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A NEW SHORT PERIOD IN THE WR STAR HD 191765

The Wolf - Rayet star HD 191765 is classified in the sixth catalog (Van der Hucht et al. 1981) as a "single" WN6 star. It is centered in ring nebula S109 and connected with it. It has been investigated by Antohin et al. (1982) and a variation in brightness and radial velocity with a period of $7^d.44$ was found. The authors have concluded that this is a binary WR with a compact companion.

Having in mind that Vreux et al. (1985) and Vreux (1985) have found periods less than $1^d.0$ at some WR stars, we searched for such a period in HD 191765. Applying Lafler - Kinman technique to data used by Antohin et al., we obtained a period of $0^d.935$ for B and V bands. In comparison with the $7^d.44$ period, the light curve with the new period (Fig.1) has lower dispersion. This points out to its higher reliability. The same analysis of radial velocity, using He II 4686 line, shows a period of $0^d.9$ (Fig.2).

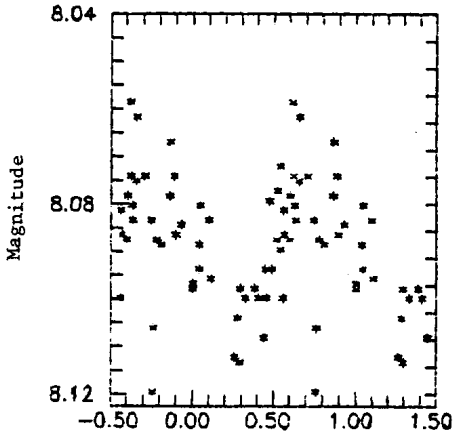

Fig. 1

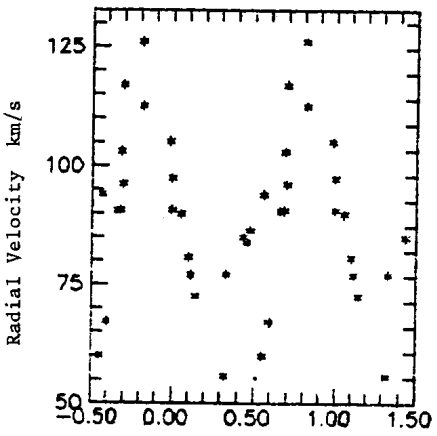

Fig. 2

Let us assume that HD 191765 is a binary system with $20M_\odot$ for WR and $1M_\odot$ for the compact object. In this case the semimajor axis is $11R_\odot$ and the eccentricity is 0.24. This large eccentricity does not agree with the rather rapid circularization of such a contact system. The optical depth of this value of semimajor axis (if we assume that mass loss rate is 10^{-5} $M_\odot$/yr) is 1.7. This value is insufficient to explain the absence of X-ray emission of this star (Sanders et al. 1981).

Finally, we may conclude that these data are insufficient to reliably identify HD 191765 as a binary WR with a compact companion. But the points with phases around 0.75 (Fig.1) look like a second minimum and do not support the pulsation hypothesis. Further investigation should possibly concentrate on confirming their existence.

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