

Pulsation of the AGB Variable in the Symbiotic Nova PU Vulpeculae

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- **Abstract.** Analysis of the 1993–4 eclipse in the slow symbiotic nova PU Vul (4900-d binary orbital period) and 1995–9 photoelectric observations in *V* and *R* bandpasses show that the cool component of this object is pulsating AGB variable with a 215-d pulsation period. Basic properties of the components of the system are discussed.

Photoelectric *V*, *R* observations of PU Vul obtained in 1995–9 with the 0.6-m telescopes at the Skalnaté Pleso (SP) and Stará Lesná (SL) observatories of the Astronomical Institute of the Slovak Academy of Sciences exhibit pulsational variability with the period 215 ± 20 d, suggesting that the cool component of spectral type M4 (Rudy et al. 1999) is pulsating AGB star (Chochol, Pribulla, & Tamura 1998). Its luminosity calculated from the period–luminosity relation of Hughes & Wood (1990) is $L_c = 3780 L_\odot$. The corresponding radius and mass determined using the Stephan–Boltzmann law and the standard pulsation equation are $R_c = 282 R_\odot$ and $M_c = 0.78 M_\odot$, respectively. Vogel & Nussbaumer (1992) found the ratio of luminosities $L_h/L_c = 2.6$, so the luminosity of the hot component is $L_h = 9830 L_\odot$. The corresponding mass of the hot CO degenerate dwarf determined from the relation of Paczyński (1971) is $M_h = 0.69 M_\odot$. Kepler’s third law and the masses of the components lead to a binary separation $a = 1380 R_\odot$. The photometric data from the 1993–4 eclipse were used by Chochol et al. (1997) for the calculation of the radius of the cool component, $R_c = 0.208a = 287R_\odot$, in agreement with the radius determined from the pulsation.

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