



esimp005@ucr.edu

# Stellar Variability of Known Exoplanet Hosts Observed by TESS

Emilie Simpson<sup>1</sup>, Tara Fetherolf<sup>1</sup>, Stephen Kane<sup>1</sup>, Joshua Pepper<sup>2</sup>, Teo Močnik<sup>3</sup>

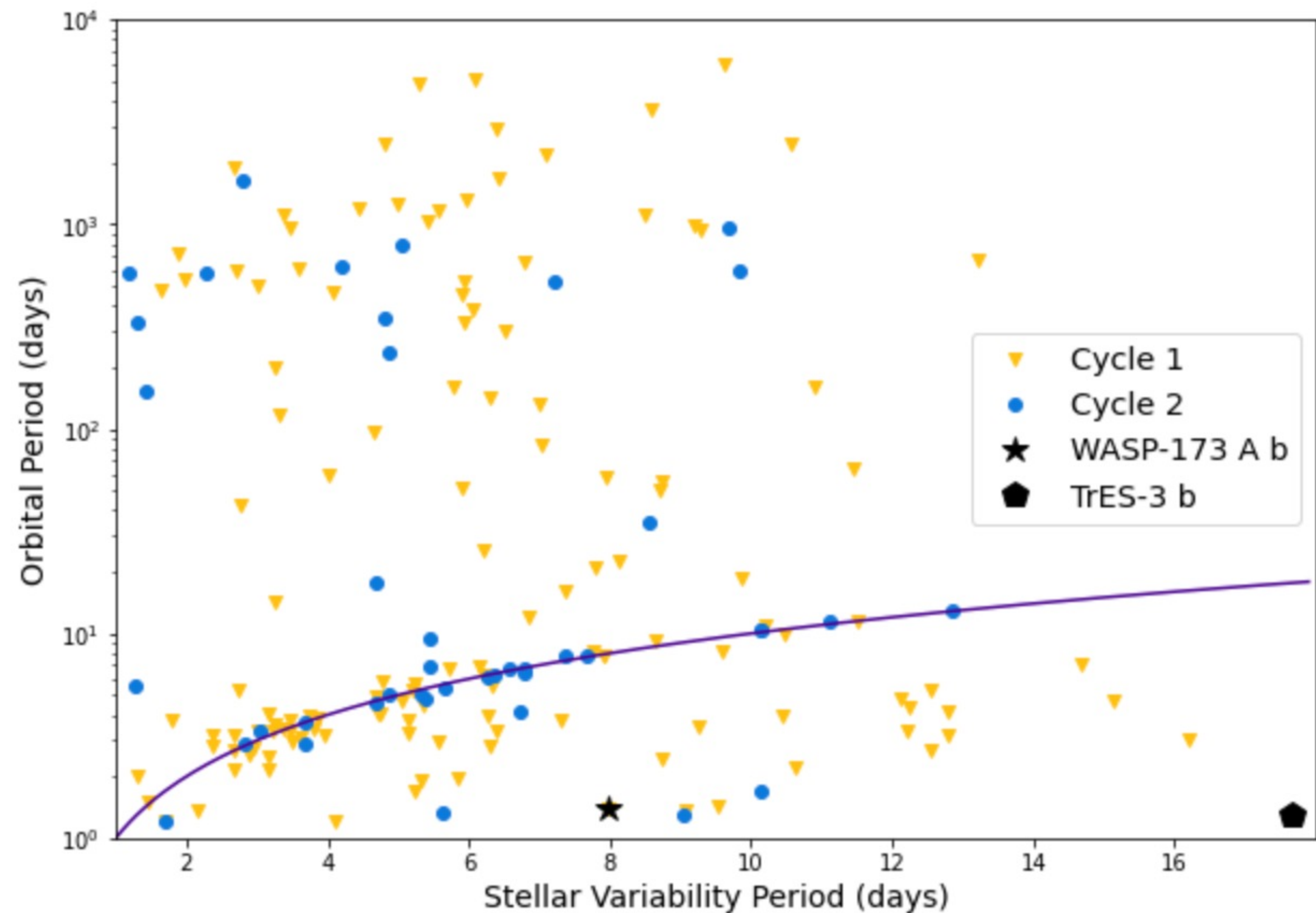
<sup>1</sup>University of California, Riverside <sup>2</sup>Lehigh University <sup>3</sup>Gemini Observatory



