# BBSAG Bulletin 53

1981 April 2

## 86th List of Minima of Eclipsing Binaries

The following table lists 212 visual and 12 photoelectric minima obtained mainly during 1981 February and March by the observers

| | |
|---|---|
| MA | Maria Andrakakou, Athens, Greece |
| LA | Lucillo Andreolo, Siena, Italy |
| GB | Guy Boistel, Sautron, France |
| (RD) | Roger Diethelm, Flüh, Switzerland, photoelectric |
| RD | " " " " , visual |
| (DE) | Demetrius P.Elias, Penteli, Greece, photoelectric |
| DE | " " " " , visual |
| LF | Luciano Ficola, Roma, Italy |
| MFi | Maurizio Franchini, Cerro Maggiore, Italy |
| RG | Robert Germann, Wald, Switzerland |
| KL | Kurt Locher, Grüt, Switzerland |
| GM | George Mavrofridis, Athens, Greece |
| PM | Patrizio Mugnaini, Siena, Italy |
| CPa | Carlo Pampaloni, Firenze, Italy |
| APa | Aristos Parris, Larisa, Greece |
| HP | Hermann Peter, Otelfingen, Switzerland |
| EP | Ennio Poretti, Arconate, Italy |
| GS | George Stefanopoulos, Aghia Paraskevi, Greece |
| NS | Nikolaos Stoikidis, Larisa, Greece |

The O-C values refer to the linear elements of the GCVS 1969, disregarding improved elements in the 1971, 1974, and 1976 supplements to the GCVS. Reductions were made mainly using the tracing paper method.

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( footnotes to page 2 : )

* GCVS 1969 period erroneous, O-C according to the GCVS 1976: +.015

** not contained in the GCVS 1969, O-C according to the GCVS 1976 : +.069 +.0683 +.068 +.066 +.070 +.065 +.070 +.057 +.073

*** no period given by the GCVS, O-C according to the elements of BBSAG Bulletin 27, page 7 : +.096

**** GCVS period erroneous, see page 5 of this issue

***** not contained in the GCVS 1969, O-C according to the GCVS 1976 : +.005 +.003

****** GCVS elements incomplete, O-C according to Martins' elements PASP 87, page 168, 1975 : -.463

(v) very slightly
(n) not disturbed according to the criteria of Crawford and Olson, PASP 91, page 413, 1979, but no correction applied to the symmetric tracing paper solution

