

Rotation, Activity, and Flaring of Kepler's Habitable Planet Hosts

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Abstract

The Kepler satellite has discovered thousands of planetary candidates, and confirmed hundreds of those. Among these confirmed planets, several rank highly on scales of 'habitability', including well-known objects such as Kepler-22b, Kepler-61b and others. We have been studying the host stars of these habitable planets, with the aim of investigating the effects of the host on habitability. Here we will present studies of the activity levels, rotation periods, and flare properties of the hosts. These have been measured through the Kepler data, utilising several photometric proxies for magnetic activity. Two separate methods, the auto-correlation-function and a wavelet based analysis, are used to study stellar rotation, which is a necessary prerequisite to obtaining reliable measures of activity. These properties of the host star impact strongly on putative habitability, being an indication of the levels of radiation and coronal mass ejections experienced at the planet's orbit.