

PHOTOMETRIC AND H α OBSERVATIONS OF LSI+61°303

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1. Introduction

The Be massive X-ray binary LSI+61°303 is a 26.5 days periodic radio source (Taylor & Gregory, 1984), exhibiting radio outbursts maxima between phases 0.6-0.8. Evidence of a photometric period of similar value has also been reported (Paredes & Figueras, 1986; Mendelson & Mazeh, 1989). The previous spectroscopic radial velocity observations of Hutchings & Crampton (1981) are in agreement with the radio period, and give support to the presence of a companion. We present new optical and infrared photometric observations and high resolution H α spectra of LSI+61°303.

2. Observations and results

The photometric and spectroscopic observations are presented in Fig. 1. The JHK data show a ~ 0.2 mag modulation with a deep minimum, which is reminiscent of eclipsing binaries. A detailed model involving attenuation and eclipsing of an emitting source associated to the secondary will be presented in Martí & Paredes (1993). A periodicity analysis applied to our V-

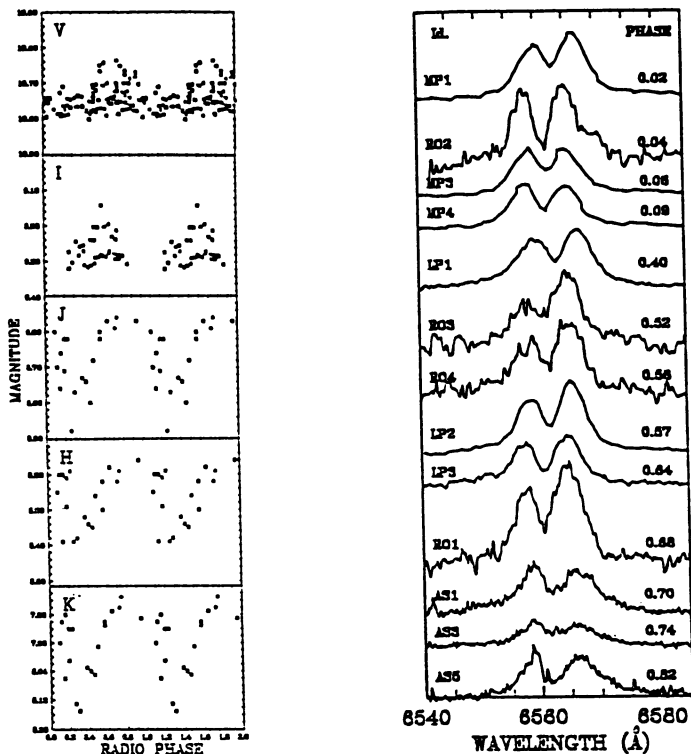


Fig. 1. *Left*) VIJHK photometric observations of LSI+61°303 folded on the 26.496 radio period. Phase zero has been set at JD 2443366.775. *Right*) Normalized H α line profiles.

band data indicates 25.8 ± 0.3 d as most significant period. A similar analysis merging our JHK data, after subtracting their respective mean and dividing by the rms, gives 27.0 ± 0.3 . Both values are close to the radio period. On the other hand, our H α spectroscopic observations show evidence of line parameter variability with radio phase. In particular, the FWHM of the H α red hump increase significantly during the phases of radio maximum, while the minimum value of the H α EW and the maximum value of the B/R peak ratio are observed between radio phases 0.7-0.8. Further details are reported in Paredes et al. (1993).

References

- Hutchings J.B., Crampton D. 1981, *PASP*, 93, 486
 Martí J., Paredes J.M., 1993 (in preparation)
 Mendelson H., Mazeh T. 1989, *MNRAS*, 239, 733
 Paredes J.M., Figueras, F. 1986, *A&A*, 154, L30
 Paredes et al., 1993 (in preparation)
 Taylor A.R., Gregory P.C. 1984, *ApJ*, 283, 273