrieved from the STScI Digitized Sky Survey Second Generation Red.

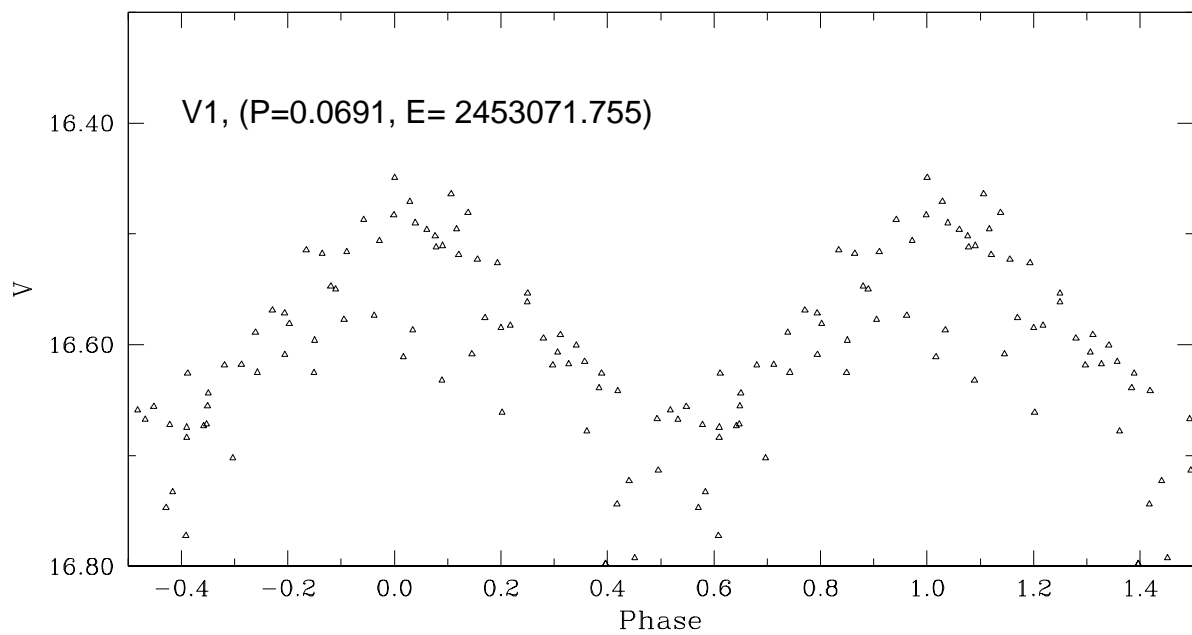


Figure 2. Phase diagram of V1

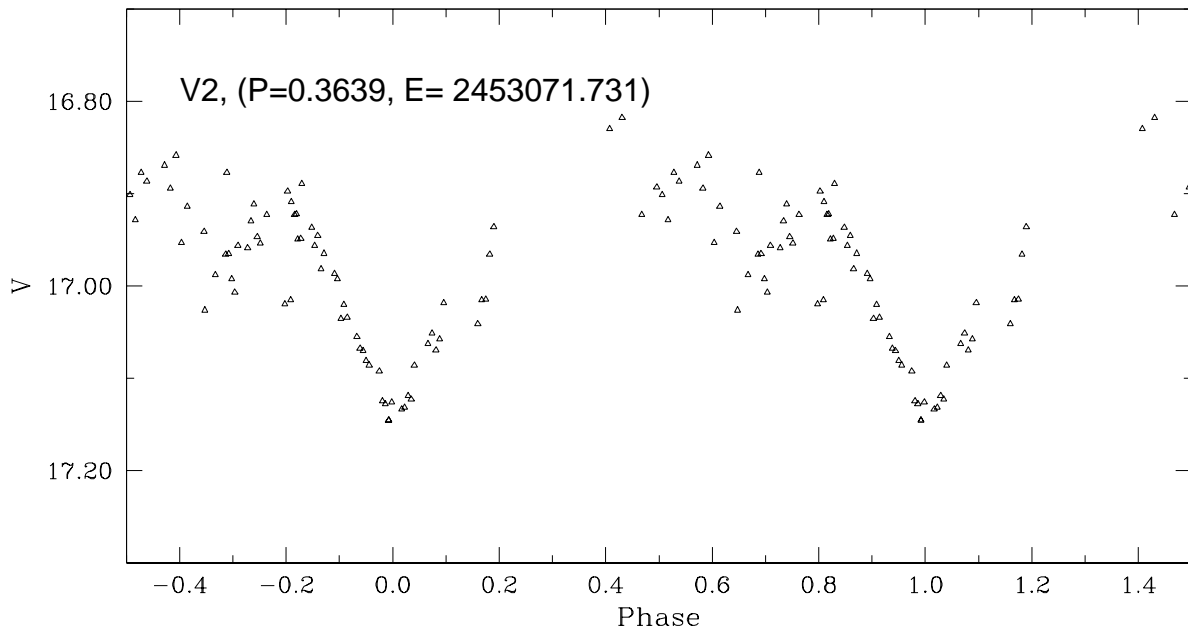


Figure 3. Phase diagram of V2

Remarks:

As a part of our survey project to searching for low-amplitude pulsating stars in open clusters, we carried out time-series CCD photometry for 2 nights March 7th to 8th 2004 in the open cluster M35 (NGC2168). The observations were performed with the 1.0m telescope at Mt. Lemmon Optical Astronomy Observatory (LOAO), Arizona, USA; Korea Astronomy Observatory has installed the telescope in September 2003. We examined light variation of 1128 stars in the observed field and found two variable stars. One is a δ Sct type star and the other is a suspected eclipsing binary. We applied the ensemble normalization technique (Gilliland & Brown 1988, Kim et al. 1999) to standardize the instrumental magnitudes of all stars in the time-series CCD frames (for UBV I photometry of M53 see Sung and Bessell 1999). Finding chart of these new pulsating stars is shown in Figure 1. Light curves are displayed in Figure 2 and Figure 3.

References:

- Gilliland R.L., Brown T.M., 1988, *PASP*, **100**, 754
 Kim, S.-L., Park, B.-G., Chun, M.-Y., 1999, *A&A*, **348**, 795
 Landolt, A.U., 1992, *AJ*, 104, 340
 Mermilliod J.C., 1992, in "Open cluster data base, BDA"
 (<http://obswww.unige.ch/webda>)
 Sung, H., Bessell, M.S., 1999, *MNRAS*, **306**, 361

¹IRAF is distributed by the National Optical Astronomy Observatories, which are operated by the Association of Universities for Research in Astronomy, Inc., under cooperative agreement with the National Science Foundation.