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Title: Lessons from hot Jupiters

Abstract:

In 1995, after years of effort, the first planet orbiting a sun-like star outside our solar system was found. The discovery of the gas-giant planet - named 51 Pegasi b after its parent star, 51 Pegasi - was wholly unpredicted based on the expectations that were gleaned from centuries of observation of our Solar System. 51 Pegasi b is a planet that's around the size of Jupiter. But instead of being far away from the sun like our own Jupiter, it's very close to its star. It is orbiting about one hundred times closer to its host star than Jupiter is to the Sun. The prevailing theory was, and still is, that the formation of this kind of planets requires icy building blocks that are available only in cold regions far away from stars. In this talk, I will review the progress to the most critical question currently facing exoplanet research: How do gas-giant planets like 51 Pegasi b end up so close to their stars? The answer to this question centers on critically evaluating the Copernican paradigm that our Solar System is typical.