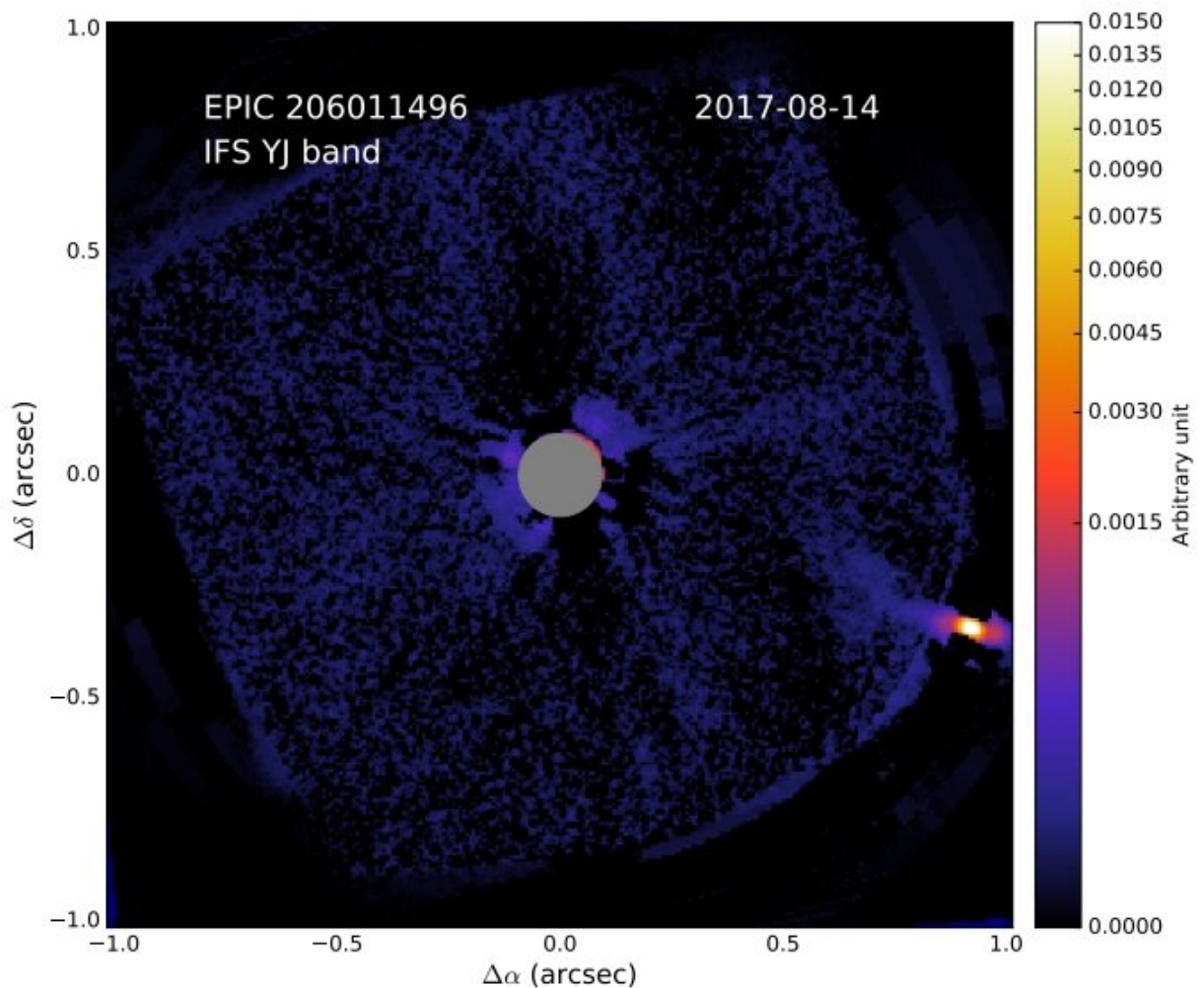


Dwarf companion to EPIC 206011496 detected by astronomers

September 20 2018, by Tomasz Nowakowski



IFS images of EPIC 206011496 obtained with the TLOCI algorithm. The central grey disk represents the coronagraph. The companion EPIC 206011496 B is well visible on the bottom right side of the image of EPIC 206011496. North is up and East is left. Credit: Ligi et al., 2018.

Using ESO's Very Large Telescope (VLT), European astronomers have uncovered the presence of an M-dwarf around the star EPIC 206011496. The newly found object is more than 60 percent less massive than our sun and is bounded to the primary star. The finding is reported in a paper published September 10 on arXiv.org.

EPIC 206011496 is a star about the mass of our sun with a radius of approximately 0.92 solar radii. It has an effective temperature of around 5,400 K and a luminosity of about 0.64 solar luminosities. However, many parameters of this star remain uncertain, including its age and distance from Earth. It could be a young star with an age of approximately 78 million years, or an evolved 2.4-billion-year-old star. When it comes to distance, some calculations suggest that it is located 753 light-years away, while another indicates that the star is 300 light-years closer.

EPIC 206011496 was observed by NASA's Kepler exoplanet-hunting spacecraft, during its prolonged mission known as K2. Recently, a team of researchers led by Roxanne Ligi of Brera Astronomical Observatory in Italy, has performed direct imaging observations of this star and five other K2 targets showcasing potential exoplanetary transits using the Spectro-Polarimetric High-contrast Exoplanet REsearch (SPHERE) instrument at ESO's VLT telescope in Chile. Their follow-up observational campaign was conducted in order to confirm the planetary nature of the detected transits.

Ligi's team found that EPIC 206011496 is a binary star in which the companion is an M-dwarf. However, what is still unknown is whether the observed transit occurs on the primary or the secondary star.

"We obtained a sample of six [stars](#) harboring the most promising Earth-

and Neptune-sized planetary candidates whose nature was not confirmed at the time. (...) With our observations only, we cannot unambiguously conclude whether the observed transit occurs on EPIC206011496 A or on EPIC206011496 B," the astronomers wrote in the paper.

The newly found star, which received designation EPIC 206011496 B, is of spectral type M4-7, has a mass of about 0.38 solar masses and a radius within the range of 0.12 to 0.26 [solar radii](#). The star is separated from EPIC 206011496 A by around 140 AU, which suggests that the orbital period of the companion is close to 7,000 years.

Given that it still needs to be determined which component of the binary exhibits transits of a planetary-type object, the exact size of the potential exoplanet remains a puzzle. The researchers noted that if the [transit](#) occurs on EPIC206011496 A, the alien world would have a radius of approximately 1.6 Earth radii. However, if the object transits the secondary star, it would be at least 2.17 times larger than our planet. Its radius could even equal 2.37 Earth radii.

"If it transits the primary star, its radius is consistent with that of a super-Earth. However, if it transits the companion star, it falls into the mini-Neptune regime," the astronomers concluded.

More information: K2 targets observed with SPHERE/VLT. A M4-7 dwarf companion resolved around EPIC206011496, arXiv:1809.03848 [astro-ph.EP] arxiv.org/abs/1809.03848

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