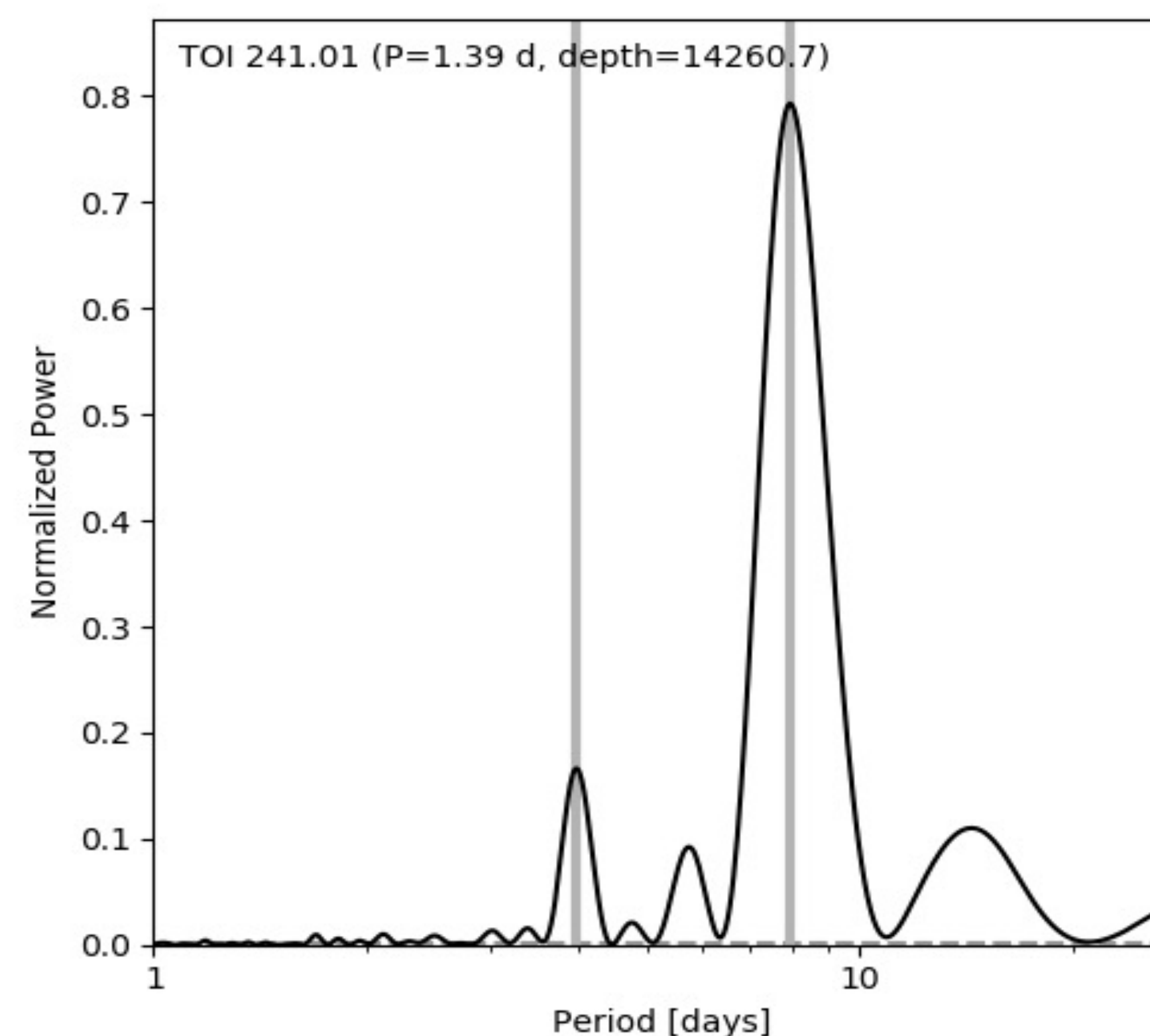