| current no. | star | minimum order | JD hel 244... | O-C | n | observer |
|---|---|---|---|---|---|---|
| 16799 | EP And | I | 4662.298 | * | 6 | KL |
| 16800 | GZ And | I | 4637.366 | ** | 15 | DE |
| 16801 | | II | 4639.3481 | ** | 15 | (DE) |
| 16802 | | II | 4640.266 | ** | 14 | DE |
| 16803 | | I | 4644.378 | ** | 6 | KL |
| 16804 | | II | 4650.330 | ** | 11 | KL |
| 16805 | | II | 4661.305 | ** | 11 | KL |
| 16806 | | I | 4663.293 | ** | 6 | KL |
| 16807 | | I | 4670.295 | ** | 8 | DE |
| 16808 | | I | 4673.361 | ** | 17 | DE |
| 16809 | V 343 Aql | I | 4690.663 | -.018 | 5 | KL |
| 16810 | SS Ari | II | 4649.324 | -.132 | 7 | RG |
| 16811 | | I | 4659.269 | -.133 | 7 | RG |
| 16812 | RZ Aur | I | 4663.370 | +.075 | 6 | KL |
| 16813 | | I | 4669.388 | +.062 | 6 | KL |
| 16814 | TT Aur | I | 4642.422 | +.035 | 10 | HP |
| 16815 | | I | 4646.421 | +.036 | 13 | HP |
| 16816 | | I | 4662.399 | +.021 | 8 | HP |
| 16817 | WW Aur | I | 4333.375 | -.002 | 14 | PM |
| 16818 | | I | 4636.393 | +.015 | 11 | EP |
| 16819 | | II | 4660.382 | +.016 | 10 | HP |
| 16820 | ZZ Aur | I | 4660.419 | -.016 | 9 | HP |
| 16821 | BF Aur | I | 4640.253 | +.017 | 7 | GM |
| 16822 | | I | 4643.413 | +.011 | 6 | GM |
| 16823 | CL Aur | I | 4644.415 | +.036 | 9 | HP |
| 16824 | TU Boo | I | 4651.549 | -.001 | 8 | MA |
| 16825 | | I | 4662.577 | +.001 | 6 | KL |
| 16826 | | II | 4672.471 | +.004 | 14 | DE |
| 16827 | | II | 4673.440 | +.001 | 10 | DE |
| 16828 | | II | 4680.572 | -.001 | 6 | KL |
| 16829 | XY Boo | I | 4691.386: | -.015: | 7 | (RD) |
| 16830 | SV Cam | I | 4660.273 | -.019 | 7 | RG |
| 16831 | AL Cam | I | 4685.390 | -.014 | 9 | RG |
| 16832 | RY Cnc | I | 4690.361 | -.032 | 12 | KL |
| 16833 | SW Cnc | I | 4646.431 | -.015 | 7 | HP |
| 16834 | TX Cnc | II | 4691.366 | +.052 | 8 | (RD) |
| 16835 | WW Cnc | I | 4685.403 | -.307 | 8 | RG |
| 16836 | WX Cnc | I | 4660.300 | +.153 | 8 | RG |
| 16837 | WY Cnc | I | 4642.510 | -.003 | 8 | HP |
| 16838 | | I | 4642.428 | +.010 | 7 | HP |
| 16839 | YZ CVn | I | 4680.602 | *** | 11 | KL |
| 16840 | R CMa | I | 4649.461 | +.019 | 22 | GB |
| 16841 | TU CMa | I | 4643.368 | .000 | 9 | HP |
| 16842 | UU CMa | I | 4661.268 | -.304 | 7 | KL |
| 16843 | EE CMa | I | 4663.310 | +.014 | 6 | KL |
| 16844 | EG CMa | I | 4582.482 | **** | 6 | KL |
