

Ground-Based Photometric Follow-Up of TESS M-Dwarf Planet Candidates With SPECULOOS

SPECULOOS; Wells, Robert; Rackham, Benjamin V.; Schanche, Nicole; Triaud, Amaury

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Document Version
Publisher's PDF, also known as Version of record

Citation for published version (Harvard):
SPECULOOS, Wells, R, Rackham, BV, Schanche, N & Triaud, A 2022, 'Ground-Based Photometric Follow-Up of TESS M-Dwarf Planet Candidates With SPECULOOS', *BAAS Bulletin of the AAS*, vol. 54, no. 5, 282.
<<https://baas.aas.org/pub/2022n5i102p282/release/1>>

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Bulletin of the AAS • Vol. 54, Issue 5

Ground-Based Photometric Follow-Up of TESS M-Dwarf Planet Candidates With SPECULOOS

**Robert Wells¹ Benjamin Rackham² Nicole Schanche¹ Amaury Triaud³
SPECULOOS Team⁴**

¹University of Bern, ²Massachusetts Institute of Technology, ³University of Birmingham,

⁴Multiple Institutions

Published on: Jun 20, 2022

URL: <https://baas.aas.org/pub/2022n5i102p282>

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TESS is discovering a wealth of transit-like signals across the whole sky. However, due to the large pixel size (21 arcsec), it is largely not possible to validate a signal as an exoplanet transit from TESS photometry alone. Therefore, it is necessary to obtain follow-up transit light curves in order to confirm the source of the signal, and additionally verify the depth and shape. I will present the work of SPECULOOS in this area, a network of 1-meter ground-based telescopes designed for high-precision photometry. Focussing on M-dwarf TESS objects of interest (TOIs), where SPECULOOS has much greater precision over TESS, we are continuing to confirm numerous new exoplanet systems, many of which are highly amenable to further study of their atmospheres. As a demonstration of SPECULOOS capabilities, I will present an overview of one system — TOI-2406 — an interesting sub-Neptune orbiting a thick-disk M4 host star. The 2.9 Earth radii planet is an unusual outcome of planet formation for a metal-poor mid-M-dwarf star. The large planet-to-star radius ratio and closeness of the host star also means this system is a good target for transmission spectroscopy, and can allow comparisons of planets formed in different environments.