K2-140b - an eccentric 6.57 d transiting hot Jupiter in Virgo

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Abstract

We present the discovery of K2-140b, a P = 6.57 d Jupiter-mass (MP = 1.019 ± 0.070MJup) planet transiting a V = 12.5 (G5-spectral type) star in an eccentric orbit (e = 0.120+0.056−0.046) detected using a combination of K2 photometry and ground-based observations. With a radius of 1.095 ± 0.018 RJup, the planet has a bulk density of 0.726 ± 0.062 ρJup. The host star has a [Fe/H] of 0.12 ± 0.045, and from the K2 light curve, we find a rotation period for the star of 16.3 ± 0.1 d. This discovery is the 9th hot Jupiter from K2 and highlights K2's ability to detect transiting giant planets at periods slightly longer than traditional, ground-based surveys. This planet is slightly inflated, but much less than others with similar incident fluxes. These are of interest for investigating the inflation mechanism of hot Jupiters.

Keywords

Techniques: high angular resolution, Techniques: photometric, Techniques: radial velocities, Planets and satellites: detection, Stars: individual: K2-140