

Nearby red dwarfs could reveal planet secrets

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Artist's impression of a disc forming into a solar system around a red dwarf. Credit: NASA/JPL-Caltech/T. Pyle (SSC)

An accidental find of a collection of young red dwarf stars close to our



solar system could give us a rare glimpse of slow-motion planet formation.

Astronomers from The Australian National University (ANU) and UNSW Canberra found large discs of dust around two of the stars, telltale signs of planets in the process of forming.

"We think the Earth and all the other planets formed from discs like these so it is fascinating to see a potential new solar system evolving," said the lead researcher Dr Simon Murphy, from the ANU Research School of Astronomy and Astrophysics.

"However, other stars of this age usually don't have discs any more. The red dwarf discs seem to live longer than those of hotter stars like the Sun. We don't understand why," said Dr Murphy.

The discovery of objects like these two challenges current theories about planet formation, said co-author Professor Warrick Lawson from UNSW Canberra.

"It suggests the planet forming process can endure a lot longer than previously thought," he said

The <u>red dwarfs</u> may also host planets that have already formed from the dusty discs, Dr Murphy said.

"I think a lot of telescopes will be turned toward them in the next few years to look for planets."

The giveaway that the red dwarfs had discs around them was an unusual glow in the infrared spectrum of the stars.





Location of one of the red dwarves, 2M1239-5702, near the Southern Cross. Credit: Akira Fujii



Although the <u>discs</u> were not observed directly, Dr Murphy said such close red dwarfs offered a good chance of catching a rare direct glimpse of a disc, or even a planet, by employing specialised telescopes.

"Because they are fainter than other stars and there is not as much glare, young red dwarfs are ideal places to directly pick out recently formed planets," he said.

Our ability to detect these dim stars has improved dramatically in recent decades, revealing a wealth of information, said Professor Lawson.



Artist's impression of red dwarf star with a gas giant planet. Credit: David A. Aguilar / CfA/Harvard-Smithsonian



"Less than 20 years ago, the notion that the nearest part of the Galaxy would be littered with young <u>stars</u> was a completely novel one," he said.

"Most of these objects lie in the southern sky and thus are best accessed by telescopes in the southern hemisphere, including those operated by the ANU and Australia more broadly."

The research is published in the *Monthly Notices of the Royal Astronomical Journal*.

Provided by Australian National University

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