

## Spectrum of S Aps at deep minimum

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**Abstract.** A high resolution spectrum ( $\sim 30,000$ ) of the cool RCrB star S Aps was obtained on 5 June 1993 (JD2449143.500) with the CTIO 4 metre cassegrain échelle spectrograph when the star was undergoing a deep light minimum.

The spectrum shows several emission lines superposed on the absorption spectrum. The spectrum has several interesting features, particularly interesting are the features of the NaI D lines. There are two emission systems present (as is typical in RCrB type stars at minimum).

(1) A very broad emission (FWHM =  $340 \text{ Kms}^{-1}$ ) is blue shifted by  $-98 \text{ kms}^{-1}$  with respect to the stellar velocity of  $-78 \text{ kms}^{-1}$  as reported by Herbig (1993).

(2) A sharper component (FWHM =  $49 \text{ kms}^{-1}$ ) is located at the stellar velocity. ( Na emission from the terrestrial airglow is seen but is clearly resolved from the two stellar components).

The infrared triplet lines of CaII at  $\lambda 8495, 8547$  have emissions corresponding to the second set of emissions seen at NaI D ( at radial velocity  $-81 \text{ Km/s}$ ).

The broad emission lines seen here only in the Na D lines are similar to those seen in the few other R CrB's observed in minimum (Rao and Lambert 1993, A.J. 105, 1915; Lambert et. al 1990, JAA, 11, 475; Kenneth and Gaposchkin 1963, Ap.J, 139, 813 ). The broad lines are clearly blue shifted with respect to the stellar velocity. It is possible that the broad emissions from S Aps arise from an extended region which is asymmetrically arranged about the star such as a bipolar flow with the receding jet obscured by dust. The sharp emissions are quite likely the 'chromospheric' emission lines seen in the declines of all R CrBs.