| 16845 | | I | 4591.610: | **** | 12 | KL |
| 16846 | | I | 4604.509 | **** | 6 | KL |
| 16847 | | I | 4650.428 | **** | 14 | KL |
| 16848 | AG CMi | I | 4644.299 | -.196 | 7 | KL |
| 16849 | AK CMi | I | 4636.379 | +.015 | 9 | GM |
| 16850 | | I | 4640.343 | +.019 | 13 | GM |
| 16851 | | I | 4641.474 | +.017 | 7 | GM |
| 16852 | | I | 4645.434 | +.016 | 9 | GM |
| 16853 | | I | 4661.285 | +.022 | 11 | KL |
| 16854 | | I | 4662.412 | +.017 | 6 | KL |
| 16855 | | I | 4662.430 | +.035 | 7 | HP |
| 16856 | | I | 4670.341 | +.024 | 8 | DE |
| 16857 | | I | 4674.295 | +.017 | 5 | NS |
| 16858 | RZ Cas | I | 4247.343 | .000 | 10 | LF |
| 16859 | | I | 4284.394 | -.001 | 16 | LA |
| 16860 | | I | 4290.373 | +.001 | 14 | LA |
| 16861 | | I | 4443.362 | -.001 | 9 | EP |
| 16862 | | I | 4462.494 | +.007 | 10 | EP |
| 16863 | | I | 4468.466 | +.002 | 16 | EP |
| 16864 | | I | 4486.394 | +.002 | 14 | EP |
| 16865 | | I | 4498.347 | +.001 | 11 | EP |
| 16866 | | I | 4541.378 | +.004 | 27 | CPa |
| 16867 | | I | 4602.339 | +.008 | 30 | MFi |
| 16868 | | I | 4651.332 | -.004 | 9 | RG |
| 16869 | | I | 4663.287 | -.001 | 8 | RG |
| 16870 | TW Cas | I | 4539.399 | +.005 | 15 | CPa |
| 16871 | IR Cas | II | 4607.259 | -.087 | 9 | HP |
| 16872 | LR Cas | I | 4637.308 | -.027 | 10 | (RD) |
| 16873 | V 523 Cas | I | 4637.331 | ***** | 7 | KL |
| 16874 | | II | 4686.287 | ***** | 5 | KL |
| 16875 | U Cep (v) | I | 4636.345 | +.054 | 9 | GM |
| 16876 | (n) | I | 4651.297 | +.048 | 11 | RG |
| 16877 | SU Cep | I | 4690.611 | .000 | 6 | KL |
| 16878 | RW Com | II | 4691.367 | -.049 | 8 | RG |
| 16879 | W Crv | I | 4637.707 | -.006 | 6 | KL |
| 16880 | | I | 4638.484 | -.005 | 6 | KL |
| 16881 | | I | 4648.578 | -.002 | 6 | KL |
| 16882 | | I | 4651.679 | -.005 | 7 | KL |
| 16883 | | I | 4662.547 | -.004 | 6 | KL |
| 16884 | V Crt | I | 4686.378 | +.045 | 6 | KL |
| 16885 | CM Dra | I | 4638.600 | ****** | 5 | KL |
| 16886 | RU Eri | I | 4659.291 | +.028 | 6 | RG |
| 16887 | TZ Eri | I | 4663.302 | -.078 | 7 | KL |
| 16888 | WX Eri | I | 4643.358 | +.004 | 9 | HP |
| 16889 | | I | 4662.291 | +.003 | 7 | KL |
| 16890 | YY Eri | II | 4636.309 | -.011 | 7 | (RD) |
| 16891 | | I | 4649.322 | -.019 | 7 | RG |
| 16892 | | I | 4651.247 | -.023 | 8 | RG |
| 16893 | | I | 4659.299 | -.009 | 6 | RG |
| 16894 | | II | 4663.309 | -.016 | 9 | RG |

