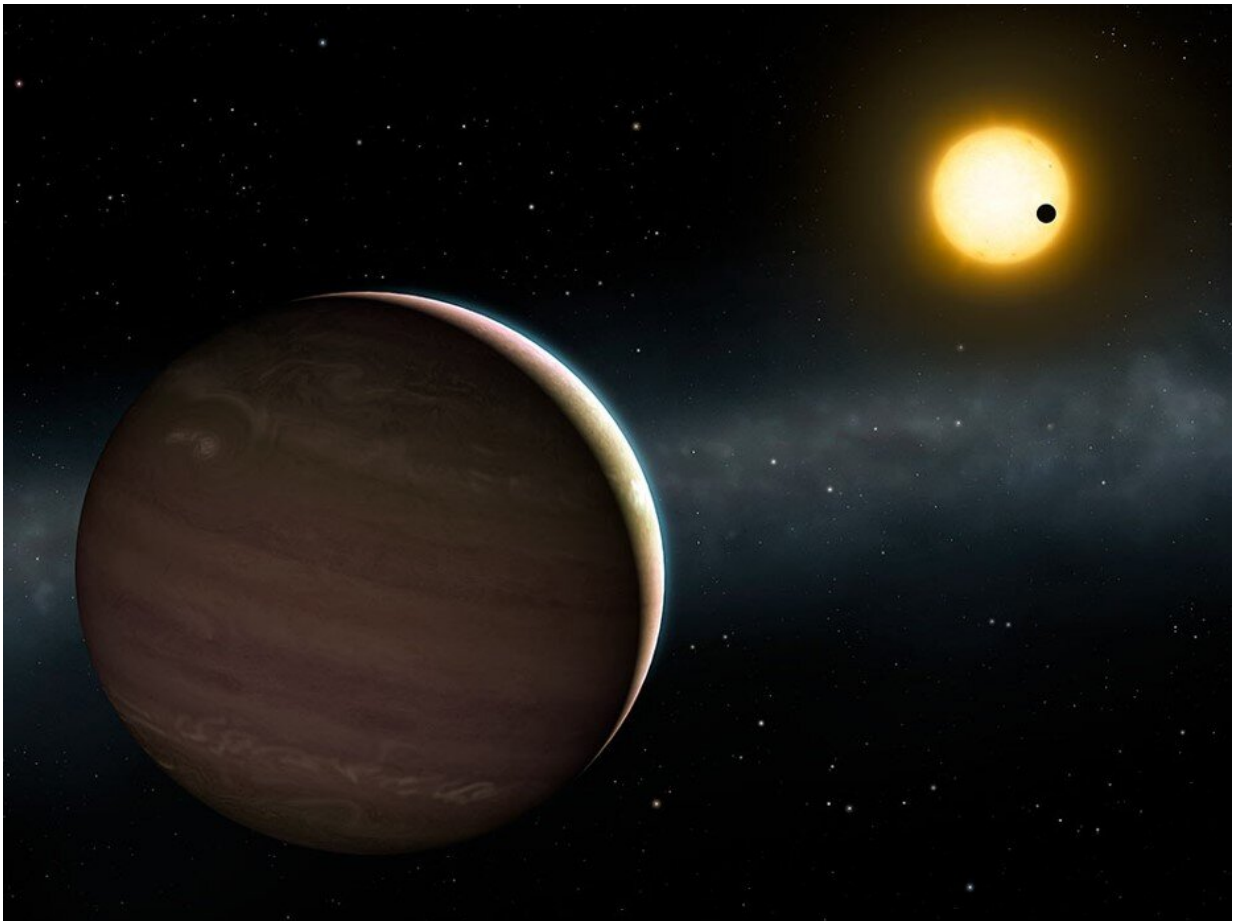


Unprecedented ground-based discovery of two strongly interacting exoplanets

July 2 2020, by Clara Barrau



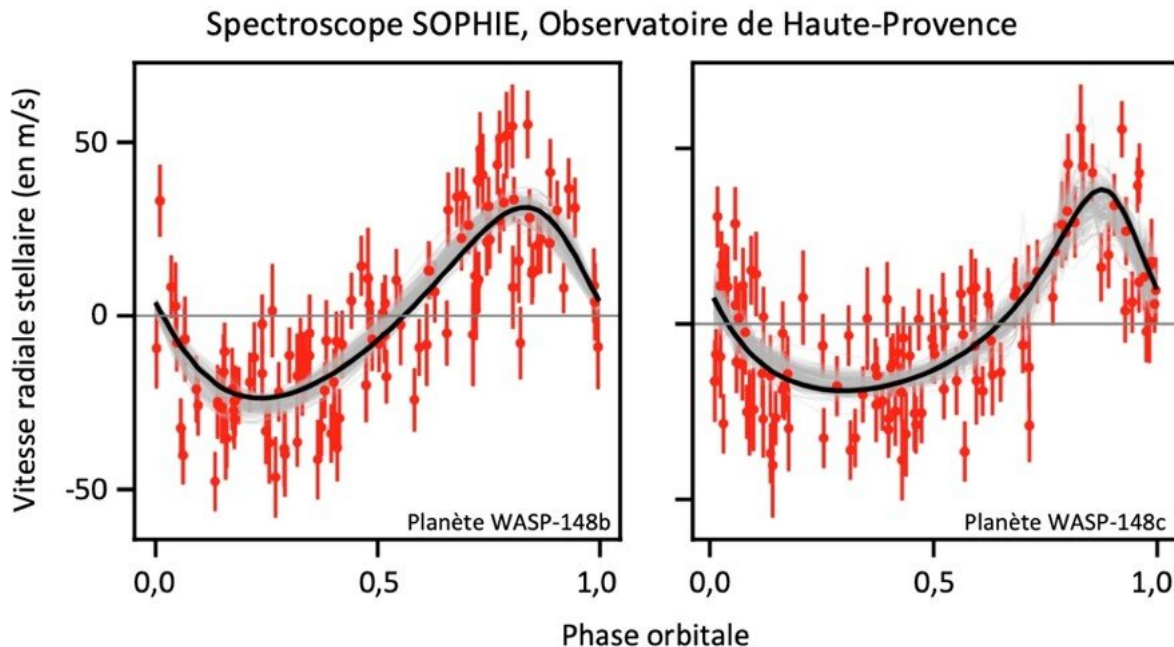
Artistic view of the strongly interacting exoplanetary system WASP-148. The planet WASP-148c is shown in front. On the back, one can see the planet WASP-148b transiting the host star around which the two planets are in orbit. Credit: Institut d'astrophysique de Paris, Mark A. Garlick

Several interacting exoplanets have already been spotted by satellites. But a new breakthrough has been achieved with, for the first time, the detection directly from the ground of an extrasolar system of this type.

An [international collaboration](#) including CNRS researchers has discovered an unusual planetary system, dubbed WASP-148, using the French instrument SOPHIE at the Observatoire de Haute-Provence (CNRS/Aix-Marseille Université). The scientists analyzed the star's motion and concluded that it hosted two [planets](#), WASP-148b and WASP-148c. The observations showed that the two planets were strongly interacting, which was confirmed from other data.

Whereas the first planet, WASP-148b, orbits its star in nearly nine days, the second one, WASP-148c, takes four times longer. This ratio between the [orbital periods](#) implies that the WASP-148 system is close to resonance, meaning that there is enhanced gravitational interaction between the two planets. And it turns out that the astronomers did indeed detect variations in the orbital periods of the planets. While a single planet, uninfluenced by a second one, would move with a constant period, WASP-148b and WASP-148c undergo acceleration and deceleration that provides evidence of their interaction.

Their study will shortly be published in the journal *Astronomy & Astrophysics*.



Measurements (in red) of the radial velocity of the WASP-148 planetary system with the SOPHIE spectroscopie at the Observatoire de Haute-Provence. The data show variations in the star's radial velocity caused by the planets WASP-148b (left) and WASP-148c (right). The black curves show the theoretical model that best fits the measurement points. Credit: G. Hébrard et al.

More information: G. Hébrard et al. Discovery and characterization of the exoplanets WASP-148b and c. A transiting system with two interacting giant planets, *Astronomy & Astrophysics* (2020). [DOI: 10.1051/0004-6361/202038296](https://doi.org/10.1051/0004-6361/202038296)

Discovery and characterization of the exoplanets WASP-148b and c. A transiting system with two interacting giant planets. arXiv:2004.14645 [astro-ph.EP]. arxiv.org/abs/2004.14645

Provided by CNRS

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