

New solar twin could shed light on another Earth

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Colour enhanced zoom around HD98618, created using information from the Sloan Digital Sky Survey.

ANU (Australian National University) astronomers have discovered a nearby solar twin which may shed light on the search for planets that are similar to Earth and that may even support life. HD98618 is only the second star found so far that is almost identical to the Sun in age, size, temperature and chemistry, according to the researchers Dr Jorge Meléndez, Ms Katie Dodds-Eden and Mr José Robles, from the Research School of Astronomy and Astrophysics.

“This solar twin doesn’t only have the same mass as the Sun, it was also formed with the same ‘chemical recipe’. So this star was equipped in the

same way as the Sun to form Earth-like planets,” Mr Robles said.

“Hopefully, as new planet finding techniques are developed and refined, astronomers will find whether HD98618 hosts terrestrial planets, which may even contain life.”

HD98618 lies a mere 126 light-years away in the northern constellation of Ursa Major (the ‘Big Dipper’). It is bright enough to see in binoculars, but only in the Northern Hemisphere.

The researchers believe that HD98618 is about four billion years-old, about 10 per cent younger than our own Sun. Its chemical properties are almost identical to the Sun and to the other closest Sun twin, a star known as 18 Scorpii, which was discovered a decade ago.

“It means that hypothetical terrestrial planets around this solar twin may have had enough time to develop some kind of complex life, assuming the time-scale for complex life formation is similar to Earth’s,” Dr Meléndez said.

The team says that focused observations of the two stars by planet-hunter teams could reveal or rule out within a few years giant planets, such as our own Jupiter, around HD98618. “18 Scorpii and HD98618 offer hope to find solar systems similar to our own in the Universe,” Dr Meléndez said.

The discovery also has implications for research in other areas. Solar twins are ideal for the absolute calibration of astronomical measuring instruments. They can provide data useful in modelling the solar phenomena that may affect climate change, and will help settle the argument about the uniqueness or otherwise of our Sun and Solar System.

“We had a number of candidates with similar properties to the Sun, but while we held out hope for each star that it would turn out to be really special, it was not at all certain to happen. HD 98618 was one of the last of our candidates to be analysed, so it was quite a surprise when we discovered how it stood out from the other candidates, together with 18 Scorpii. It was very exciting - I had to blink twice to be sure I wasn't imagining it,” Ms Dodds-Eden said.

The researchers made the discovery using the largest telescope in the world, the 10m Keck I telescope on the summit of Hawaii's dormant Mauna Kea volcano.

Their paper detailing the discovery will be published in *Astrophysical Journal Letters*.

Source: Australian National University

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