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V348 Pav - A polar with an extremely low-mass white dwarf

Cataclysmic Variables (CVs) are close binary systems composed of a white dwarf and a main sequence red star transferring mass to the compact object as it fills its Roche lobe. Polars are CVs where the white dwarf presents an intense magnetic field and material is transferred not by an accretion disc but is guided by the magnetic field lines to the white dwarf magnetic poles and have both stellar components rotating synchronously with the orbital period. In polars the emitted light is polarized due to the interaction of transferred material with the magnetic field lines that produce, for example, the cyclotron radiation. In a project to search for new magnetic Cataclysmic Variables (Oliveira et al. 2017), we selected the candidate V348 Pav for detailed observational follow-up. This source presents many kinds of variability in the CRTS (Catalina Real-Time Transients Survey) light curve: long (years) and short (one month) term variations between magnitudes 18 and 15, and 1 mag variations in timescales of few days. We obtained 13 h of time-resolved spectroscopic data with the Goodman spectrograph at the SOAR Telescope and 20 h of time-resolved polarimetric and photometric data with the P&E Telescope on OPD/LNA. The radial velocities of Hβ line present an orbital period ≈80 min. The photometric data show an 0.7 mag amplitude senoidal lightcurve with a period of 0.05556 days and a circular polarization modulated with an amplitude of about 30%. We present a model for V348 Pav using the CYCLOPS code (Costa & Rodrigues 2009). The resulting mass diagram using spectral emission lines, assuming a Roche lobe-filling secondary, shows a system with inclination of 30-40 degrees and a primary mass of 0.28-0.38 $M_\odot$.

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