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ON THE VARIABILITY OF THE CENTRAL STAR OF THE PLANETARY NEBULA NGC 1514

The central star of the planetary nebula NGC 1514 (PK 165 - 15.1) is much too luminous relative to the nebula. The spectral type is too late considering the high excitation in the nebula. These facts and the observed UV excess (Kohoutek 1967; Kohoutek and Hekela 1967; Liller and Shao 1968) suggest the presence of a much hotter second component. Also the idea that these two stars form a physical pair is generally accepted, some doubt remains because of partly contradictory radial velocity observations (Kohoutek 1968; Mammano et al. 1968; Greenstein 1972; Acker 1976).

The number of published photometric measurements is small. Some of the observers have suggested variability. Kohoutek (1966) derived a longterm brightness increase of about $-0^{m}.005$/year. Arkhipova (1968) found no variations larger than $\pm\ 0^{m}.01$ in V and B and $\pm\ 0^{m}.025$ in U during some observing runs ranging from 10 minutes up to several hours. Lawrence et al. (1967) suspect periodic oscillations of 138 and 855 sec.

During 31 nights covering the period between January 1982 and March 1983 we collected about 350 V measurements of this object with the single-channel photoelectric photometer attached to the 24 inch RC telescope of the L.Figl Observatory. An aperture of 20 arcsec was used, this limited the nebular contribution to less than 1% of the total light and was therefore ignored. Each V magnitude per night consisted of the average of 5 to 6 15 sec integrations. During a few nights the star was monitored continously for a few hours to look for short-term variations.

Table I gives the identification of the observed stars.

Table I

Object	BD	SAO	V	B - V	Sp
Central Star of NGC 1514	$+30^{o}$ 623	057020	$9.42^{+)}$	$0.55^{+)}$	K0
Comparison Star	+30 621	057017	8.41	0.87	K0
Check Star	+30 624	057021	8.19	1.46	

$^{+)}$Data from Liller and Shao

The mean of all measurements is

ΔV (central star - comparison star) = $1^{m}.0131 \pm 0.0045$ st.d.
ΔV (comparison star - check star) = $0^{m}.2260 \pm 0.0039$ st.d.

These two standard deviations for single measurements are practically identical suggesting constancy of the central star during the observed period.

We checked for short-term variability by analysing the longest run of 5 hours applying Fourier methods. The program used has been described by Breger (1982). Practically the power spectrum is flat. The highest peak of $0^{m}.0017$ amplitude with a frequency of 154 sec is not regarded as significant. The oscillations of 138 and 855 sec as suggested by Lawrence et al. could not be found in our data.

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