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NEW TIMES OF MINIMA OF ECLIPSING BINARY SYSTEMS

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Observatory and telescope:

50-cm $f/8.4$ Ritchey–Chrétien telescope of the Baja Astronomical Observatory (Hungary) (Ba50)
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 Pizskéstető Mountain Station (Hungary)
40-cm Cassegrain telescope (Sz40) of Szeged Observatory (Hungary)

Detector:

512 × 512 Apogee AP-7 CCD camera (Ba50)
UBVRI Photometer (Pi50)
1536 × 1024 Photometrics CCD-camera (Pi90)
1536 × 1024 Photometrics CCD-camera (Pi100P)
1152 × 770 Wright Instruments CCD-camera (Pi100W)
512 × 512 SBIG ST9-E CCD camera (Sz40)

Method of data reduction:

Reduction of the CCD frames was made with a customly developed IRAF¹ package.

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).

¹IRAF 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

| Observed star(s): | | | | | | | |
|--------------------------|-----------|---------------------|-----------|---|-------------|------------|--------|
| Star name | GCVS type | Coordinates (J2000) | | Comp. star | Ephemeris | | Source |
| | | RA | Dec | | E 2400000+ | P [day] | |
| XZ And | EA | 01 56 52 | +42 06 02 | 2824-1778 | 49313.53034 | 1.3572965 | 1 |
| AB And | EW | 23 11 32 | +36 53 35 | BD+36°5018 | 51534.2504 | 0.33189106 | 2 |
| SS Ari | EW | 02 04 15 | +24 00 06 | BD+23°277 | 52528.7093 | 0.40598385 | 3 |
| HP Aur | EB | 05 10 22 | +35 47 47 | 2401-1128 | 46353.2360 | 1.4228191 | 4 |
| IM Aur | EA | 05 15 30 | +46 24 21 | HD 33732 ^a 3358-1208 ^b | 38327.7974 | 1.2472891 | 5 |
| IU Aur | EA | 05 27 52 | +34 46 58 | HD 35619* 2411-1937** HD 35669*** | 47469.5535 | 1.811474 | 6 |
| VW Cep | EW | 20 37 21 | +75 35 57 | BD+75°751 | 44157.4131 | 0.2783146 | 7 |
| V477 Cyg | EA | 20 05 28 | +31 58 18 | BD+31°3929 | 44189.2639 | 2.34699060 | 7 |
| AK Her | EW | 17 13 58 | +16 21 01 | 1536-1834 | 42186.4600 | 0.42152201 | 7 |
| GU Her | EA | 16 32 05 | +30 23 21 | 2581-2356 | 50983.46694 | 4.34320188 | 8 |
| V861 Her | EW | 16 51 13 | +41 17 58 | 3079-0194 | 43684.3250 | 0.3446322 | 9 |
| SW Lac | EW | 22 53 42 | +37 56 19 | 3215-1406 | 45275.3477 | 0.3207209 | 7 |
| UV Leo | EA | 10 38 21 | +14 16 04 | BD+14°2273 | 48617.5761 | 0.6000864 | 10 |
| UZ Leo | EW | 10 40 33 | +13 34 01 | 0845-0996 | 47240.4180 | 0.6180508 | 11 |
| V404 Lyr | EB | 19 19 06 | +38 22 00 | 3121-1597 | 35836.448 | 0.7309432 | 12 |
| AG Per | EA | 04 06 56 | +33 26 47 | BD+33°791 | 44584.5830 | 2.02870904 | 7 |
| XY UMa | EA/RS | 09 09 56 | +54 29 18 | HD 237784 | 52351.5911 | 0.47899511 | 3 |
| DW UMa | EA | 10 33 53 | +58 46 54 | 3822-0070 | 46229.00691 | 0.13660653 | 13 |
| LP UMa | EW | 10 33 58 | +58 52 16 | 3822-0070 | 50495.5212 | 0.30989069 | 14 |

Source(s) of the ephemeris:

