

Three Exoplanets discovered, two from Sutherland

During a recent international conference on extrasolar planets in Suzhou (near Shanghai), China, the UK's leading team of planet-hunting astronomers, the Wide Angle Search for Planets (WASP), announced the discovery of three new planets. These extra-solar planets were seen to pass in front of, or transit, their host star. Studying such planets outside of our Solar System allows scientists to investigate how planetary systems form. WASP is the first team to detect planets in both the Northern and Southern Hemisphere using this technique.

Dr Coel Hellier of Keele University comments: "When we see a transit we can deduce the size and mass of the planet and also what it is made of, so we can use these planets to study how solar systems form".

WASP-4 and WASP-5 are the first planets discovered by the WASP project's cameras in Sutherland and were confirmed by a collaboration with Swiss and French astronomers. "These two are now the brightest transiting planets in the Southern hemisphere" said Dr Hellier. The two southern systems are both in Phoenix. WASP-3 is the third planet that the team has found in the North using the SuperWASP camera sited in the Canary Islands. Dr Don Pollacco

of Queen's University Belfast, said: "We are the only team to have found transiting planets in both the Northern and Southern hemispheres; for the first time we have both SuperWASP cameras running, giving complete coverage of the sky".

Exoplanet expert Professor Andrew Cameron of St. Andrews University comments: "All three planets are similar to Jupiter, but are orbiting their stars so closely that their 'year' lasts less than two days. These are among the shortest orbital periods yet discovered". Being so close to their star, the surface temperatures of the planets will be more than 2 000 degrees Celsius, so it is unlikely that life as we know it could survive there. But the finding of Jupiter-mass planets around other stars supports the idea that there are also many Earth-sized planets waiting to be discovered as astronomers' technology improves. The Extrasolar Planets Encyclopedia currently lists a total of 264 exoplanets so far discovered worldwide.

The WASP project is the most ambitious project in the world designed to discover large planets. Funding for the project comes from the UK Universities and the Science and Technology Facility Council. ☆

The Surprise Comet of 2007, 17P/Holmes

Every 6.88 years a nondescript little comet rounds the Sun at just over 2 AU, never getting closer than 1.06 AU to Earth. With an orbit that lies entirely between Mars and Jupiter and an estimated nucleus diameter of 3.4 km, 17P/Holmes barely gets bright enough to register on long exposure photographic or CCD images.

Understandably very few people ever took any notice of Comet Holmes and this year was no exception when it quietly reached perihelion on 4 May 2007. It was thus fading already when, on Wednesday, 24 October, it suddenly experienced an outburst causing it to brighten almost a million times, reaching naked eye visibility when it almost instantly brightened from magnitude 17 to about magnitude 2½. Within a day its star-like nucleus had expanded into a perfectly round, bright little disk, visible in binoculars and telescopes. It looked like no comet ever seen.

Suddenly people were aware of this virtually unknown comet and wanted to find out more about its history. It turns out that it was experiencing a similar major outburst when it was discovered by the English amateur, Edwin Holmes, exactly 115 years ago. In fact, it was around 4th or 5th magnitude when he discovered it in November 1892. In the next few weeks it faded and then underwent a second eruption 2½ months after the first.

Pinning down its orbit had its own set of problems, aggravated by its perihelion

distance of 2 AU and the perturbations of Jupiter and Saturn. At some stage it was thought to be the lost comet 3D/Bielä. Although the orbit seemed to be adequately secured when Comet Holmes was seen during the first two apparitions after discovery (1899 and 1906), it was suddenly lost and never seen despite predictions at virtually every return thereafter. Recovery seemed doubtful. It took until 1963 and with the help of a high-speed computer when B.G. Marsden integrated the motion of comet Holmes from 1899 to 1975 and issued predictions for the upcoming apparition of 1964. The comet was finally recovered by E. Roemer (U. S. Naval Observatory, Flagstaff station, Arizona) on 16 July 1964. She determined the magnitude as 19.2 and described the comet as very sharply condensed, with only a trace of coma. The measured positions indicated Marsden's prediction only needed to be corrected by +0.7 day. Its orbit is quite dynamic, regularly being modified by close approaches to Jupiter, the closest being 0.54 AU from Jupiter in December 1908, explaining why it got lost. The comet has been observed on every return since 1964.

Comet Holmes was not well placed for viewing from South Africa in 2007, particularly from the southern parts of the country where it only cleared the northern horizon by seven degrees at culmination. It gradually swelled till about half a lunar diameter without losing much brightness and some intricate detail was visible in a telescope. ☆