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PG 1316+678: A young pre-cataclysmic binary with weak reflection effects

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Abstract

The PG 1316+678 star is classified as a pre-cataclysmic binary, as is evidenced by its photometric and spectroscopic observations. Its orbital period is determined to be $P_{orb} = 3.3803d$, which coincides with the photometric period. The intensities of the emission H I and H β lines are shown to vary synchronously with the brightness of the object ($\Delta m_V = 0.065m$, $\Delta m_R = 0.08m$). These variations arise as the UV radiation from the DAO white dwarf is reflected from the surface of the cold companion. The parameters of the binary are estimated and the time of its evolution after the common-envelope phase is determined to be $t \approx 240\,000$ years. Thus, PG 1316+678 is a young pre-cataclysmic NN Ser variable with the smallest known photometric reflection effect. © 2013 Pleiades Publishing, Ltd.

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