

Astronomy Talk 9th April 2016

Exoplanets

This talk was given by Prof. Don Pollacco of Warwick University. Don first covered some basic facts about the universe, e.g. the distances to stars, and talked about whether aliens would cross such distances, using the Drake equation. He opined that alien life will either be simple, or far more advanced than us, maybe with no interest in us.

We then looked at exoplanet discoveries, and that we need both transit and Doppler information to find both size and mass. Direct imaging is not yet feasible except in odd cases. SuperWASP (Wide Angle Search for Planets) was started in La Palma in 2003, and has found more than 160 of the 400 or so planets for which we have complete-ish information. No Earth-like planets have been found yet, which we define as 1-2 Earth radii and <10 Earth masses and in the so called "habitable zone". The density of some of these planets defies our understanding of planets.

Planetary atmospheres are also of interest, and we looked at evaporating gas giants very near their stars, and how atmospheres can be analysed, e.g. by seeing light from the star passing through the planet's atmosphere during a transit. Another case is to see changes in the spectrum of star plus planet as the planet moves round the star: full view on the far side of the star, very little view on the near side. The European CHEOPS satellite (CHaracterising ExOPlanets) will look to measure some of these. JWST (James Webb Space Telescope) should also be able to measure atmospheres.

In 2024 the European PLATO (PLANetary Transits and Oscillation of stars) satellite will also give information on the age and mass of the star, using helioseismology. The future looks very exciting, and no doubt we will find Earth's twin one day!

We finally came back to the Drake equation with Don opining that there might be 20,000 or so civilisations in the Milky Way – or maybe none at all...