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Transit Timing Variations of an Ultra-Short-Period Hot Jupiter WASP-18Ab

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Long-term transit follow-up observations sometimes show Transit Timing Variations (TTVs), which can provide clues to understanding the evolution of the planetary system. We study an exoplanet WASP-18Ab which has a mass about 10.43 Jupiter Mass and an orbital period 0.94 day only. It is expected to experience the tidal interaction with its central star, and shrink down its orbit. We fit the mid-transit times from light curves obtained by TESS, CHEOPS, and also published literature data. Our results indicate that (i) the orbit of WASP-18Ab is not decaying, (ii) the TTVs of WASP-18Ab cannot be explained by the apsidal precession model, and (iii) the models with sinusoidal variations provides a better fit to the mid-transit times.

Section

Solar System/Exoplanets

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