| current no. | star | minimum order | JD hel 244... | O-C | n | observer |
|---|---|---|---|---|---|---|
| 16895 | AK Eri | I | 4637.341 | +.604 | 6 | KL |
| 16896 | AM Eri | I | 4644.379 | * | 4 | KL |
| 16897 | RW Gem | I | 4662.366 | +.004 | 8 | KL |
| 16898 | YY Gem | II | 4637.341 | -.005 | 10 | (RD) |
| 16899 | AF Gem | I | 4643.450 | -.018 | 10 | HP |
| 16900 | | I | 4663.356 | -.008 | 8 | HP |
| 16901 | AV Gem | I | 4691.444 | -.003 | 5 | KL |
| 16902 | AY Gem | I | 4662.422 | -.003 | 8 | HP |
| 16903 | BD Gem | I | 4642.379 | +.046 | 9 | HP |
| 16904 | | I | 4663.395 | +.055 | 10 | HP |
| 16905 | GW Gem | I | 4643.502 | -.029 | 13 | HP |
| 16906 | CC Her | I | 4693.492 | +.095 | 9 | KL |
| 16907 | ES Her | I | 4644.620 | -.117 | 6 | KL |
| 16908 | | I | 4691.534 | -.124 | 6 | KL |
| 16909 | VW Hya | I | 4638.482 | -.130 | 7 | KL |
| 16910 | Y Leo | I | 4647.357 | +.127 | 8 | NS |
| 16911 | | I | 4647.359 | +.129 | 13 | GM |
| 16912 | | I | 4647.364 | +.134 | 11 | APa |
| 16913 | | I | 4662.537 | +.132 | 8 | KL |
| 16914 | RW Leo | I | 4650.588 | +.056 | 6 | KL |
| 16915 | UU Leo | I | 4663.404 | -.032 | 6 | KL |
| 16916 | UV Leo | II | 4646.501 | -.011 | 8 | HP |
| 16917 | | I | 4659.411 | -.003 | 7 | HP |
| 16918 | | II | 4660.311 | -.003 | 9 | RG |
| 16919 | BL Leo | II | 4665.539 | -.001 | 6 | KL |
| 16920 | T LMi | I | 4675.621 | -.125 | 11 | KL |
| 16921 | RS Lep | I | 4636.264 | -.011 | 9 | GM |
| 16922 | | I | 4645.283 | -.011 | 6 | GM |
| 16923 | | I | 4645.285 | -.009 | 7 | NS |
| 16924 | RY Lyn | I | 4645.308 | ** | 6 | NS |
| 16925 | SX Lyn | I | 4648.642 | -.352 | 7 | KL |
| 16926 | RV Lyr | I | 4644.661 | +.057 | 14 | KL |
| 16927 | TZ Lyr | I | 4651.673 | +.034 | 11 | KL |
| 16928 | RW Mon | I | 4642.393 | -.006 | 11 | HP |
| 16929 | | I | 4644.300 | -.006 | 6 | KL |
| 16930 | | I | 4663.360 | -.007 | 9 | HP |
| 16931 | AN Mon | I | 4663.379 | +.068 | 8 | KL |
| 16932 | | I | 4685.390 | +.067 | 7 | KL |
| 16933 | BM Mon | I | 4644.323 | +.014 | 6 | KL |
| 16934 | | I | 4685.405 | +.013 | 5 | KL |
| 16935 | | I | 4690.376 | +.004 | 8 | KL |
| 16936 | BO Mon | I | 4691.400 | +.156 | 12 | HP |
| 16937 | | I | 4691.418 | +.174 | 8 | RG |
| 16938 | V 752 Oph | I | 4675.609 | *** | 4 | KL |
| 16939 | EQ Ori | I | 4642.423 | -.078 | 11 | HP |
| 16940 | ER Ori | II | 4646.301 | -.037 | 11 | GM |
| 16941 | | II | 4649.263 | -.039 | 8 | RG |
| 16942 | | II | 4651.382 | -.037 | 8 | GM |
| 16943 | | II | 4660.283 | -.028 | 7 | RG |
| 16944 | FK Ori | I | 4642.475 | +.299 | 12 | HP |
| 16945 | | I | 4644.422 | +.298 | 12 | HP |
| 16946 | | I | 4646.375 | +.305 | 10 | HP |
| 16947 | FL Ori | I | 4643.327 | +.094 | 6 | HP |
| 16948 | | I | 4646.426 | +.091 | 13 | HP |
| 16949 | OS Ori | I | 4640.303 | -.038 | 8 | NS |
| 16950 | V 640 Ori | I | 4683.338 | -.024 | 9 | KL |
| 16951 | RT Per | I | 4637.412 | -.069 | 9 | HP |
| 16952 | | I | 4642.504 | -.073 | 8 | HP |
| 16953 | | I | 4649.300 | -.073 | 6 | KL |
| 16954 | | I | 4660.345 | -.070 | 9 | HP |
| 16955 | ST Per | I | 4637.336 | -.025 | 6 | KL |
| 16956 | | I | 4637.336 | -.024 | 11 | HP |
| 16957 | | I | 4645.290 | -.016 | 7 | NS |
| 16958 | XZ Per | I | 4646.449 | +.015 | 8 | HP |
| 16959 | | I | 4683.338 | -.024 | 9 | KL |
| 16960 | AG Per | II | 4636.383§ | +.035 | 10 | (RD) |
| 16961 | | I | 4637.329 | -.033 | 9 | (RD) |
| 16962 | KW Per | I | 4638.420 | +.040 | 6 | KL |
| 16963 | | I | 4640.283 | +.041 | 8 | NS |
| 16964 | | I | 4650.529 | +.043 | 6 | KL |
| 16965 | QU Per | I | 4644.332 | **** | 6 | KL |
| 16966 | Y Psc | I | 4524.334 | +.157 | 11 | APa |
| 16967 | | I | 4524.342 | +.165 | 9 | NS |
| 16968 | XZ Pup | I | 4637.452 | -.021 | 7 | KL |
| 16969 | AY Pup | I | 4637.445 | +.052 | 6 | KL |
| 16970 | | I | 4638.392 | +.060 | 6 | KL |
| 16971 | DF Pup | I | 4638.419 | +.127 | 6 | KL |
| 16972 | GK Pup | I | 4669.383 | +.010 | 6 | KL |

