

Photometry of Known Extrasolar Planets

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Scientific Motivation

We identify five known exoplanetary systems, four of which are known transiting systems, as being within 12 degrees of the proposed K2 campaign 0 field center. The four transiting planets **WASP-12b**, **HAT-P-20b**, **HAT-P-24b** and **HAT-P-39b** are hot-Jupiters around bright stars which will undergo dozens of transits over the nominal 83 d observing window. We propose observing these events in preferably short-cadence, but at least long-cadence, for two main objectives:

- Observe two benchmark transiting systems for which the transit profiles are already well-known, in order to evaluate the performance of K2. This is very similar to the way in which HAT-P-11b, HAT-P-7b and TrES-2b were initially used by the original *Kepler Mission*.
- Refine the transit parameters of these two bright transiting planets, search for secondary eclipses, phase variations, transit timing variations, additional transiting planets and characterize the stellar variability of the host stars.

Additionally, the radial velocity planet, **HD 50554b** lies well-inside the nominal field. With a 1224 d period, the transit probability is very low at 0.3%. However, we advocate observing this target in order to better characterize the stellar activity and seek interior transiting planets.

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