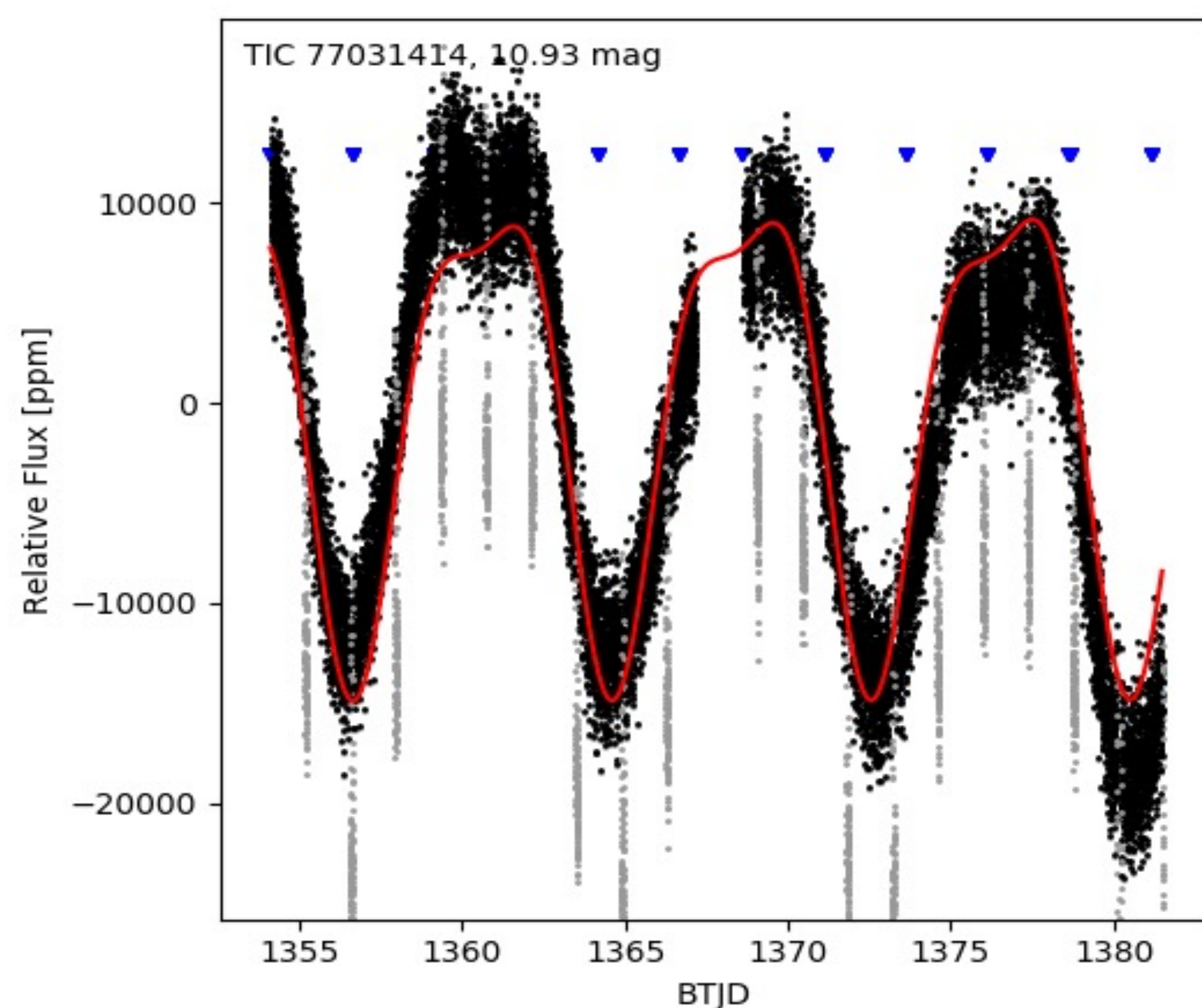
## Abstract

