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[2] Understanding Giant Planets

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Planets are common astrophysical objects. Giant planets, which are massive planets made of mostly hydrogen and helium, are the first planets to form in planetary systems, and due to their large masses they affect the dynamical evolution of the system. In addition, giant planets reveal critical information on the planetary birth environment and the formation process.

Gas giants are thought to have cores in their deep interiors, and the division into a heavy-element core and hydrogen-helium envelope is applied in both formation and interior models. I will briefly summarize giant planet formation models, and will show that the primordial internal structure of giant planets depends on their growth history and evolution. I will present current-state internal structure models of Jupiter, and their connection to high-pressure physics. Finally, I will discuss the importance of the recent theoretical results for interpreting the measurements of the Juno mission and for characterizing giant exoplanets.

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