

# Core instability models for planetary formation

- The principal aim of my PhD is to develop a simple model for computing planetary formation, which allows us to form a large population of planets and analyze them statistically, with the intention of comparing with observations and refine the actual theories of planetary formation.
- Our model is based on the core instability model for the gas accretion and the oligarchic growth regime for the accretion of solid core, in a disk where several embryos are allowed to form. We also consider type I and II migration of the embryos.

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- We have investigated the consequences that a different prescription for the solid and gas accretion rates would have on the mass and semi major axis distribution of extrasolar planets (Miguel & Brunini 2008, MNRAS 387, 463)
- We also have explored the effects of different rates of type I migration on the distribution, and studied the best conditions for the generation of habitable planets (Miguel & Brunini 2009. MNRAS 392, 391).
- Focusing our attention on planets with masses less than  $10 M_{Earth}$ , we have studied the effects produced by the collisions between the embryos: the distribution of obliquities and spin rates.
- Now we are analyzing the consequences on the planetary formation when different models for the solar nebula are considered, meaning different ice lines, and chemical composition.