1. Demircan et al., 1995
2. Pribulla et al., 2001
3. Pribulla et al., 2002
4. Wolf & Sarounová, 1996
5. Bartolini & Zoffoli, 1986
6. Drechsel et al., 1994
7. Kholopov et al., 1985
8. Borkovits et al., 2001
9. Antipin, 1996
10. Mikuz, et al., 2002
11. Hegedüs & Jäger, 1992
12. Csizmadia & Sándor, 2001
13. Bíró, 2000
14. Bíró & Borkovits, 2000

Times of minima:

| Star name | Time of min. | Error | Type | Filter | $O - C$ | Rem. |
|-----------|--------------|-------|------|----------------|---------|------------------------------|
| | HJD 2400000+ | | | | | |
| XZ And | 52534.4460 | 1 | I | <i>R</i> | 0.0511 | Bor/Ba50 |
| AB And | 52517.3162 | 1 | I | <i>R</i> | 0.0045 | Bor/Ba50 |
| | 52517.4811 | 2 | II | <i>R</i> | 0.0034 | Bor/Ba50 |
| | 52548.3470 | 4 | II | <i>B, V, R</i> | 0.0035 | Bor+Pál+Pál/Pi50 |
| SS Ari | 52528.5021 | 1 | II | <i>V</i> | -0.0042 | Bor/Ba50 |
| | 52547.3805 | 7 | I | <i>B, V, R</i> | -0.0041 | Bor+Pál+Pál/Pi50 |
| HP Aur | 52606.5288 | 3 | I | <i>B, V, R</i> | 0.0029 | Bir/Ba50 |
| IM Aur | 52567.4615 | 6 | II | <i>R</i> | -0.0119 | Bir/Ba50 ^a |
| | 52599.2683 | 3 | I | <i>V, R</i> | -0.0110 | Csiz+Bor/Pi100P ^b |
| | 52607.372 | 3 | II | <i>V, R</i> | -0.015 | Bor/Ba50 ^a |
| | 52655.3973 | 3 | I | <i>V</i> | -0.0100 | Heg/Ba50 ^b |
| | 52723.377 | : | II | <i>R</i> | -0.007 | Bir/Ba50 ^b |
| | 52728.365 | : | II | <i>V</i> | -0.009 | Bor/Ba50 ^a |

