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PHOTOELECTRIC MINIMA OF SOME ECLIPSING BINARY STARS

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| Observatory and telescope: | |
| Observations were conducted in Cloudcroft, New Mexico. 28cm Schmidt-Cassegrain, 2640 mm focal length. German equatorial mount. | |

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| Detector: | SBIG ST-7E, -25 °C, covering 8×5 arcminutes, 18 micron pixels (binned 2×2). Unfiltered. |
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| Method of data reduction: | |
| All CCD frames calibrated with bias, dark, and flat frames using AIP4WIN software. Differential aperture photometry performed using AIP4WIN software [†] . | |

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| Method of minimum determination: | |
| Digital tracing paper method, bisection of chords, curve fitting, and (occasionally) Kwee and van Woerden (1956). | |

| Times of minima: | | | | | |
|-------------------------|------------------------------|--------|------|--------|-----------------|
| Star name | Time of min. HJD 2400000+ | Error | Type | Filter | Rem. |
| HV Aqr | 2454012.6534 | 0.0003 | I | None | |
| V1647 Aql | 2453930.6824 | 0.0003 | II | None | |
| V1647 Aql | 2453930.9199 | 0.0005 | I | None | |
| DO Aur | 2454048.8796 | 0.0003 | I | None | |
| EM Aur | 2454137.7738 | 0.0003 | II | None | |
| S Cnc | 2453876.9159 | 0.0010 | I | None | |
| XZ Cnc | 2454049.9853 | 0.0004 | I | None | |
| BI CVn | 2454137.9636 | 0.0002 | I | None | |
| RR CMa | 2454045.9819 | 0.0002 | I | None | |
| AD CMa | 2454055.9368 | 0.0002 | I | None | |
| CV CMa | 2454044.9377 | 0.0008 | II | None | Apsidal motion |
| BQ Cap | 2453994.7980 | 0.0015 | I | None | Period 1.47409d |
| RZ Cas | 2453989.8576 | 0.0003 | I | None | |
| GK Cas | 2454031.8360 | 0.0002 | I | None | |
| NU Cas | 2454078.6502 | 0.0002 | I | None | |
| GW Cep | 2453957.9704 | 0.0007 | I | None | |
| GW Cep | 2454137.6350 | 0.0002 | II | None | |
| GW Cep | 2454138.5914 | 0.0002 | II | None | |

[†] AIP4WIN software available at: <http://www.willbell.com/aip/index.htm>

| Times of minima: | | | | | |
|-------------------------|------------------------------|--------|------|--------|------------------|
| Star name | Time of min. HJD 2400000+ | Error | Type | Filter | Rem. |
| NR Cep | 2454047.8227 | 0.0002 | II | None | |
| DY Cet | 2453994.9419 | 0.0002 | II | None | Period 0.440792d |
| EK Com | 2454169.8621 | 0.0003 | II | None | |
| NU Cyg | 2453919.8921 | 0.0003 | I | None | Period 0.281122d |
| NU Cyg | 2454277.9001 | 0.0003 | II | None | |
| QW Cyg | 2453917.7304 | 0.0003 | II | None | |
| V500 Cyg | 2453977.6723 | 0.0001 | I | None | |
| V704 Cyg | 2453989.6342 | 0.0002 | II | None | |
| V842 Cyg | 2453941.8300 | 0.0003 | I | None | |
| V884 Cyg | 2453919.7626 | 0.0004 | II | None | Period 0.480053d |
| V1189 Cyg | 2453995.6313 | 0.0002 | I | None | |
| V1901 Cyg | 2453996.7451 | 0.0005 | I | None | |
| V1902 Cyg | 2453989.6812 | 0.0005 | I | None | Period 0.450204d |
| V1902 Cyg | 2453995.7584 | 0.0002 | II | None | |
| V2150 Cyg | 2453994.6667 | 0.0008 | I | None | Period 0.591859d |
| V2197 Cyg | 2453972.6656 | 0.0003 | II | None | Period 0.465748d |
| V2197 Cyg | 2453976.6248 | 0.0003 | I | None | |
| V2290 Cyg | 2453958.8123 | 0.0002 | I | None | |
| BQ Eri | 2454056.8743 | 0.0006 | I | None | Period 0.821981d |
| WW Gem | 2454176.6753 | 0.0002 | I | None | |
| DQ Her | 2454194.8589 | 0.0003 | I | None | |
| V1050 Her | 2453918.6933 | 0.0004 | I | None | |
| V1050 Her | 2453988.6435 | 0.0008 | II | None | |
| V1063 Her | 2453906.7337 | 0.0004 | I | None | Period 1.65981d |
| RX Hya | 2454109.8898 | 0.0001 | I | None | |
| DI Hya | 2454058.9801 | 0.0001 | I | None | |
| KW Hya | 2454108.7935 | 0.0010 | II | None | |
| VX Lac | 2453918.9449 | 0.0001 | I | None | |
| CW Lib | 2453929.7171 | 0.0003 | I | None | |
| GI Lib | 2454192.9117 | 0.0002 | I | None | |
| GV Lib | 2454176.9311 | 0.0002 | I | None | |
| GV Lib | 2454277.7088 | 0.0006 | II | None | |
| Del Lib | 2454138.9684 | 0.0006 | I | None | |
| SW Lyn | 2454169.6670 | 0.0002 | I | None | |
| DF Lyr | 2453933.6540 | 0.0002 | I | None | |
| V429 Lyr | 2453975.8341 | 0.0002 | I | None | |
| EH Mon | 2454179.6989 | 0.0006 | I | None | |
| EW Mon | 2454050.9209 | 0.0002 | II | None | |
| EW Mon | 2454078.8256 | 0.0003 | I | None | |
| HM Mon | 2454053.8793 | 0.0002 | I | None | |
| V524 Mon | 2454052.8766 | 0.0002 | II | None | |
| V634 Mon | 2454075.7686 | 0.0005 | I | None | |
| V709 Oph | 2453975.6722 | 0.0008 | I | None | |
| V641 Ori | 2454058.8514 | 0.0002 | I | None | |
| V1027 Ori | 2454076.7923 | 0.0002 | II | None | |

