FU ORI AS A SUPERACCRETOR.

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FU Ori is the prototype of a subclass of young stars in which a brightening by 4-6^m over a period of less than 10 years was observed (Herbig, 1977). A large increase in the rate of accretion from the disk around a T Tauri star is currently believed to be responsible for its outburst (Hartmann & Kenyon, 1996). As a result, the accretion luminosity is several hundred times higher than the luminosity of the central star. Therefore, the observed spectrum of FU Ori is an accretion-disk spectrum. No trace of emission of a gas with $T > 7500$ K was found by Kenyon et al. (1989) in UV IUE-spectra of FU Ori, but Skinner et al. (2006) observed X-ray emission from FU Ori with $T \simeq 6 \cdot 10^7$ K.

We analysed two HST/STIS spectra of FU Ori observed on 22 Feb. 2001 in 2300-3100 Å spectral band. We were able to reproduce observed spectrum assuming that it is a sum of supergiant's spectra with ΔT_{ef} and numerous absorption lines of stellar wind. The best fit – see Fig.1 – corresponds to the following set of parameters: interstellar absorption $A_V = 2.2^m$; a sum of three emission regions with $T_{ef} = 5000$ K (63% of the entire area), 6000 K (32%), and 9000 K (5%); stellar wind with gas temperature T=5000 K and electron density $\log N_e \simeq 11$.

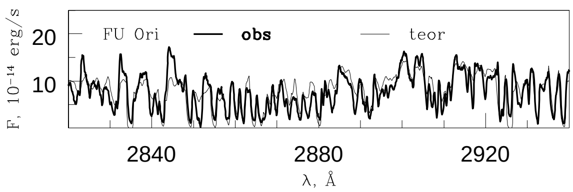

Figure 1: A part of HST/STIS spectrum of FU Ori.

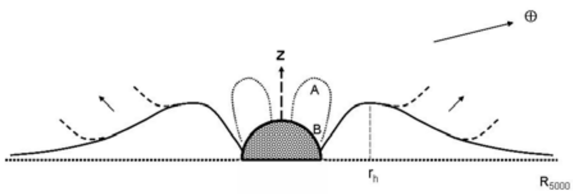

Figure 2: Schematic view of disc and outflow of FU Ori

The number and strength of wind's absorption lines increase to the blue part of the spectrum resulting in underestimation of T_{ef}^{max} in analysis of low resolution IUE spectra. At the same time we found that the size of region with $T_{ef} = 9000$ K is less than stellar radius. We interpret our results in the frame of accretion disk model of Kley & Lin (1996), who found that at accretion rates $\dot{M} \geq 10^{-5}$ $M_\odot$/yr advection plays an important role. As a result the thickness of accretion disk increases invard and photosphere of the innermost regions takes the cone form - see Fig.2.

In the frame of this geometry one can observe only some part of the back side of the cone, and we suppose that due to this reason the emitting area of the region with $T_{ef} = 9000$ K is so small (Kravtsova et al., 2007). We assume that low and high temperature components of FU Ori's X-ray emission originate in regions denoted with A and B letters respectively in Fig.2, what explains different absorption for these components found by Skinner et al. (2006).

Observations of H_α line also indicate that the geometry of innermost accretion disk regions is complex. Herbig et al. (2003) found that the equivalent width of H_α absorption component varies periodically with $T \simeq 15$ days – see also Errico et al.(2003). Our September 2005 observations demonstrate a quasiperiod T$\simeq$ 9 days, but we found no period in other seasons – see Fig.3. We discuss possibility to explain these features in the context of suggested geometry if to assume additionaly that magnetic and rotational axes of the star are not coincide.

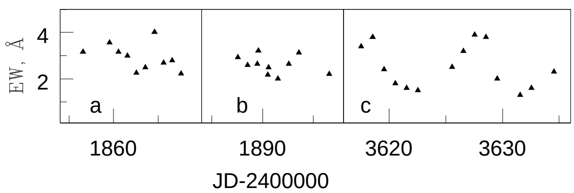

Figure 3: Variations of EW of H_α

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