

"CI Cygni: the eclipse of the hot component, which is in strong outburst,
is entering the phase of totality"

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The symbiotic star CI Cyg is undergoing a major outburst phase that begun in 2008 (Munari et al. 2008, CBET #1487, Siviero et al. 2009, MNRAS 399, 2139), the first one after 30 years of flat quiescence. The current outburst phase is a close copy of the multi-maxima eruption that CI Cyg experienced in 1970-78. After a maximum at $B=10.28$, $V=9.50$, $V\hat{'}Rc=+0.80$, $V\hat{'}Ic=+2.07$ that occurred on the first week of October 2008, the star started to decline, reaching a minimum brightness $B=12.1$, $V=11.0$, $V\hat{'}Ic=+3.2$ during March, 2010, values which are not too far away from those observed during the long preceding quiescence. Almost immediately after, the star bounced back and started a rapid rise toward a second maximum (Munari et al. 2010, ATel #2732).

The rise toward a second maximum proceeded fast and unperturbed until August 24, 2010 when the star was measured at $B=10.67$ $V=9.73$, $V\hat{'}Rc=+1.14$, $V\hat{'}Ic=+2.36$. At that time, an eclipse of the outbursting component, by the M6III cool giant companion, started to become noticeable. The decline in magnitude has been linear since then. On 8 October 2010 the system has weakened to $B=12.4$, $V=11.1$, $V\hat{'}Rc=+1.40$, $V\hat{'}Ic=+3.22$, which are the same as at the center of totality during the last eclipse, which occurred in 2008. The orbital period of CI Cyg is 853.8 days.

The current eclipse, and in particular the totality phase that is starting right now, offer relevant opportunities to study the outer regions of the ionized circumstellar medium and to derive absolute magnitude, radius and temperature of the component in outburst.

The eclipse is deeply affecting the spectral appearance too. Comparing our Echelle spectra for August 21 (immediately before the beginning of the eclipse) and October 5, at the bottom of the eclipse, now the veiling of the absorption spectrum of the M6III giant is greatly reduced, and the relative intensity of emission lines largely different. The ratio of HeII/Hbeta equivalent widths changed from 1.58 on August 21 to 0.30 on October 5, for [OIII] 5007/HeI 5016 from 1.37 to 10.4, for OI 8446/Paschen from 2.4 to 15, for Halpha/HeI 6678 from 12 to 46, for [FeVII] 6087/[OI] 6300 from 2.5 to 1.5, and for Hgamma/[OIII] 4363 from 1.23 to 1.45. The sharp absorption component superimposed on Balmer and Paschen emission lines has reduced in strength, and the [OIII] lines changed from a saddle profile with a velocity separation of 70 km/sec to a more Gaussian one with FWHM=140 km/sec.