

September 18, 2015  
MSE 2101 topics

- The nebular theory:
  - initial contraction and disk formation
  - formation of the protostar and planetesimals
  - condensation and accretion
  - clearing the nebula
- So why two types of planets?
- Ok, I get ice and other water compounds, but *gases*?
- Alternative models – what needs to be explained?
  - orderly motion of large bodies
  - two types of planets
  - small bodies
  - allowance for exceptions
- Examples of alternative models
  - Comte de Buffon's collision hypothesis
  - Chamberlin-Moulton's close encounter hypothesis
  - Schmidt's Sun passing through an interstellar cloud
- Challenges to the nebular theory
  - weird exoplanets – hot jupiters
  - stellar formation typically a violent process
  - planetary disks can linger a long long time