Discovery of nine new planets extends possibility of finding extra terrestrial life

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Three teams of scientists announced the discovery of nine new planets outside our solar system (exoplanets) on August 7, extending the number of known exoplanets to fifty. University of California at Berkeley astronomer Geoffrey Marcy stated, “We're now at the stage where we are finding planets faster than we can investigate them and write up the results.” The announcements were made at the International Astronomical Union meeting held in the English city of Manchester.

The scientists cannot observe the planets directly because of the overwhelming light from the stars they orbit. Instead, they find evidence of the existence of a planet by detecting the subtle effects of the planet's gravitational pull on the star being orbited, known as a “wobble”. Astronomers use this to determine the planet's orbit and size. This technique has meant that so far only large planets with a similar magnitude to the gas giants, such as Jupiter, have been discovered. Marcy stated that “the planets are lost in the glare of the stars, so we use a different technique. We watch to see if a star wobbles in space due to the gravitational pull on the star from the planets. From that we can deduce the orbits of the planets and their bulk mass.”

Six of the planets were identified by astronomers based in Geneva, Switzerland using the La Silla European Southern Observatory in Chile. The Swiss team found a planet smaller than Saturn orbiting a star known as HD 168746 in the constellation of the Shield, 140 light years away from Earth. This is the smallest planet to be discovered to date. Two planets just bigger than Saturn were found orbiting stars in the constellation of the Sail and in the constellation of the Cross. Three planets larger than Jupiter were detected orbiting other stars.

Three other stars were found by astronomers from the University of California at Berkeley and at the University of Texas at Austin. The Berkeley team discovered the second planetary system. Previously only the star Upsilon Andromidae was known to have a planetary system. Initial indications are that such systems are relatively common. The team conducted a survey of twelve stars known to have planets and found that five of them showed signs of being orbited by another planet. Berkeley astronomer Debra Fischer stated, “This is the first time anyone has noticed that such a high percentage of stars with one known planet show evidence of a second companion.”

The University of Texas team found a planet similar in size to Jupiter about 10.5 light years away from Earth orbiting the star Epsilon Eridani, a star very similar to the sun. The planet is so close it may be directly observable with space telescopes such as the Hubble. University of Texas astronomer William Cochrane stated “not only is the star near by, it lies 297 million miles from its central star—roughly the distance from the sun to the asteroid belt in our own solar system.” This is important as it leaves space for smaller Earth-sized planets in between, which would be more suitable sites for the evolution of life than the gas giants already found. Astronomers think that Jupiter played an important role in stabilising conditions on the rocky planets in the early periods of the formation of the solar system.

Scientists at NASA also announced the development of techniques which will greatly enhance astronomers' capacity to discover more planets. Preliminary findings of the examination of dust around certain stars indicate that it is disturbed by the motion of planets through it. Preliminary work has identified three sites as possible locations for the discovery of further planets. NASA has plans to launch two space-based telescopes in the

near future dedicated to the discovery of exoplanets. The Space Interferometer Mission, designed to detect stellar “wobbles” will be launched in 2006 and the Terrestrial Planet Finder, which is designed to detect and photograph planets, will be launched in 2013.

The great expansion in the discovery of planets enhances the possibility of finding extraterrestrial life in the future. The quest now by scientists is to find planets with similar characteristics to the rocky planets such as the Earth, which are more likely candidates for holding life than the gas giants such as Jupiter.