Astronomers discover coolest objects outside solar system

January 26 2011

UK's University of Hertfordshire astronomers have measured the distances to 11 of the coolest objects ever discovered outside our solar system. The 11 cool objects – known as brown dwarfs – have masses intermediate between stars (more massive) and planets (less massive), and as a result do not burn hydrogen, making them extremely cool.

The work led by Federico Marocco, an astrophysicist in UH's Centre for Astrophysics Research was carried out as part of a collaboration between UH, the astronomical Observatory of Torino and a wider international group.

Astronomers call very cool brown dwarfs like the ones discovered 'T dwarfs' and Federico and his team have discovered many of the coolest known examples ever found.

Federico Marocco said: "A proper understanding of such cool atmospheres is important for interpreting warm giant planets as well as brown dwarfs, since planet temperatures can overlap with those of brown dwarfs".

The team made deep infrared measurements of each T dwarf with the UK Infrared telescope over a 4 year period and this allowed them to determine the distances of each dwarf. It was revealed the dwarfs were between 30 and 300 light years from the Sun. The new distance measurements show that our understanding of cool atmospheres is incomplete, and establishes benchmark measurements that future

theories will be tested against.

“It may be that our solar system’s nearest neighbor is an undiscovered brown dwarf, just waiting to be revealed” said Marocco.

The new discoveries have been published in a paper in the academic journal *Astronomy & Astrophysics*.

Provided by University of Hertfordshire