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

Number 5244

Konkoly Observatory
Budapest
08 March 2002

HU ISSN 0374 – 0676

HD 275525, GSC 02866-01866 AND GSC 03429-01645 : THREE NEW DELTA SCUTI TYPE VARIABLES

KIM, S.-L.[1]; KWON, S.-G.[1]; YOUN, J.-H.[1]; KYEONG, J.-M.[1]; LEE, J.W.[2]

[1] Korea Astronomy Observatory, Daejon, 305-348, Korea, e-mail: slkim@kao.re.kr

[2] Dept. of Astronomy and Space Science, Chungbuk National University, Cheongju, 361-763, Korea

Observatory and telescope:
Sobaeksan Optical Astronomy Observatory, 61cm telescope

Detector:	SITe 2K CCD camera (FOV $20\farcm5\times20\farcm5$)

Filter(s):	B, V

Transformed to a standard system:	No

Availability of the data:
Upon request

Method of data reduction:
Standard CCD-frame reduction using the IRAF package[1]

Observed star(s):				
Star name	GCVS type	Coordinates (J2000) RA	Dec	Comp./check star(s)
HD 275525	DSCT	3 37 15.0	+40 54 00	HD 275605/GSC 02866-01819
GSC 02866-01866	DSCT	3 36 54.4	+40 55 40	HD 275605/GSC 02866-01819
GSC 03429-01645	DSCT	9 32 45.7	+49 38 06	GSC 03429-00621/GSC 03429-01027

[1]IRAF 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.

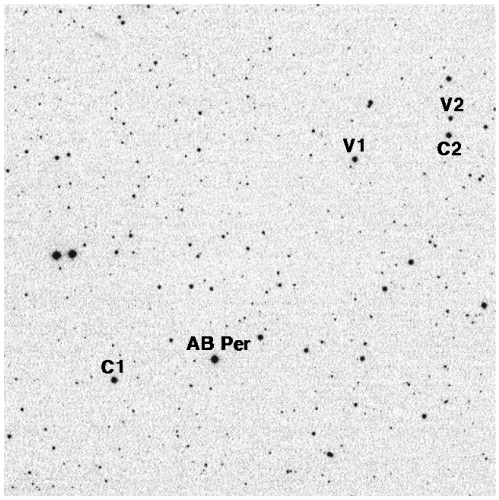

Figure 1. An observed CCD image (20′.5×20′.5) near the eclipsing binary AB Per. Two new variable stars (V1 = HD 275525 and V2 = GSC 02866-01866) and two comparison stars (C1 = HD 275605 and C2 = GSC 02866-01819) are marked. North is up and east is to the left

