SLOW AND RAPID CHANGES OF THE RADIAL VELOCITIES IN THE SYMBIOTIC BINARY CH CYGNI

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In the period 1982-1986, new 98 radial velocities (RVs) were determined (at the figures denoted by □). All spectrograms were obtained at the Toruń Observatory. RVs were measured at the Skalnaté Pleso Observatory. The main results are summarized in the figures 1-3. The phase is determined from the middle position of the hot component eclipse (JD 2 446 272) and from the minima difference observed in U light curve (5700d) (Mikolajewski et al., 1987).

Slow changes of the RVs of the absorption components of ionized metals reflect the orbital motion of the hot component only between the phases 0.7 and 0.0. The rapid changes are observed mainly between the phases 0.8 and 0.9. They are created by combination of the emission red wing with the absorption component (Skopal et al., 1987). RVs of the cool component are in antiphase (Tomov and Luud, 1984).

Slow changes of the RVs of emission Fe II and [Fe II] lines reveal similar behaviour (RVs Fe II lines are shifted about -5km/s). The RVs maximum of the [FeII] lines is shallow with scatter about 15km/s and shifted to the RVs maximum of the ionized metals approximatelly about 0.1P. The rapid changes of the RVs of the Fe II lines arise between the phases 0.8 and 0.9 too, where the 25km/s deep minimum is observed.

Figures 1-3 follow to conclusion that the RVs of emission forbidden and permitted lines of iron do not coincide with the orbital motion neither the hot nor the cool component. Slow changes of the RVs can be explaine by creating of these lines in stellar wind. The change of the radial component of the stellar wind velocity vector strongly depends on the spectroscopic elements. The rough estimate of the spectroscopic elements given by Mikolajewski et al. (1987) shows the possibility of the creation of the emission Fe II and [Fe II] lines in stellar wind around M component.

The deep minimum of the RVs of the emission Fe II lines coincide with the arising of the S-wave component (in detail: Skopal et al., in preparation). This fact indicates that the origin of these components of the Fe II lines is located either in small region near the hot spot in accretion disk or in shock front on the

J. Mikolajewska et al. (eds.), The Symbiotic Phenomenon, 223–224.

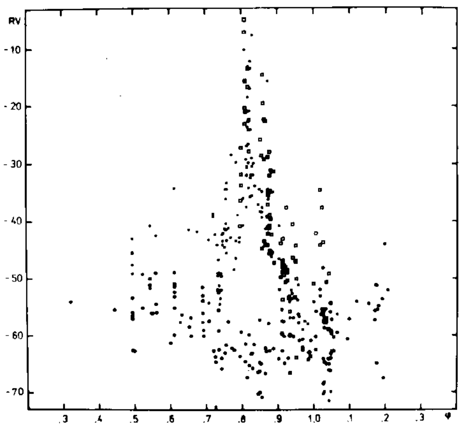

Figure 1. Radial velocities of the ionized metals (▪,□) and of the M component (•)

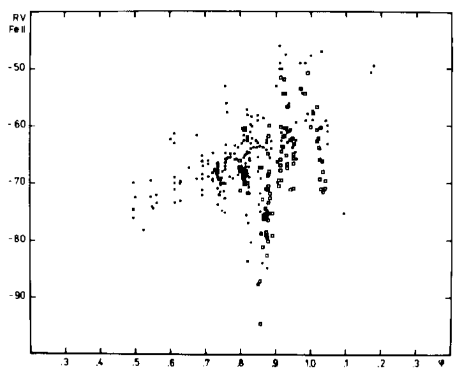

Figure 2. Radial velocities of the emission Fe II lines

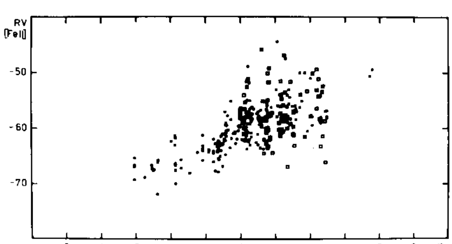

Figure 3. Radial velocities of the emission [Fe II] lines

cone surface, if an accretion from a stellar wind onto a compact component is assumed. Time of the passage through periastron (in 1982) and a position of both components ($-50^{o} < \mathrm{omega}_{hot} < -30^{o}$) (Mikolajewski et al., 1987) make possible both interpretations. These possibilities can be distinguished by determination of the Roche lobe size of cool component, which depend on the orbital eccentricity and on the ratio of rotational angular velocity to orbital frequency (Hadrava, in press).

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