UBV PHOTOMETRY OF THE SHORTEST PERIOD CONTACT BINARY CC COM

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Abstract. Red colours: $B-V=+1.23$, U–B = +1.03 and short period: $P=0.2207$ days place CC Com at the lower temperature end of the period-colour relation for the W UMa-type binaries. Contrary to the typical behaviour of $(B-V)$ which shows reddening during both minima, the $(U-B)$ index reveals rather large scatter, especially when different nights are intercompared. In addition $(U-B)$ seems to decrease abnormally during some of primary minima when the colours change to $B-V=+1.29$ and $U-B=+0.99$; it is unclear whether the ultraviolet excess $\delta(U-B)$ of about +0.11 is not related to these changes. Small night-to-night changes seem to be present in the V-light curve as well.

The large amplitudes of light variations (0.86 and 0.74 mag) and the presence of total eclipses with semi-duration of about 7 deg in phase permit to determine the geometrical elements with rather high accuracy in spite of larger than normal observational errors due to the faintness of the system ($V=11.3-12.2$). CC Com belongs to the W-type systems with the relative temperature excess of secondary component $X=+0.058\pm0.002$. Other elements are: $i=88\overset{\circ}{.}6\pm0\overset{\circ}{.}9$, $q=0.511\pm0.009$, $f=0.78\pm0.03$ for the assumed $T_e^0=4300$ K. To obtain a perfect fit to the light curve, the gravity darkening exponent was also varied with the resulting value $\beta=0.09\pm0.02$.

There are indications that CC Com might belong to the Coma cluster.

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P. Eggleton et al. (eds.), Structure and Evolution of Close Binary Systems, 347.