Planet Formation around Single and Binary Stars

Ji-Lin Zhou[1]
[1]*Department of Astronomy, Nanjing University, Nanjing 210093, China zhoujl@nju.edu.cn*

The detected explanted systems show some orbital characteristics that are quite different with our solar systems. While planets in solar systems are in near-circular orbits and have moderate distances to the sun, many planets in extra-solar systems locate either in close-in orbits, or in eccentric orbits. In this presentation, I will review the mechanisms that cause these difference, including the formation of terrestrial planets in close-in orbits; the excitation of eccentricities, and planetary accretion in binary system. Basically we think, inward migration of giant planet helps to trap embryos in mean motion resonance. In the case of embryos undergo type I migration, the migration speed is crucial in determine the final configuration . Planetary scatterings may be the major cause of orbital eccentricities. The presence of small inclination may be helpful to planetary accretion. These mechanisms are revealed by N body and hydrodynamic simulations, mainly based on some recent works.

References

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