

New look at HD 10180 shows it might have nine planets

April 9 2012, by Bob Yirka



HD 10180 planetary system (Artist's Impression). Image: ESO/L. Calçada

(Phys.org) -- Astronomer Mikko Tuomi of the University of Hertfordshire, has found after looking at data regarding the solar system surrounding the star HD 10180, that it likely has nine planets making it the most highly populated solar system known to man (ours has just eight after the demotion of Pluto). He details his findings in a paper pre-published on *arXiv* (and set for publication in *Astronomy and Astrophysics*) describing how after studying slight wobbles by the star as it's tugged by planetary gravitation, he found what he believes is confirmation of a seventh planet, and evidence for two more.

HD 10180 is about 130 light years away from us, in the Hydrus constellation and was first [noted](#) by astronomers in 2010. At the time it

was thought the [solar system](#) consisted of just five planets, though there was speculation that it might have as many as seven. Since that time, other work has shown that there are likely six planets, five of which are believed to have a mass close to that of Neptune. The other appears closer in mass to Saturn. Researchers come to these conclusions by studying the way a star appears to wobble (a Doppler shift) as it responds to the gravitational pull of planets orbiting around it. By studying these light shifts, astronomers can deduce not only the size of the planet that causes it, but its period as well. Those originally noted had periods ranging from 5 to 2000 days.

Tuomi didn't make any new observations, instead he went back and looked at the original data using different kinds of statistical analysis techniques. In so doing, he found evidence for three more planets, all much smaller than the original six. These new planets, which he estimates to be 1.3, 1.9, and 5.1 times the size of Earth, have much shorter periods (1.2, 10 and 68 days) than the other planets indicating that they are very close to their star, closer even than Mercury is to our sun, which would mean they are far too hot to support water retention or life, at least as we know it.

It's important to note that such work doesn't actually prove that any of the planets suspected of revolving around HD 10180 actually exist, it merely offers strong evidence. Adding even more is statistical evidence offered by Tuomi suggesting that if there are truly [planets](#) there, they all appear to have stable orbits.

More information: Evidence for 9 planets in the HD 10180 system, arxiv.org/pdf/1204.1254v1.pdf

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