| Times of minima: | | | | | | | |
|-------------------------|------------------------------|------------|------|-------------------|------------------|------------------|--------------|
| Star name | Time of min. HJD 2400000+ | Error | Type | Filter | $O - C$ [day] | Rem. | |
| IU Aur | 52533.519 | 4 | II | <i>V</i> | -0.010 | Heg/Ba50* | |
| | 52553.451 | 3 | II | <i>B, V, R</i> | -0.004 | Bír/Ba50** | |
| | 52572.4699 | 9 | I | <i>B, V</i> | -0.0059 | Bor+Pál/Pi50* | |
| | 52572.4700 | 9 | I | <i>V, R</i> | -0.0058 | Bír/Ba50* | |
| | 52572.4706 | 2 | I | <i>V</i> | -0.0052 | Csák+Mész/Sz40* | |
| | 52602.3561 | 17 | II | <i>B, V, R</i> | -0.0090 | Bor/Ba50* | |
| | 52619.565 | 4 | I | <i>U, B, V, R</i> | -0.009 | Szab/Pi50* | |
| | 52641.3032 | 2 | I | <i>R</i> | -0.0086 | Bor/Ba50* | |
| | 52651.266 | 1 | II | <i>R</i> | -0.009 | Bor/Ba50** | |
| | 52669.3803 | 5 | II | <i>V</i> | -0.0093 | Bír/Ba50*** | |
| | 52697.4660 | 13 | I | <i>B, V, R</i> | -0.0015 | Bor/Pi50* | |
| | 52698.3725 | 8 | II | <i>B, V, R</i> | -0.0007 | Bor/Pi50* | |
| | VW Cep | 52787.3891 | 2 | II | <i>R</i> | 0.1360 | Bír+Bor/Ba50 |
| | V477 Cyg | 52767.4991 | 1 | I | <i>R</i> | -0.0154 | Pál/Ba50 |
| | AK Her | 52747.4943 | 5 | II | <i>R</i> | 0.0111 | Bor/Ba50 |
| | | 52758.4549 | 1 | II | <i>R</i> | 0.0121 | Bor/Ba50 |
| 52766.4631 | | 1 | II | <i>R</i> | 0.0114 | Kós+Pál+Bor/Ba50 | |
| GU Her | 52779.3942 | 6 | II | <i>R</i> | 0.0133 | Bor/Ba50 | |
| V861 Her | 52693.6196 | 4 | I | <i>V, R, I</i> | 0.0919 | Csiz/Pi100W | |
| | 52696.5519 | 4 | II | <i>V, R, I</i> | 0.0949 | Csiz/Pi100W | |
| SW Lac | 52518.424 | 1 | I | <i>R</i> | -0.405 | Bor/Ba50 | |
| UV Leo | 52725.4682 | 2 | II | <i>V</i> | 0.0006 | Bír/Ba50 | |
| UZ Leo | 52767.3666 | 3 | II | <i>R</i> | 0.0293 | Pál/Ba50 | |
| V404 Lyr | 52765.4568 | 4 | II | <i>V, R</i> | -0.0012 | Bír/Ba50 | |
| AG Per | 52555.473 | 1 | I | <i>R</i> | 0.092 | Bor/Ba50 | |
| XY UMa | 52693.5986 | 2 | I | <i>V</i> | 0.0050 | Köny/Pi90 | |
| DW UMa | 52607.5755 | 2 | I | <i>R</i> | -0.0001 | Bor/Ba50 | |
| | 52709.3477 | 1 | I | <i>R</i> | 0.0002 | Bor/Ba50 | |
| | 52716.3139 | 1 | I | <i>R</i> | -0.0005 | Bor/Ba50 | |
| | 52716.4508 | 1 | I | <i>R</i> | -0.0002 | Bor/Ba50 | |
| | 52716.5871 | 1 | I | <i>R</i> | -0.0005 | Bor/Ba50 | |
| | 52721.36905 | 6 | I | <i>R</i> | 0.00020 | Bor/Ba50 | |
| | 52721.50524 | 5 | I | <i>R</i> | -0.00022 | Bor/Ba50 | |
| | 52721.6418 | 2 | I | <i>R</i> | -0.0003 | Bor/Ba50 | |
| | 52724.37426 | 6 | I | <i>R</i> | 0.00006 | Bor/Ba50 | |
| | 52730.3851 | 1 | I | <i>R</i> | 0.0002 | Bor/Ba50 | |
| | 52730.5215 | 1 | I | <i>R</i> | 0.0000 | Bor/Ba50 | |
| | LP UMa | 52607.595 | 1 | II | <i>R</i> | 0.014 | Bor/Ba50 |
| | | 52709.3980 | 3 | I | <i>R</i> | 0.0177 | Bor/Ba50 |
| 52716.376 | | : | II | <i>R</i> | 0.023 | Bor/Ba50 | |
| 52716.5258 | | 8 | I | <i>R</i> | 0.0181 | Bor/Ba50 | |
| 52721.3320 | | 6 | II | <i>R</i> | 0.0210 | Bor/Ba50 | |
| 52721.4828 | | 1 | I | <i>R</i> | 0.0168 | Bor/Ba50 | |
| 52724.4284 | | : | II | <i>R</i> | 0.0184 | Bor/Ba50 | |
| 52730.4698 | | 3 | I | <i>R</i> | 0.0170 | Bor/Ba50 | |

Explanation of the remarks in the table:

Observer(s)/Instrument
(Superscripts ^{a,b} indicate the comparison stars used in the actual reduction for IU Aur, as well as asterisks have the same meanings for IU Aur, as labeled in Table 'Observed star(s)').

Acknowledgements:

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