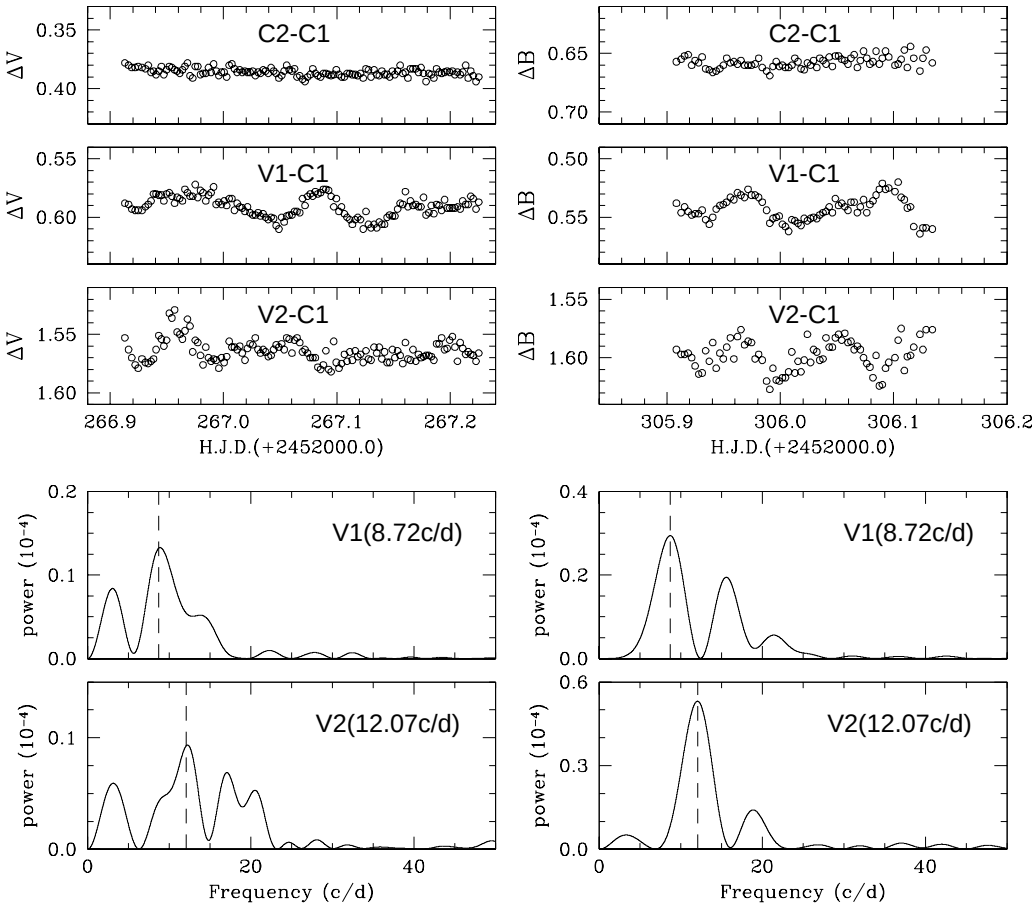

Figure 2. Light curves (upper) and its power spectra (lower) of two variable stars discovered in the observed field of AB Per. The dominant frequency (vertical dashed line) is about 8.72 c/d for HD 275525 and about 12.07 c/d for GSC 02866-01866, respectively. Magnitude differences between comparison star (C1) and check star (C2) are plotted in the top panel

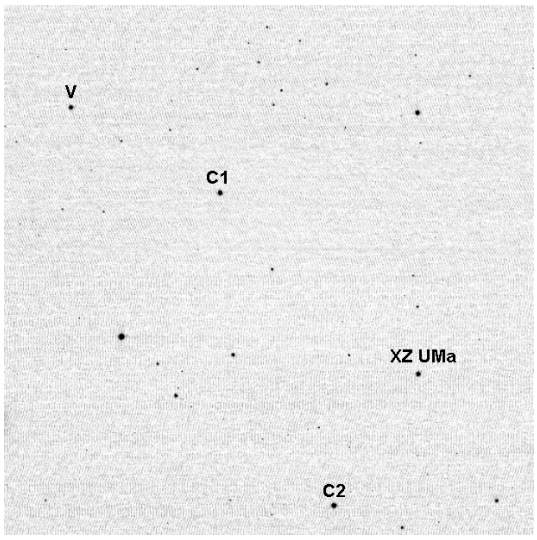

Figure 3. An observed CCD image (20′.5×20′.5) near the eclipsing binary XZ UMa. A new variable star (V = GSC 03429-01645) and two comparison stars (C1 = GSC 03429-00621 and C2 = GSC 03429-01027) are marked. North is up and east is to the left