* O-C according to the GCVS amounts to several entire periods, O-C according to the elements of BBSAG Bulletin 50, page 5 : -.007

** no period given by the GCVS, O-C according to the elements of Samolyk and Wedemayer, JAAVSO preprint 1977: +.015

*** no period given by the GCVS, O-C according to the elements of BBSAG Bulletin 27, page 4, footnote 1 : +.050

**** no period given by the GCVS, O-C according to the elements of BBSAG Bulletin 42, page 3 : -.124

| current no. | star | minimum order | JD hel 244... | O-C | n | observer |
|---|---|---|---|---|---|---|
| 16973 | RZ Pyx | I | 4638.510 | +.203 | 6 | KL |
| 16974 | EG Sgr | I | 4679.674 | * | 5 | KL |
| 16975 | AO Ser | I | 4648.703 | +.002 | 6 | KL |
| 16976 | AU Ser | I | 4648.653 | ** | 7 | KL |
| 16977 | LX Ser | I | 4644.586 | *** | 15 | KL |
| 16978 | | I | 4691.482 | *** | 6 | KL |
| 16979 | | I | 4691.642 | *** | 6 | KL |
| 16980 | AC Tau | I | 4637.393 | +.063 | 6 | KL |
| 16981 | AM Tau | I | 4644.328 | -.161 | 12 | HP |
| 16982 | | I | 4646.371 | -.162 | 11 | HP |
| 16983 | | I | 4650.455 | -.165 | 6 | KL |
| 16984 | AN Tau | I | 4644.274 | +.017 | 7 | HP |
| 16985 | HU Tau | I | 4602.422 | +.022 | 37 | MFi |
| 16986 | | I | 4637.377 | +.020 | 10 | RD |
| 16987 | | I | 4637.383 | +.026 | 30 | MFi |
| 16988 | V 781 Tau | II | 4636.339 | **** | 12 | RD |
| 16989 | | II | 4637.371 | **** | 10 | RD |
| 16990 | | I | 4691.331 | **** | 7 | RD |
| 16991 | V Tri | I | 4649.272 | +.017 | 6 | KL |
| 16992 | X Tri | I | 4631.355 | -.041 | 9 | HP |
| 16992 | | I | 4636.213 | -.041 | 8 | GM |
| 16993 | RV Tri | I | 4638.272 | -.028 | 6 | KL |
| 16994 | | I | 4644.304 | -.026 | 9 | HP |
| 16995 | RW Tri | I | 4637.300 | +.002 | 10 | DE |
| 16996 | | I | 4640.311 | -.001 | 34 | DE |
| 16997 | | I | 4650.282 | -.002 | 8 | KL |
| 16998 | | I | 4685.294 | -.004 | 7 | KL |
| 16999 | TW UMa | I | 4691.312 | -.106 | 7 | KL |
| 17000 | TX UMa | I | 4330.371 | +.004 | 13 | LF |
| 17001 | UX UMa | I | 4637.677 | +.001 | 4 | KL |
| 17002 | | I | 4639.447 | .000 | 14 | DE |
| 17003 | | I | 4645.540 | -.001 | 15 | DE |
| 17004 | | I | 4646.528 | +.001 | 14 | DE |
| 17005 | | I | 4650.656 | .000 | 7 | KL |
| 17006 | | I | 4672.487 | .000 | 27 | DE |
| 17007 | | I | 4675.634 | .000 | 6 | KL |
| 17008 | | I | 4690.383 | -.001 | 6 | KL |
| 17009 | | I | 4690.582 | +.001 | 6 | KL |
| 17010 | VV UMa | I | 4663.288 | +.110 | 8 | RG |
| 17011 | XZ UMa | I | 4679.653 | -.063 | 6 | KL |
| 17012 | | I | 4683.307 | -.077 | 7 | RG |
| 17013 | | I | 4683.319 | -.066 | 6 | KL |
| 17014 | ZZ UMa | I | 4663.385 | +.005 | 7 | HP |
| 17015 | AW UMa | II | 4691.348 | -.001 | 7 | RD |
| 17016 | VV Vir | I | 4644.546 | ***** | 7 | KL |
| 17017 | | I | 4685.590 | ***** | 7 | KL |
| 17018 | AH Vir | II | 4685.340 | +.054 | 7 | RG |
| 17019 | AZ Vir | II | 4691.417 | ****** | 7 | RG |
| 17020 | BO Vul | I | 4679.680 | -.087 | 4 | KL |
| 17021 | NO Vul | II | 4644.669 | ******* | 8 | KL |
| 17022 | | I | 4685.642 | ******* | 6 | KL |

