

PRESS RELEASE

Scientists at HBKU's QEERI Discover Three New Extrasolar Planets

Doha, June 27, 2016 – Scientists at the Qatar Environment and Energy Research Institute, one of Hamad bin Khalifa University's three national research institutes, announced the discovery of three new extrasolar planets (exoplanets), found by using optical Earth-based telescopes, supported by by Qatar Foundation as part of the ongoing Qatar Exoplanet Survey (QES). The research is funded by the Qatar National Research Fund (QNRF) and is published in the repository Arxiv.org (<https://arxiv.org/abs/1606.06882>)

The team identified the new exoplanets using tens of thousands of images collected by the dedicated QES telescopes in New Mexico (USA), Tenerife (Spain) and Urumqi (China).

Following an agreement with the International Astronomical Union (IAU), the three new planets are officially named Qatar-3b, Qatar-4b and Qatar-5b.

Exoplanets are planets orbiting around other stars, outside of the Earth's solar system. The three newly discovered exoplanets belong to a category astronomers call 'hot Jupiters', planets that are in size similar to that of Jupiter (the largest planet in our solar system), which are located very close to their host star and, due to this proximity, have temperatures that range between 1200 and 3000 degrees Celsius. Hot Jupiters typically take about 1 to 10 Earth days for a full orbit around their host star as 'a year' on the hot Jupiters lasts only 1-10 Earth days, which is considerably shorter than a year on Earth which is 365 days.

The three new Exoplanets have sizes between 1 and 1.5 times that of Jupiter (12 to 17 times larger than the Earth) and temperatures between 1400 and 1700 Celsius, completing full orbits around their stars in times ranging between 1.8 and 2.9 Earth's days. The distances to the new planets were calculated to be in the order of 1400 to 1800 light years away, where a light year is equal to 10 trillion kilometers.

The continuing discoveries of extrasolar planets are key in answering some fundamental questions in the field of astronomy, including 'How are planets and planetary systems formed?' and 'Are there other planets similar to Earth?'. The three new planets, together with the previous discoveries of Qatar-1b and Qatar-2b, are part of Qatar's contribution to the field and bring the QES-team in the top-five, among 30 teams around the world that use ground-based telescopes to search for extrasolar planets.

The QES team plans to automate and simplify the techniques for reliable detection of exoplanets using Earth-based small telescopes in order to facilitate the participation of a larger number of scientists and amateur astronomers around the world and improve and accelerate the detection of exoplanets.

Dr. Khalid A. Al-Subai, the team lead, as well as QEERI's Acting Executive Director and first author of the publication, commented: "There are thousands of Astronomy Amateur clubs around the world and we hope our technique and algorithms are helpful to them and assist the discovery of thousands of more exoplanets."

With most of the bright stars in the sky having Arabic names, Dr. Al-Subai hopes that the Qatar Exoplanet Survey and these discoveries resurrect the great tradition of the Arab world in the field of astronomy, adding records of five exoplanets bearing Qatar's name to the modern astronomical landscape.

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About Qatar Environment and Energy Research Institute (QEERI)

Qatar Environment and Energy Research Institute (QEERI) is a national research institute within Hamad bin Khalifa University. As a national research institute, QEERI plays a leading role addressing the national energy and water security grand challenges through research and development (R&D). Aligned with the Qatar National Vision 2030's strategy of transforming the State into a diverse and sustainable knowledge-based economy, QEERI's water R&D program is developing innovative technologies in water desalination and treatment; water quality and reuse; aquifer recharge; and climate change and atmospheric science. QEERI's energy R&D focuses on solar photovoltaics (PV), energy storage and smart grids.

Hamad bin Khalifa University, a member of Qatar Foundation for Education, Science and Community Development, is an emerging research university located within Education City in Doha, Qatar.

For more information, please visit www.qeeri.org.qa