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UBV OBSERVATIONS OF II Peg IN 1988-1989

II Peg (=BD+27^o4662 = HD 224085 = SAO 91578) is a bright RS CVn-type single-line spectroscopic system (K2 IV-V). This very interesting spotted binary has been one of the most observed in the northern hemisphere (see Rodonó et al., 1986; Strassmeier et al. 1988 and references therein) and has shown highly variable light curve with peak-to-peak V-band amplitude up to 0.5 magnitude (Byrne 1986, Cutispoto et al. 1987).

We present UBV photometry obtained at Mt. Hopkins in 1988-89 by the Phoenix Automatic Photoelectric Telescope (APT) and BV data obtained middle 1989 at the mountain station of Catania Observatory on Mt. Etna. The observations were corrected for atmospheric extinction and nightly mean standard differential magnitudes (variable-comparison star) were computed.

The UBV APT data were obtained during 30 nights in the period October 1988 - January 1989 with an uncooled UBV photometer fed by a 0.25-m cassegrain telescope. Our comparison star was HD 244016 (V=8.52, B-V=0.776, U-B=0.49) while HD 223462 was used as check star. No significant variations between comparison and check star were observed.

The Catania BV observations were made during 7 nights in June-July 1989 with an uncooled simultaneous UBV photometer fed by a 0.61-m quasi-cassegrain telescope. Our principal comparison star was HD 224084 (V=8.245, B-V=1.281, U-B=1.356), while HD 224016 and BD+27^o4648 were used as check stars and were observed several times on each night. No significant variations between comparison and check stars were observed.

The V light and color curves of II Peg are shown in Figures 1 and 2 where the phases are reckoned from the spectroscopic ephemeris by Raveendran et al. (1981):

$$\text{HJD} = 2443030.396 + 6.724464 \times E$$

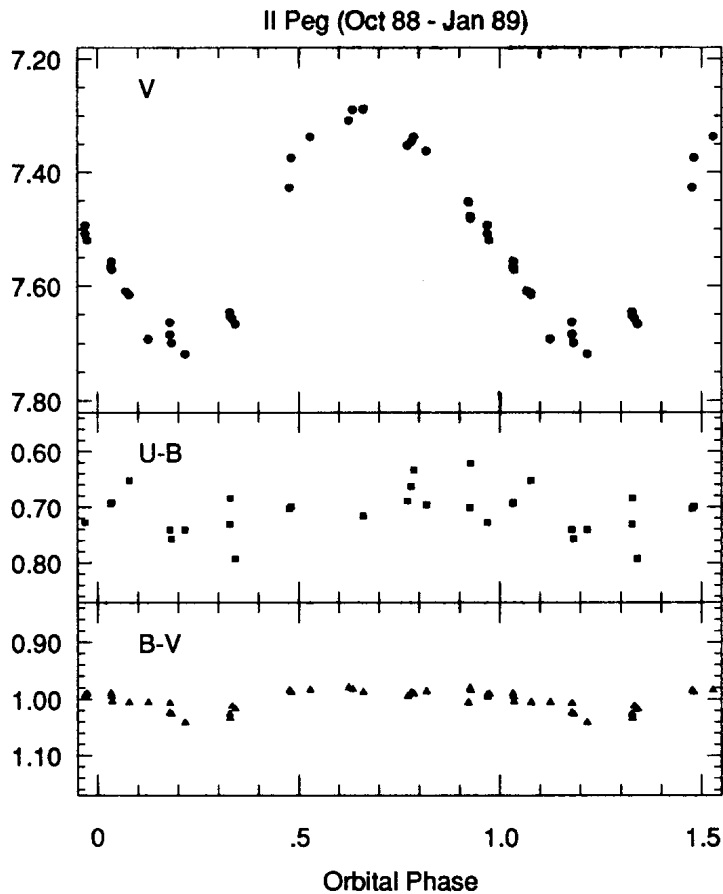


Fig.1.: V-light, U-B and B-V color curves of II Peg in October 1988 - January 1989. Phases are reckoned from the ephemeris:
 $HJD = 2443030.396 + 6.724464 \times E$ (Raveendran et al. 1981).

Typical nightly standard deviations for V, B-V and U-B data are 0.005, 0.01 and 0.01 mag. respectively. A listing of the individual data will be provided upon request to the first author.

