ULTRAVIOLET OBSERVATIONS OF CX DRACONIS

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CX Draconis /HD 174237, B2.5Ve, v.sin i = 160 km.s^{-1}/ is a typical Be star displaying most of the well known spectroscopic and photometric characteristics of these stars.
Koubský /1978/ disclosed that CX Dra is a SB1 /P=6.69603^{d}, K = 35 km.s^{-1}, e = 0/. Penrod /1985/ confirmed that the secondary is a F star. Peters and Polidan /1984/ reported strong, variable lines of NV, CIV and SiIV from high-resolution spectra secured with IUE satellite. These features were interpreted to arise from gas stream and accretion close to the photosphere of the B-component of the system.

To clarify the nature of the system, a coordinated IUE campaign was organized in 1983. The analysis of 51 high-resolution IUE spectra of CX Dra revealed two types of lines connected with the star and/or circumstellar matter:
i - strong lines /Si II, C II, Mg II/ which are only marginally influenced by the circumstellar matter. This effect is manifested by slight profile variation during the orbital cycle and by the distortion of the radial-velocity curve based on Si II lines /e = 0.19/.
ii - resonance lines /Si III, Si IV, Al III/ and subordinate lines Fe III which show additional variable absorption /AVA/. In order to isolate the AVA, photospheric spectra of the primary component was subtracted from the original data. The radial velocities of AVA of Si IV and Al III lines are shown in Fig. 1. They do not follow the orbital RV curve and rapid variability near phase 0.18 and 0.83 was clearly detected. Note the high-velocity /-700 km.s^{-1}/ near phase 0.4. At this phase we observed even in the original spectra violet satellites which mimic the high-velocity components /HVC/ observed in other Be stars. Very similar behaviour as the AVA is observed in the strengths and velocities of NV and CIV lines which are too "hot" for B2.5V primary.

IUE observations of CX Dra suggested the model for the

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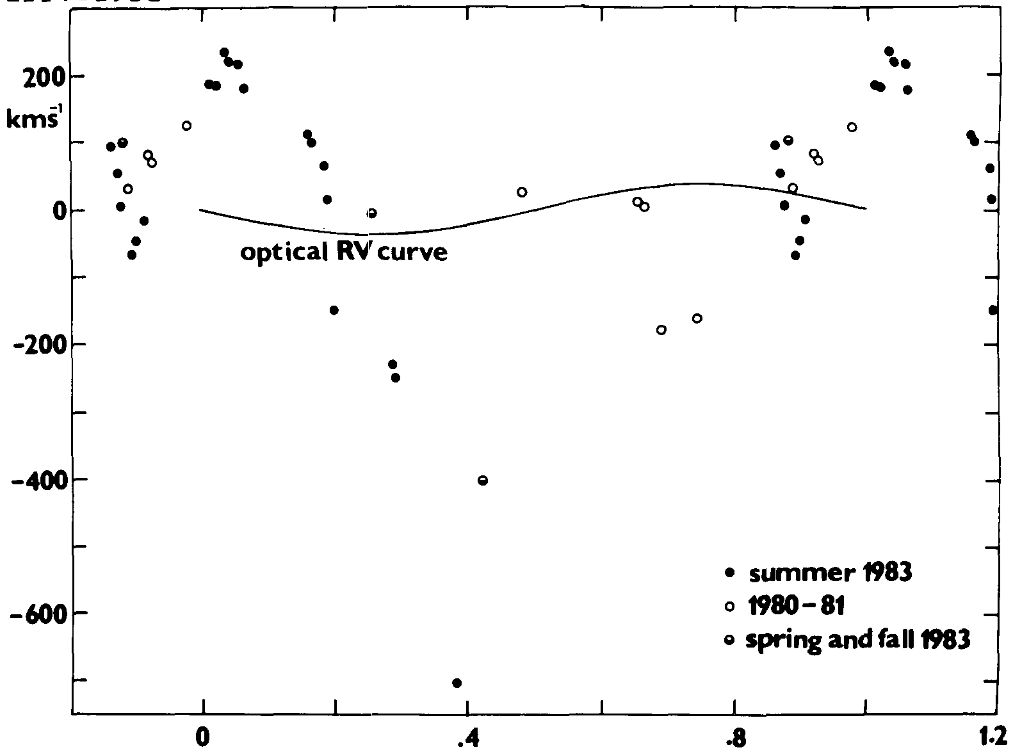
system. A gas stream leaves the secondary star and impacts on the surface of the primary star. A fraction of the transferred matter flows around the primary. This fact is clearly supported by the velocity behaviour of AVA. It is

Fig. 1. Observed radial velocities from AVA of Si IV and Al III lines versus phase /P=6.69603^d, T /prim.min./ = 42551.2932



difficult to derive the radial velocity of NV and CIV lines during the whole orbital cycle. We have unambiguous evidence of their presence only between phase 0.8 and 0.9 while their presence in other phases is uncertain, namely in the case of CIV. As they mimic the behaviour of AVA in the former interval, we feel that further observations with better spectral resolution and higher S/N ratio, and also more reliable modelling are needed to decide whether the AVA are manifestation of the proposed high temperature accretion region /HTAR/ /Peters and Polidan,1984/ or if AVA originates in the matter moving in the system.

References

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