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NEW TIMES OF MINIMA OF ECLIPSING BINARY SYSTEMS AND OF MAXIMUM OF SXPHE TYPE STARS

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Observatory and telescope:
50-cm $f/8.4$ Ritchey–Chrétien telescope (Ba50) of the Baja Astronomical Observatory (Hungary) 50-cm $f/15$ Cassegrain telescope (Pi50), 60/90/180 Schmidt telescope (Pi90) and 1m $f/13.3$ RCC telescope (Pi100) of the Konkoly Observatory at Piszkéstető Mountain Station (Hungary) 12, 25, and 40-cm Newton telescopes (Be12, Be25, Be40, respectively; Belgium)

Detector:	512 × 512 Apogee AP-7 CCD camera (Ba50) uncooled UBV Photometer (Pi50u) cooled UBVRI Photometer (Pi50c) 1340 × 1300 Princeton Instr. CCD camera (Pi100) 2184 × 1472 SBIG ST10XME with filterwheel (filters Bessell specifications) (Bexx) 1536 × 1024 Photometrics CCD-camera (Pi90)

Method of data reduction:
Reduction of Baja and Piszkéstető CCD frames was made with a customly developed IRAF[1] package, while the others were reduced by Mira-AP (6) software

[1]IRAF is distributed by the National Optical Astronomical Observatories, operated by the Association of the Universities for Research in Astronomy, inc., under cooperative agreement with the National Science Foundation

Method of minimum determination:

The minima times were computed with parabolic fitting, and in some cases with linearized Pogson-method or Kwee-van Woerden method (Kwee & van Woerden, 1956). Maxima times reported here of the three SXPHE type stars was determined by a low-order (3-4) polynomial fit.

Times of minima:

Star name	Time of min. HJD 2400000+	Error	Type	Filter	Rem.
Times of minima of selected eclipsing binary stars					
RT And	53649.40304	7	I	R	Bír/Ba50
EP And	53652.54279	7	I	V	Csz/Pi100
OO Aql	52813.45965	4	I	–	Heg/Ba50
IM Aur	53336.4052	6	I	B, V, R	Bír/Ba50
	53376.3151	3	I	V	Heg/Ba50
	53629.5232	6	I	R	Bor/Ba50
	53697.502	1	II	V	Kov+Reg+Bor/Pi50c
	53760.4894	1	I	R	Bor/Ba50
IU Aur	52927.5161	4	I	V	Bor+Pál/Pi100
	53026.2503	3	II	R, B	Bír/Ba50
	53026.2514:	4	II	V	Bír/Ba50
	53053.4217	17	II	V, R	Bor/Ba50
	53360.4672	2	I	V	Bor/Ba50
	53379.486	1	II	V	Bor/Ba50
	53380.3904	4	I	V	Bor/Ba50
	53744.4947	4	I	R	Kis/Ba50
	53765.3244	1	II	R	Kis/Ba50
SV Cam	44614.6147	2	I	B, V	Pat/Pi50u
	44980.5406	1	I	B, V	Pat/Pi50u
	47547.3624	2	I	B, V	Pat/Pi50u
	49255.4148	3	I	B, V	Pat/Pi50u
AS Cam	53679.4436	6	II	R	Bor/Ba50
	53760.25497	5	I	R	Bor/Ba50
RZ Cas	53454.3881	6	I	R	Heg/Ba50
OX Cas	53655.4201	4	II	V	Be25
PV Cas	53197.5062	5	II	V	Bor/Ba50
VW Cep	52799.49503	5	I	–	Heg/Ba50
	53663.3715	3	I	V, R	Bor+Kov+Reg/Pi50c
	53663.3722	4	I	B	Bor+Kov+Reg/Pi50c
EK Cep	53636.5875	1	I	V	Be25
AH Cnc	53765.3982	4	I	V, I	Csz/Pi90
ES Cnc	53765.4321	6	I	V, I	Csz/Pi90
XZD1[a] (Cnc)	53765.5186	8	I	V, I	Csz/Pi90
AQ Com[b]	53081.347	1	II	V	Bír/Ba50
	53081.4897	2	I	V	Bír/Ba50
	53081.6283	4	II	V	Bír/Ba50
	53464.386	1	I	R	Heg/Ba50
	53464.5183	7	II	V, R	Heg/Ba50
LS Del	53229.4800	9	I	R	Heg/Ba50
	53559.4814	4	I	V	Csz/Pi100
U Gem	53654.5002	1	I	I	Csz/Pi100
HS Her	53208.4059	3	I	R	Bor/Ba50
V994 Her	52937.4701	1	II	R	Heg/Ba50
AU Lac	53660.3536	3	I	V	Be40
Y Leo	53408.3460	3	I	V	Be12
UZ Leo	53462.3788	18	I	V, R	Heg/Ba50
V404 Lyr	53235.4508	7	II	V	Bor/Ba50
BX Peg	53250.50843	5	II	V	Csz/Pi100
AG Per	53319.333	2	II	V	Bor/Ba50
	53335.561	1	II	V	Bor/Ba50

