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NEW W UMa TYPE ECLIPSING BINARIES IN THE GLOBULAR CLUSTER M15

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VAR 1

Name of the object:
W1

Equatorial coordinates:	**Equinox:**
R.A.= $21^{\rm h}30^{\rm m}21\overset{\rm s}{.}06$ **DEC.**= $+12°9'9\overset{''}{.}3$	2000

VAR 2

Name of the object:
W2

Equatorial coordinates:	**Equinox:**
R.A.= $21^{\rm h}29^{\rm m}52\overset{\rm s}{.}25$ **DEC.**= $+12°6'11\overset{''}{.}2$	2000

Observatory and telescope:
BOAO (Bohyunsan Optical Astronomy Observatory), 1.8-m reflector ($f/8$, Cassegrain focus)

Detector:	Thinned back illuminated SITe 2048 × 2048 chip ($11\overset{'}{.}6 \times 11\overset{'}{.}6$)

Filter(s):	B, V

Availability of the data:
Through IBVS Web-site as files 5189-t1.txt, 5189-t2.txt, 5189-t3.txt, and 5189-t4.txt

Transformed to a standard system:	Landolt (1992)
Standard stars (field) used:	

Type of variability:	W UMa

Remarks:

Time-series BV CCD photometry was performed over three nights for W1 and nine nights for W2 from 1997 to 2000. Using IRAF/CCDRED package, we processed CCD images to correct overscan regions, trim unreliable subsections, subtract bias frames and correct flat field images. Instrumental magnitudes were obtained using the Point Spread Function fitting photometry routine in IRAF/DAOPHOT package (Massey & Davis 1992). We applied the ensemble normalization technique (Gilliland & Brown 1988, Jeon *et al.* 2001) to standardize the instrumental magnitudes of all stars in the time-series CCD frames. Two new faint ($\langle V \rangle = 20\overset{\mathrm{m}}{.}246$, $\langle B \rangle - \langle V \rangle = 1\overset{\mathrm{m}}{.}014$ & $P = 0\overset{\mathrm{d}}{.}23306$ for W1; $\langle V \rangle = 19\overset{\mathrm{m}}{.}791$, $\langle B \rangle - \langle V \rangle = 0\overset{\mathrm{m}}{.}560$ & $P = 0\overset{\mathrm{d}}{.}23576$ for W2) W UMa type stars in globular cluster M15 were discovered.

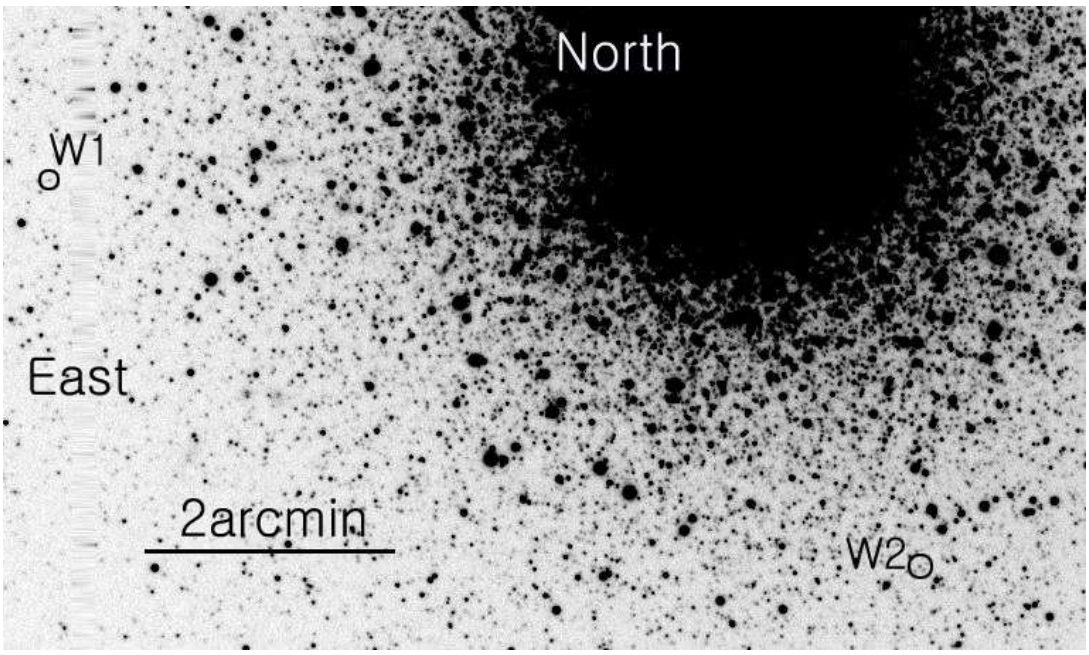

Figure 1. Finding chart of the two W UMa type variable stars, W1 and W2, in globular cluster M15

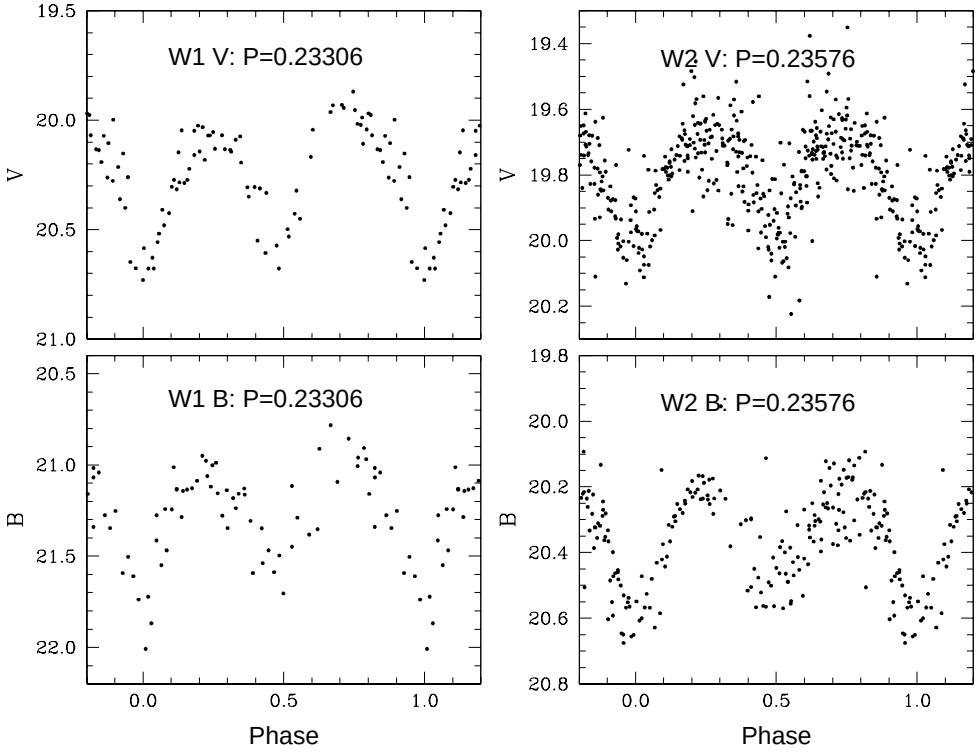

Figure 2. Light curves of the two W UMa type stars

References:

Gilliland, R.L., Brown, T.M., 1988, *PASP*, **100**, 754
Jeon, Y-.B., Kim, S-.L., Lee, H., Lee, M.G., 2001, *AJ*, **121**, 2769
Landolt, A.U., 1992, *AJ*, **104**, 340
Massey, P., Davis, L.E., 1992, A User's Guide to Stellar CCD photometry with IRAF