In both observing periods the V light curve is single-peaked with the rising branch steeper than the descending one and has an estimated amplitude of about 0.43 mag. Small color variations show the star to be

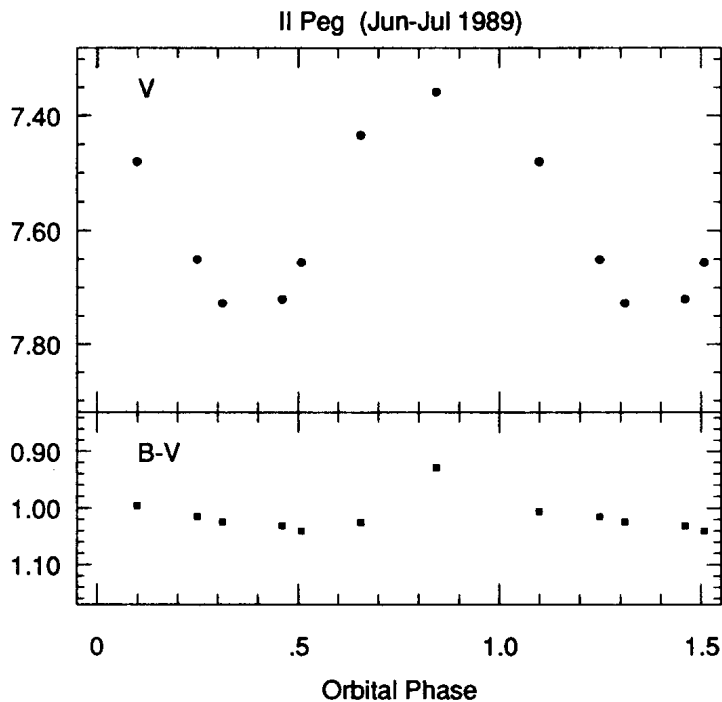


Fig.2.: V-light and B-V color curves of II Peg in June - July 1989.
 Phases are reckoned from the ephemeris:
 $HJD = 2443030.396 + 6.724464 \times E$ (Raveendran et al. 1981).

bluer at light maximum, in agreement with the cool spot hypothesis. The APT data show that the light curve has remained considerably stable for more than 14 star rotations. In mid-1989 the star was fainter than in late 1988 - early 1989, indicating a global increase of II Peg's degree of spottedness.

In Figure 3 a collection of the published photometry of II Peg is reported, with the vertical bars indicating the peak-to-peak V amplitude of the light curve. There is a clear systematic decrease of the II Peg luminosity at light maximum and of its mean light level from 1974 to 1984, which is followed by a definite increase after 1984. This systematic trend could be suggestive of a spot cycle and once again stresses the importance of long-term systematic photometry of spotted stars.

We wish to thank Prof. Marcello Rodonó for suggesting us to carry out the present observations and for making available to us the APT data.

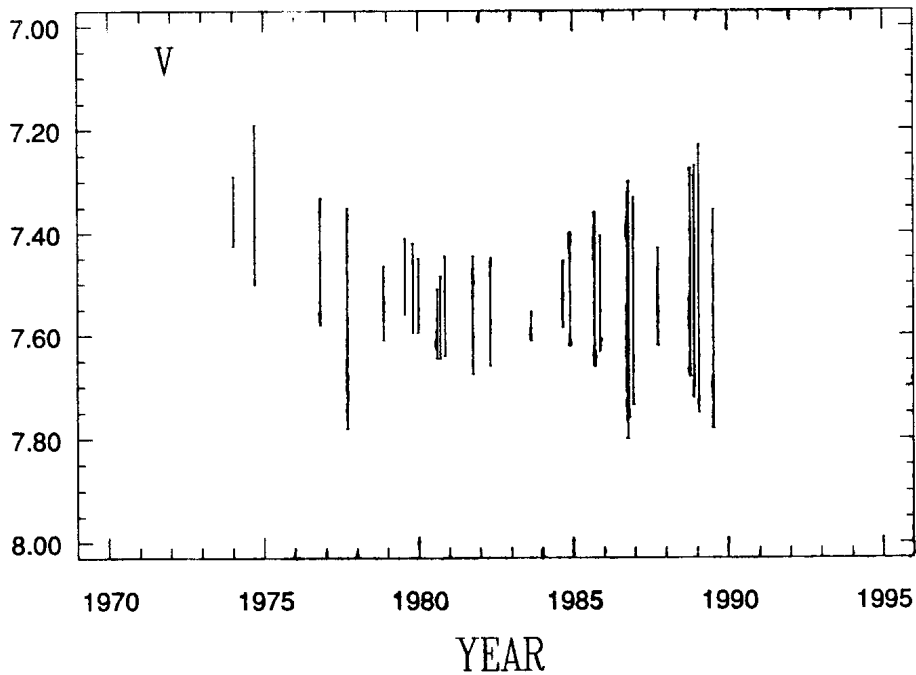


Fig.3.: Collection of the published photometry of II Peg. Vertical bars indicate the peak-to-peak amplitude of the V light curve.

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