

HATS-6b Mystery Solved

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Abstract: In this paper it is presented a comprehensive theory which can explain HATS-6b.

Zhou:

"The existence of HATS-6b ... presents a challenge to planet formation theories -- any comprehensive theory of planet formation must explain why gas giants are uncommon around small stars, but still allow for the occasional formation of these planets,"

It presents a challenge to the nebular disk theory (it falsifies it actually), no gas giant should be that close to its host star. The gas giants are uncommon around small stars because they have smaller gravitational fields, it is harder for them to capture larger objects. The question is not, "still allowing for the occasional formation of these planets", the question should have been, "why are we assuming they are related?"

HATS-6b and HATS-6 are on different evolutionary timelines, the "gas giant" is a middle aged star which was adopted by the hotter, younger host as it was travelling the galaxy. The bigger hotter star has much more angular momentum (it is travelling though the galaxy), and the smaller one was free floating at one point before it was adopted, so its "formation" was in complete disregard of its current orbit.

This discovery just points out that gas giants are older stars which are adopted by younger hotter stars as they travel the galaxy. As

these stars evolve, the gas giant will further solidify into a rocky world and host life, and the younger host will further lose enthalpy becoming a “gas giant”. The theory which covers this is called “stellar metamorphosis”.