* O-C according to the GCVS but with half its period (cf. BBSAG Bulletin 42, page 4): -.151

** GCVS 1969 period too inaccurate for reasonable reduction, O-C according to the GCVS 1974 : -.005

*** not contained in the GCVS, O-C according to the elements of Africano, Horne & Margon IAUC 3466 : +.007 +.008 +.010

**** not contained in the GCVS, see note below on this page

***** O-C according to the GCVS would exceed 2 periods, O-C according to the elements of BBSAG Bulletin 31, page 6 : -.005 -.005

****** GCVS 1969 period erroneous, O-C according to the GCVS 1976 : +.003

******* not contained in the GCVS 1969, O-C according to the GCVS 1976 : +.014 +.017

## V 781 Tauri = SAO 77615 : New preliminary Elements

In a previous note (BBSAG Bulletin 52, p.7) preliminary elements of this EW variable from photoelectric observations have been given. Further observations serve to refine these elements :

$$\mathrm{Min}_{\mathrm{I\ JD\ hel}} = 2443875.926 + .34478\ E$$

The 3 minima in the above list get the O-C values +.001 -.001 .000 according to these elements.

R. Diethelm

# E G Canis Mainris

## New Totally Different Perind

My 5 visual minima obtained during the last 2 winters agree fairly with the GCVS (1971) elements

2425622.760 + 1.292946 E

only as a result of selection due to prediction by this ephemeris, but on other times of zero phase I found maximum light. These elements were based entirely on Meinunger's photographic patrol (Mitteilungen Sonneberg vol. 8, no. 4, 1968). My new proposed elements

2425623.410 + 1.83783 E

give a convincing light curve (Fig. 56) and fit Meinunger's times of weakened light as well if I reject two of them. Thus the RMS mean of the O-C values (Table 17) result as $^d$.034 formerly and $^d$.057 now.

K. Locher

Table 17

| | JD 24... | O-C GCVS | O-C new |
|---|---|---|---|
| Meinunger's observations | 25623.447 | +.041 | +.037 |
| | 25645.410 | +.023 | -.054 |
| | 25647.320 | -.006 | +.018 |
| | 26652.633 | +.042 | +.039 |
| | 26744.381 | -.010 | -.105 |
| | 27424.480 | .000 | -.003 |
| | 27483.312 | +.003 | +.018 |
| | 28955.329 | +.001 | -.067 |
| | 30734.488 | +.066 | +.073 |
| | 31876.174 | +.081 | reject |
| | 32594.292 | -.033 | -.007 |
| | 32993.141 | +.058 | +.033 |
| | 36229.434 | -.009 | -.093 |
| | 36604.400 | +.003 | -.044 |
| | 37648.507 | +.056 | reject |
| | 37973.600 | -.027 | -.028 |
| | 38372.526 | +.025 | +.089 |
| | 38407.410 | .000 | +.054 |
| | 38416.479 | +.018 | -.066 |
| | 39179.311 | +.012 | +.067 |
| | 39528.380 | -.014 | -.051 |
| BBSAG minimum no. 15030 | | | |
| x | 44290.293 | -.022 | +.044 |
| minima page 2 this issue | | | |
| o | 44582.482 | -.038 | +.018 |
| + | 44591.610 | :+.039: | :-.043: |
| z | 44604.509 | +.009 | -.009 |
| s | 44650.428 | -.618 | -.036 |

Figure 56