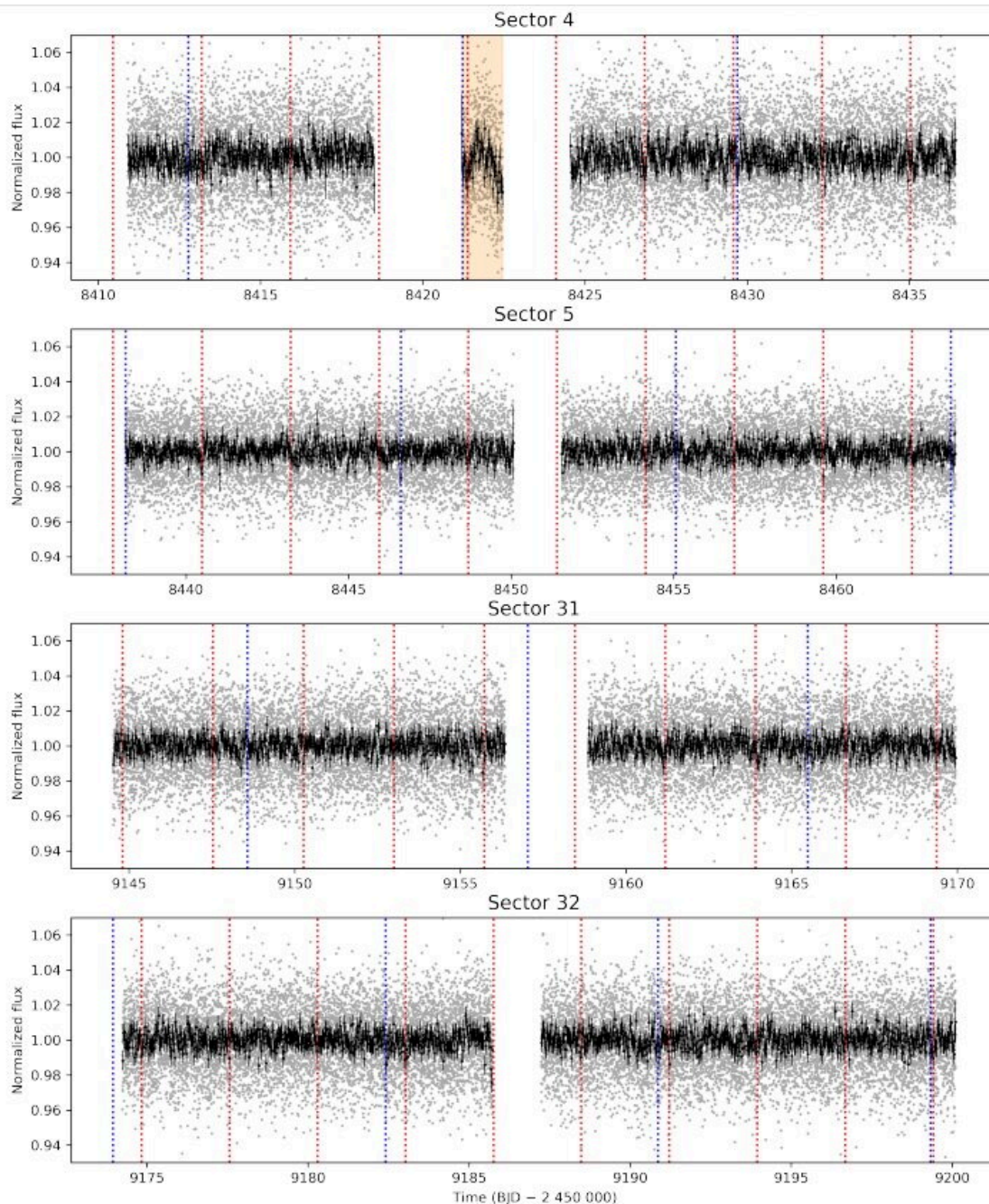


Astronomers discover two 'super-Earths' orbiting nearby star

September 14 2022, by Tomasz Nowakowski



TESS photometry of LP 890-9. For each of the four sectors, the 2-minute data points (in grey) have been binned into 30-minute intervals to produce the black points, with error bars corresponding to the root-mean-square of the uncertainties of the points in the bins. The transits of LP 890-9 b and c are indicated by red and blue dotted lines, respectively. The region marked in orange in sector 4 was impacted by thermal effects and thus excluded from the analysis.

Credit: Delrez et al., 2022.

An international team of astronomers reports the discovery of two new "super-Earth" exoplanets orbiting a nearby late-type M dwarf star. The newfound alien worlds, designated LP 890-9 b and LP 890-9 c, are slightly larger than the Earth. The finding has been published in *Astronomy & Astrophysics*.

"Super-Earths" are planets more massive than Earth but not exceeding the mass of Neptune. Although the term "super-Earth" refers only to the mass of the planet, it is also used by [astronomers](#) to describe planets bigger than Earth but smaller than the so-called "mini-Neptunes" (with a radius between two to four Earth radii).

Now, astronomers led by Laetitia Delrez of the University of Liège in Belgium, have discovered two new planets of the super-Earth class. They observed LP 890-9—a nearby M dwarf star of M6V spectral type, using NASA's Transiting Exoplanet Survey Satellite (TESS). This led to the discovery of the inner planet, which received designation LP 890-9 b. Follow-up observations of this system with the SPECULOOS (Search for habitable Planets EClipsing ULtra-cOOl Stars) Southern Observatory, resulted in the detection of a second longer-period transiting planet—LP 890-9 c.

"We have presented the discovery and initial characterization of the LP 890-9 system, which hosts two temperate super-Earths transiting a nearby M6 dwarf," the researchers wrote in the paper.

LP 890-9 b has a radius of about 1.32 Earth radii and its mass is estimated to be not greater than 13.2 Earth masses. The planet orbits its host every 2.73 days at a distance of approximately 0.018 AU from it.

The equilibrium temperature of LP 890-9 b was calculated to be 396 K.

When it comes to LP 890-9 c, its radius was measured to be nearly 1.37 Earth radii, while its mass is assumed to be less than 25.3 Earth masses. The exoplanet is separated from its [parent star](#) by 0.04 AU and has an [orbital period](#) of approximately 8.46 days. The planet's equilibrium temperature is estimated to be at a level of 272 K.

The host star LP 890-9 has a radius of about 0.15 solar radii and its mass is 0.12 solar masses. The effective temperature of this M dwarf is around 2,871 K and its luminosity is at a level of 0.00143 solar luminosities. The star is located approximately 104 [light years](#) away from the Earth.

Summing up the results, the astronomers underlined that their discovery makes LP 890-9 the second-coolest star found to host planets after TRAPPIST-1. They added that LP 890-9 c is the second-most favorable habitable-zone terrestrial planet known so far.

"The discovery of the remarkable LP 890-9 system presented in this work offers another rare opportunity to study temperate terrestrial [planets](#) around our smallest and coolest neighbors," the authors of the paper concluded.

More information: L. Delrez et al, Two temperate super-Earths transiting a nearby late-type M dwarf, *Astronomy & Astrophysics* (2022). [DOI: 10.1051/0004-6361/202244041](https://doi.org/10.1051/0004-6361/202244041)

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