DIRECT OBSERVATION OF AN EXTRASOLAR PLANET!!

For the past twelve years or so, astronomers have been discovering planets orbiting other stars (i.e., exoplanets) using indirect observations. As a planet orbits a star (like the Earth orbiting the Sun), gravity causes the planet to orbit about the star. However, the tug-of-war also causes the star to orbit as well. (Technically, they both orbit around a “common center-of-mass”). So by watching the “wobble” of a star, astronomers can estimate the period, distance between the star and the planet, and mass of the planet. There are some star systems where multiple planets have been observed tugging on their common star. (http://exoplanets.org/)

However, it was reported on 14 November 2008 that the Hubble Space Telescope (HST) has actually imaged an exoplanet about the star Fomalhaut in the constellation Piscis Australis (southern fish). Fomalhaut is 25 light-years from the Earth.

Astronomers first started gaining an interest in Fomalhaut as a possible candidate for exoplanets when, in the 1980s, the satellite IRAS first discovered excess dust surrounding the star. In 2004, the HST imaged the dust surrounding Fomalhaut. A second image was taken 21 months later that showed an object moving in an orbit about the star (see figure, top center).

This object is “... 10.7 billion miles from the star, or about 10 times the distance of the planet Saturn from our sun” (nasa.gov) and orbits the star once every 872 years. The mass of the planet is at most 3 times the mass of Jupiter. For its mass, the planet appears to be brighter than expected. A possible ring-like structure around the planet, composed of ice and dust, could be reflecting more light, thus making the system appear brighter.

Is there life on the planet (Fomalhaut b)? Unlikely. The star itself is estimated to be 100-million-years old and will only live to the ripe old age of 1 billion years. The Earth, for comparison, is 4.6 billion years old, and our Sun should live for another 5 billion years.

Hubble needs lots of TLC

The Hubble Space Telescope (HST) has been in orbit for about 18 years. So, it is understandable that the HST does need attention every once in awhile. Now is that time. Another visit from the shuttle is needed to replace various components of the HST. The mission was originally scheduled to take place in October; however, a computer malfunction on the HST delayed the mission. The new mission will be to repair this component in addition to all the other systems originally slated for replacement. Currently, the mission is expected to launch sometime in 2009. Although research on HST was halted for a week, HST has recovered and resumed data collection.

What’s Up in the Sky?

Jupiter is still unmistakeable as a very bright object high in the Southern sky in the evening. Joining Jupiter, however, is an even brighter object: Venus (the evening star) is making a spectacular show as the very bright object to the lower right of Jupiter.