Characterizing an exoplanet requires knowledge of its host star's intrinsic properties. The activity of a star can lend a unique perspective of how the star interacts with an exoplanet atmosphere and the ability to confirm an exoplanet's place in a system. We will discuss how variable behavior in known exoplanet host stars can be responsible for the discovery of possible false positive signatures. The main points of this work include an overview of how the stellar photometry were processed for ~650 known exoplanet hosts observed by TESS, and the methodology of identifying strong stellar variability. We include a discussion on how this analysis can be applied to both current and future catalogs to search for false positives in an effort to reduce the false positive rate in confirmed planet catalogs. We identify specific cases for which the period of variability closely matches the known planet orbital period, and thus may be indicative of a false positive exoplanet signature.

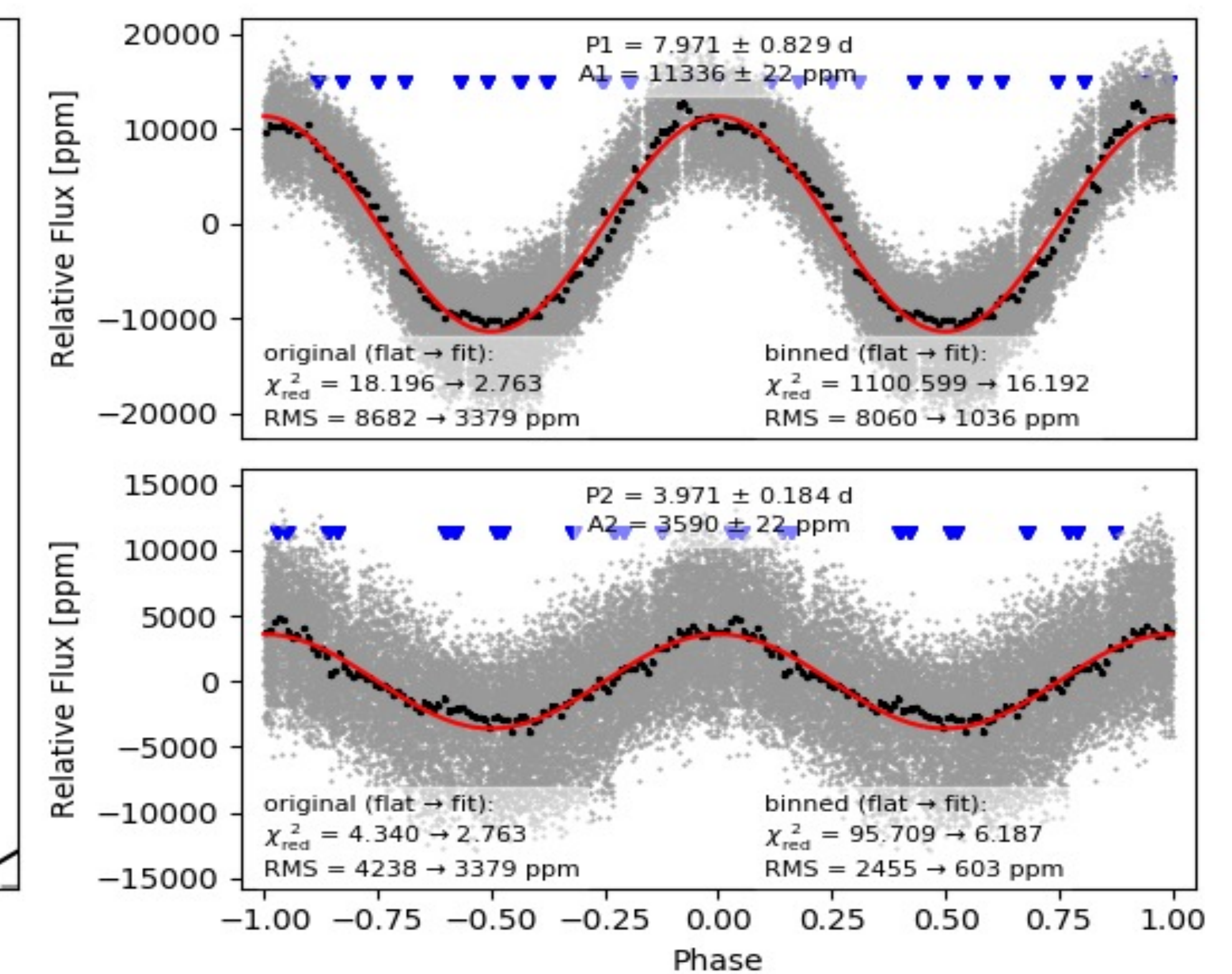
## Primary Mission Period Comparison



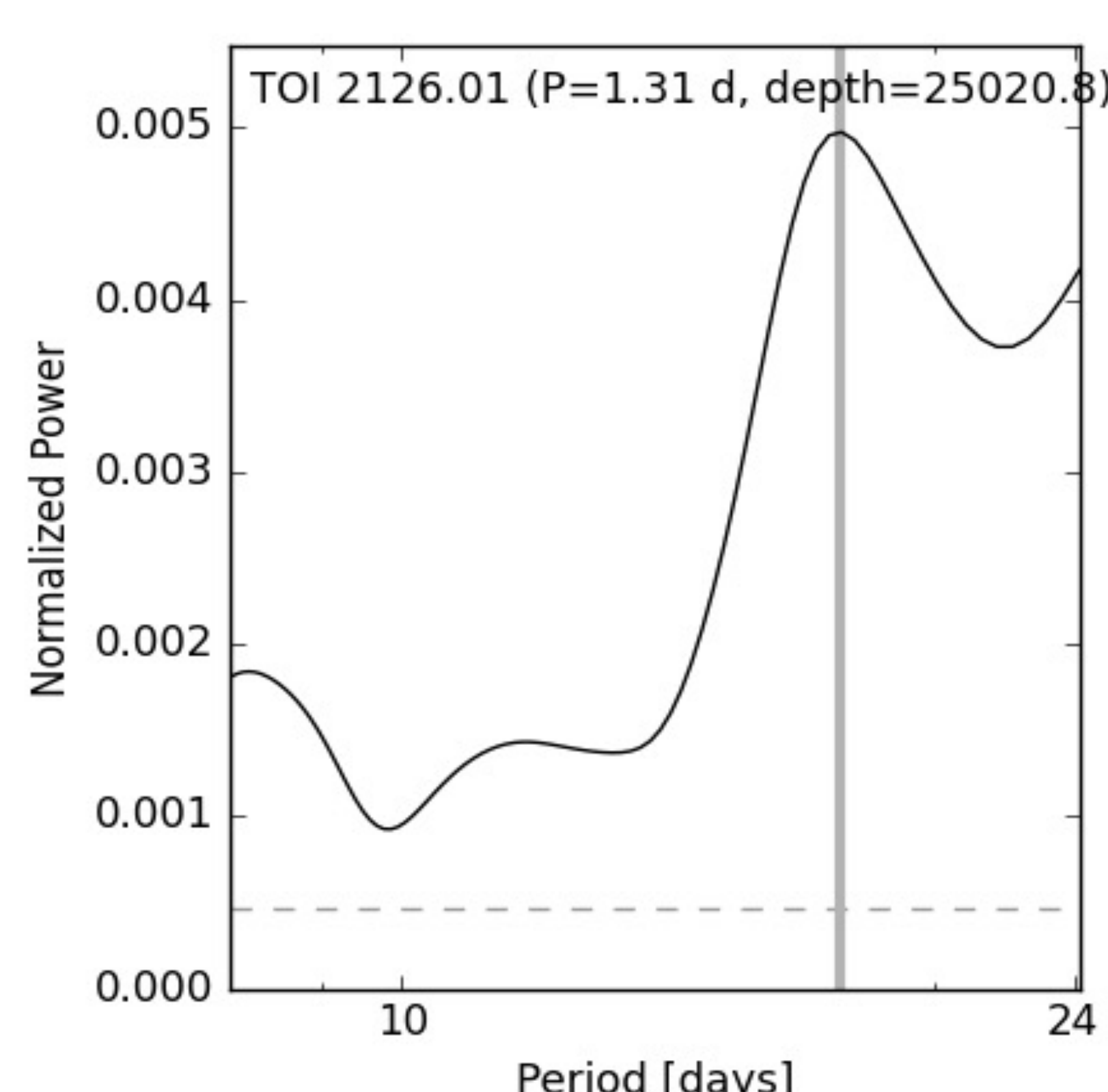
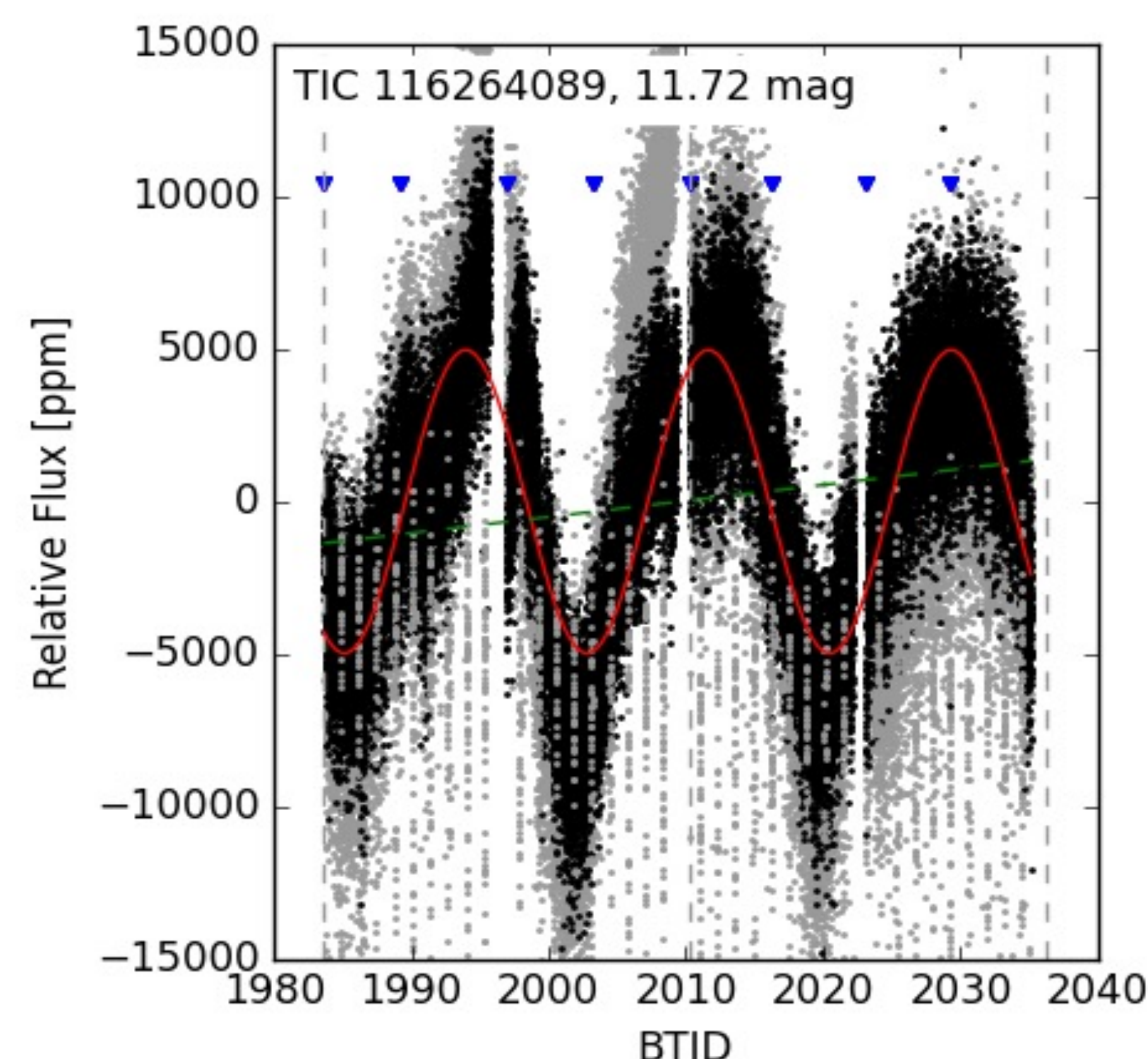
WASP-173 A b



Hellier=19, Labadie-Bartz+19



TrES-3 b



O'Donovan+07, Sozzetti+09

