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Study says every star has planets

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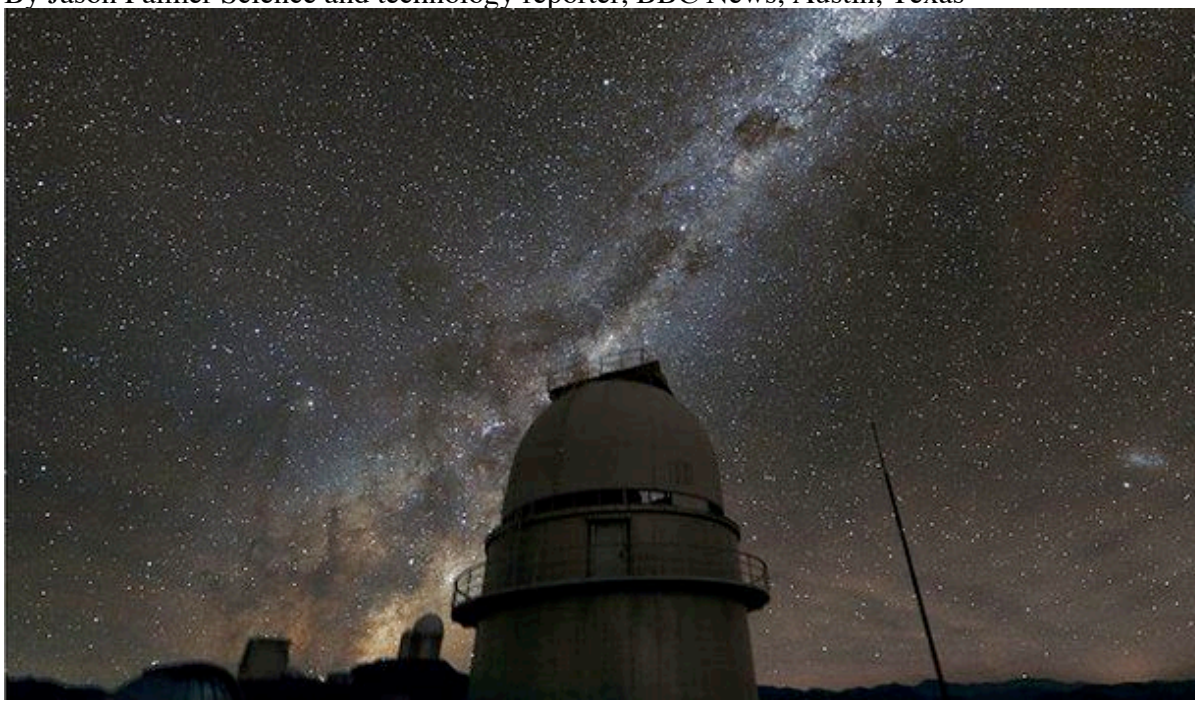

There may be billions of Earth-sized planets out there

Every star twinkling in the night sky plays host to at least one planet, a new study suggests.

That implies there are some 10 billion Earth-sized planets in our galaxy.

Using a technique called gravitational microlensing, an international team found a handful of exoplanets that imply the existence of billions more.

The findings were released at the 219th American Astronomical Society (AAS) meeting, alongside reports of the smallest "exoplanets" ever discovered.

Gravitational microlensing is a method that uses the gravity of a far-flung star to amplify the light from even more distant stars that have planets.

Astronomers used a number of relatively small telescopes that make up the Microlensing Network for the Detection of Small Terrestrial Exoplanets, or Mindstep, to look for the rare event of one star passing directly in front of another as seen from Earth.

The team witnessed 40 of these microlensing events, and in three instances spotted the effects of planets circling the more distant stars.

While the number of actual events and detected planets was low, the team was able to estimate how many such exoplanets must exist.

Most news of exoplanets in recent years has come from the Kepler telescope, which spots

planets by looking for the slight dimming of their host stars' light as planets pass in front of them.

That method is better at finding large planets close to their host stars.

While a more difficult effect to catch, gravitational microlensing is better at finding planets of all sizes and distances.

It can currently spot a planet as small as Mercury, orbiting at a similar distance to its host star, or as far away as Saturn.

The Nature study was a collaboration between researchers from more than 20 international institutes and universities.

"Just the recent 15 years have seen the count of known planets beyond the Solar System rising from none to about 700, but we can expect hundreds of billions to exist in the Milky Way alone." says co-author Dr Martin Dominik, from the University of St Andrews, UK.

Ever smaller
However, Kepler measurements hold a number of small-planet surprises as well.

In December, the Kepler team announced the first Earth-sized planet, the smallest yet detected.

Also at the meeting, the Kepler team announced even smaller planets, all three orbiting a small dwarf star called KOI-961.

The planets are just 0.78, 0.73 and 0.57 times the radius of Earth.

The discovery came from an analysis of Kepler catalogue data released to the public in February 2011.

UK amateur astronomer Kevin Apps was among those who pored through the data, finding an unusual looking set of planet candidates in the data.

He contacted long-time collaborator John Johnson, a California Institute of Technology astronomer, and found the key to the puzzle lay in comparing the KOI-961 star to the well-known and similar Barnard's star.

What they found was a miniature version of other mulitple planetary systems that the exoplanet hunt has catalogued.

Using similar parameters, Mr Apps told BBC News, "we realised that it was even more remarkable than we thought: the star was fainter, the planets were smaller. The whole thing was like a very compact triple planetary system."

Prof Johnson said that the trio was "more similar to Jupiter and its moons in scale than any other planetary system".

"The discovery is further proof of the diversity of planetary systems in our galaxy."