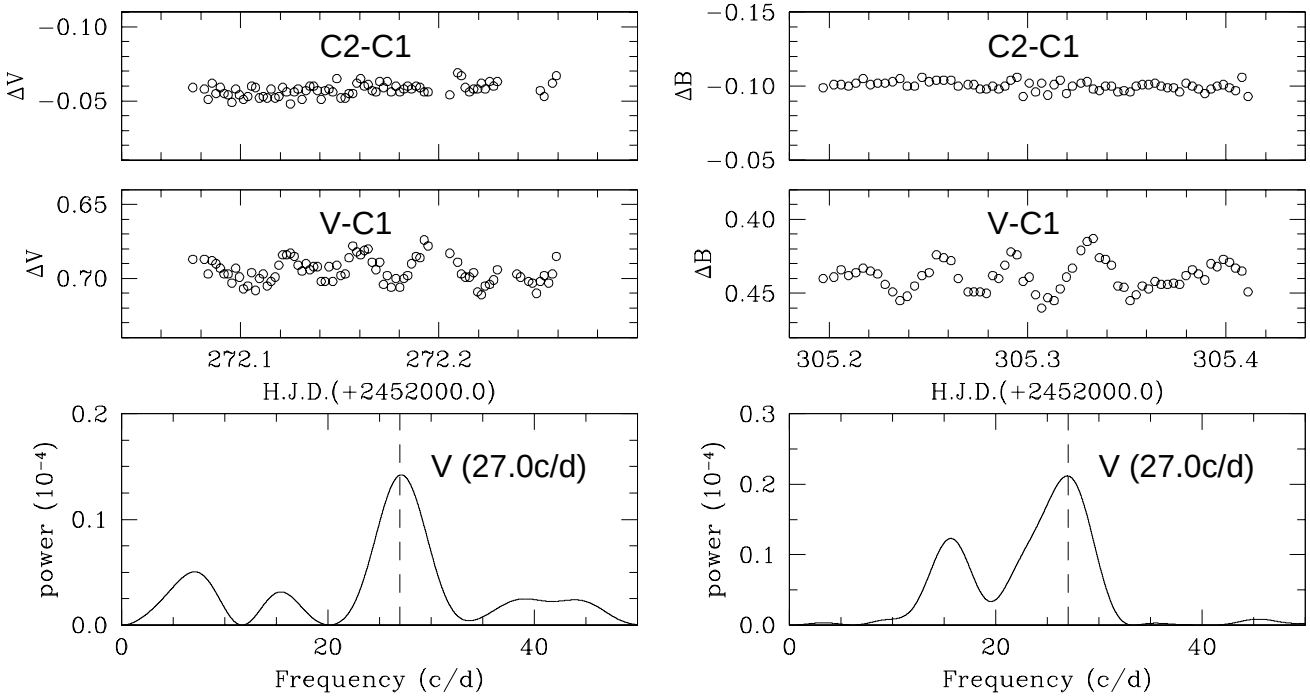

Figure 4. Light curves (upper) and its power spectra (lower) of a variable star discovered in the observed field of XZ UMa. A dominant frequency is shown at about 27.0 c/d (vertical dashed line). Magnitude differences between comparison star (C1) and check star (C2) are plotted in the top panel

Remarks:

As a part of the observational survey to search for δ Scuti type pulsating components in eclipsing binary systems (Kim et al. 2002), we performed time-series CCD observations of AB Per and XZ UMa in December 23 and 28, 2001 with V filter. After reducing the data, we have discovered serendipitously three new variable stars in the observed fields. To confirm this variability, we obtained again time-series CCD frames in January 30 and 31, 2002 with B filter. We applied classical two-star differential photometry to get differential magnitudes and derived variable periods from the discrete Fourier analysis (Scargle 1989).
Maximum amplitudes are about $0\overset{m}{.}03$ in V-band and $0\overset{m}{.}04$ in B-band for HD 275525, about $0\overset{m}{.}04$ in V-band and $0\overset{m}{.}05$ in B-band for GSC 02866-01866 and about $0\overset{m}{.}03$ in V-band and $0\overset{m}{.}04$ in B-band for GSC 03429-01645. Light variations show smooth and very complicated curves, indicating that multiple periods are superimposed. The dominant frequency for each variable star is about 8.72 c/d ($0\overset{d}{.}115$) for HD 275525, about 12.07 c/d ($0\overset{d}{.}083$) for GSC 02866-01866 and about 27.0 c/d ($0\overset{d}{.}037$) for GSC 03429-01645, respectively. Considering the above variable characteristics, we suggest that the three variable stars can be identified as δ Scuti type pulsating variables.

Acknowledgements:

This research made use of the SIMBAD database, operated at CDS, Strasbourg, France

References:

Kim, S.-L., Lee, J.W., Kwon, S.-G., Youn, J.-H., Kyeong, J.-M., 2002, *Journal of the Korean Astronomical Society*, to be submitted

Scargle, J.D., 1989, *ApJ*, **343**, 874