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TIMES OF MINIMA OF ECLIPSING BINARIES DI HERCULIS AND V1143 CYGNI

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VAR 1

Name of the object:					
DI Herculis = HD 175227					
Equatorial coordinat	Equinox:				
R.A. = $18^{h}53^{m}26^{s}24$ I	J2000				
Comparison star(s):	HD 174932				
Check star(s):	HD 343238				
VAR 2					
Name of the object:					
V1143 Cygni = HD 185912					
Equatorial coordinat	Equinox:				
$R.A. = 19^{h}38^{m}41^{s}.18$ I	J2000				
Comparison star(s): HD 184240					
Check star(s):	HD 186239				
Observatory and telescope:					
51-cm Cassegrainian telescope of Biruni Observatory at Shiraz University, Shiraz, Iran					
Detector:	Unrefrigerated RCA4509 photomultiplier tube				
Filter(s):	B and V bands of Johnson system				
Transformed to a standard system: No					
Type of variability:	Eclipsing binaries with apsidal motion				



Figure 1. Light curve of DI Herculis in B filter



Figure 2. Light curve of DI Herculis in V filter



Figure 3. Light curve of V1143 Cygni in B filter



Figure 4. Light curve of V1143 Cygni in V filter

System	Min. type	Heliocentric JD	
System		2400000 +	
DI Her	Ι	$51781.25030 \pm .00021$	
DI Her	II	$51789.37072 \pm .00081$	
V1143 Cyg	Ι	$51771.34410\pm.00066$	
V1143 Cyg	II	$51792.28645 \pm .00220$	

Table 1: The photoelectric times of minima

Table 2: The depth of minima, according to the present study

System	Filter	Min. I	Min. II
DI Her	В	$0^{\rm m}_{\cdot}70 \pm 0.01$	$0^{\rm m}_{\cdot}55\pm0.01$
DI Her	V	$0^{\rm m}_{\cdot}69\pm0.02$	$0^{\rm m}_{\cdot}58\pm0.02$
$V1143 \ Cyg$	B	$0^{\rm m}_{\cdot}53\pm0.01$	$0^{\rm m}_\cdot 25\pm 0.01$
V1143 Cyg	V	$0^{\mathrm{m}}_{\cdot}48\pm0.02$	$0^{\rm m}_\cdot 23\pm 0.02$

Remarks:

DI Herculis and V1143 Cygni are stars with apsidal motion, moving in highly eccentric orbits. The eccentricities are 0.49 and 0.54 for DI Herculis and V1143 Cygni, respectively (Guinan and Maloney, 1985). The observations were made during the summer of 2000. Heliocentric times of minima were computed by fitting a Lorentzian function to the minima. Uncertainties were estimated from the combined errors in the two filters. Table 1 presents the derived times of minima (I for primary and II for secondary). The depths of minima in each filter are presented in Table 2. The probable errors of the individual observation were estimated from an examination of the scatter in the outside eclipse portions of the light curves. Finally, the observed light curves of DI Herculis and V1143 Cygni in B and V filters are plotted in Figures 1–4. These light curves are calculated according to the ephemeris of Guinan et al. (1994) for DI Herculis and of Lacy and Fox (1994) and Andersen et al. (1987) for V1143 Cygni.

Min. I (DI Herculis) = HJD 2449491.8622 + $10^{4}55016766 \times E$; Min. I (V1143 Cygni) = HJD 2449234.6144 + $7^{4}64075217 \times E$.

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