Times of minima:					
Star name	Time of min. HJD 2400000+	Error	Type	Filter	Rem.
Times of minima of selected eclipsing binary stars					
β Per[c]	53403.3738	2	I	$V, R+N$	Bor+Kov/Pi50c
	53658.5729	7	I	$V+N$	Bor+Kov+Reg/Pi50c
WZ Sge	53654.2756	1	I	I	Csz/Pi100
	53654.3324	1	I	I	Csz/Pi100
DW UMa	53036.6561	1	I	R	Bor/Ba50
	53095.3973	5	I	R	Bor/Ba50
	53375.57700	6	I	V	Bor/Ba50
	53375.6520	1	II?	V	Bor/Ba50
	53465.32885	35	I	V, R	Bor/Ba50
	53465.4021	12	II?	V, R	Bor/Ba50
	53465.4652	5	I	V, R	Bor/Ba50
	53465.6019	2	I	V, R	Bor/Ba50
LP UMa[d]	53036.6476	4	I	R	Bor/Ba50
	53375.5212	5	II	V	Bor/Ba50
	53465.391	3	II	V, R	Bor/Ba50
	53465.5545	25	I	V, R	Bor/Ba50
TV UMi	53445.319	2	I	B, V, R	Bír/Ba50
	53445.5207	10	II	B, V, R	Bír/Ba50
Times of maxima of some SXPHE stars					
CY Aqr	53566.5233	7		V	Csz/Pi90
XX Cyg	53567.4231	5		V	Csz/Pi90
AE UMa	53716.5170	2		B, V, R, I	Kla/Pi100

Explanation of the remarks in the table:

Observer(s)/Instrument

[a]:XZD 1: The variability of this star was independently discovered by Xin et al. (2002) and by Sandquist & Shetrone (2003). Xin et al. (2002) made astrometry and their position was different from the one of star S 757, therefore SIMBAD Database[2] lists these objects as XZD 1 and S 757 (this later designation was used by Sandquist & Shetrone's paper and it refers to Sanders' (1977) star catalogue) so it seems to be two different stars in the SIMBAD. Comparing the positions and the finding chart of Xin et al. to each other, to our CCD frame and to Aladin picture we concluded that Xin et al. and Sandquist & Shetrone discovered the variability of the same star. The following cross-identifications are valid: S 757 = XZD 1 = Cl* NGC 2682 FBC 2976 = Cl* NGC 2682 MMJ 5405. [b]:AQ Com: In the night HJD 2453081, the secondary minima were approx. 0.1 mag deeper than the primary one. The period of this star seems to be constant, nevertheless, it is necessary to improve its value determined previously in Csizmadia & Borkovits (2001). The following new ephemeris was calculated: $MIN_I = 2451925.4991 + 0.2813312056 \times E$.

[c]: β Per: Due to the brightness of the system we had to use an additional neutral filter (denoted by N)

[d]: LP UMa: In the night HJD 2453465 especially strong asymmetry and O'Connell effect was observed

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