| Times of minima: | | | | | |
|-------------------------|------------------------------|--------|------|--------|------------------|
| Star name | Time of min. HJD 2400000+ | Error | Type | Filter | Rem. |
| BQ Peg | 2454012.7412 | 0.0002 | I | None | |
| BY Peg | 2453957.8253 | 0.0002 | II | None | |
| CF Peg | 2453917.8006 | 0.0004 | I | None | Period 0.413498d |
| CW Peg | 2454273.8879 | 0.0001 | I | None | |
| DX Per | 2454049.8828 | 0.0004 | I | None | |
| V364 Per | 2453988.9165 | 0.0003 | II | None | |
| V364 Per | 2454109.5937 | 0.0002 | I | None | |
| BL Pup | 2454138.7848 | 0.0002 | I | None | |
| V1068 Sgr | 2453928.7201 | 0.0003 | II | None | |
| V1963 Sgr | 2453918.8250 | 0.0002 | II | None | Period 0.825080d |
| V1963 Sgr | 2453930.7890 | 0.0002 | I | None | |
| MX Ser | 2453906.8760 | 0.0010 | I | None | Period 0.30776d |
| MX Ser | 2454169.9725 | 0.0003 | I | None | |
| RW Tri | 2453972.9106 | 0.0002 | I | None | |
| XY UMa | 2454076.9392 | 0.0002 | I | None | |
| XY UMa | 2454173.6989 | 0.0002 | I | None | |
| DN UMa | 2454166.7367 | 0.0005 | I | None | |
| DV UMa | 2454179.7820 | 0.0002 | I | None | |
| DV UMa | 2454179.8675 | 0.0002 | I | None | |
| IY UMa | 2453838.6023 | 0.0002 | I | None | |
| IY UMa | 2453838.6763 | 0.0002 | I | None | |
| IY UMa | 2453838.7502 | 0.0002 | I | None | |
| IY UMa | 2453838.8241 | 0.0002 | I | None | |
| IY UMa | 2453838.8981 | 0.0002 | I | None | |
| CM Vir | 2454173.9112 | 0.0003 | I | None | |
| DM Vir | 2453919.6710 | 0.0003 | I | None | |
| FO Vir | 2454194.7473 | 0.0007 | I | None | |
| HP Vul | 2454271.8414 | 0.0006 | I | None | |
| NSV 13635 | 2453996.6262 | 0.0005 | II | None | |
| NSV 13638 | 2454030.6114 | 0.0003 | II | None | Period 0.427415d |
| GSC 0594-0324 | 2453958.9374 | 0.0003 | I | None | Period 0.241202d |
| GSC 0594-0324 | 2453975.9427 | 0.0006 | II | None | |
| GSC 0742-0237 | 2454031.9763 | 0.0005 | I | None | |
| GSC 0742-0237 | 2454049.0089 | 0.0006 | I | None | |
| GSC 2484-0592 | 2454057.9386 | 0.0009 | II | None | |
| GSC 0742-0237 | 2454166.5979 | 0.0005 | I | None | |
| GSC 3449-0680 | 2454075.9657 | 0.0002 | I | None | |
| GSC 3449-0680 | 2454174.6384 | 0.0002 | I | None | |

Acknowledgements:

This research has made use of the SIMBAD database, operated at CDS, Strasbourg, France (see references).

References:

Kwee, K. K., & van Woerden, H., 1956, *B.A.N.*, **12**, (464), 327-330
 SIMBAD astronomical database, <http://cdsweb.u-strasbg.fr/Simbad.html>