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(陈卓)

Tsinghua University

Radiation hydrodynamic models of circumplanetary disks

Time: 15:00-16:00, 18 June (Tuesday), Shanghai time

Venue: N601 (TDLI)

Host: Hongzhe Zhou (周竑喆)

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Meeting ID: 270999458

Abstract:

During the final stages of its formation, a gas giant will typically develop a circumplanetary disk (CPD) around the planet, which can accrete some of the surrounding material. Meanwhile, satellites can grow and evolve within the CPD. Currently, there are few observational constraints on the temperature, density, and state of CPDs. In the hope of uncovering the interior of the CPDs, we conduct axis-symmetric 2D radiation hydrodynamic simulations. Our simulations suggest that the CPD of a gas giant may have temperatures as high as 2000K, which can sublime high-temperature-resistant dust such as silicates and dissociate H₂. In addition, the spin of the gas giant can affect the transfer of mass and angular momentum in CPD-gas giant interactions. In this report, I will show some physical processes of gas giant accretion through CPDs and discuss the formation and evolution of gas giants and their satellites under more realistic conditions.

Biography:

Chen Zhuo is now an associate research professor in IASTU at Tsinghua University. He graduated from the University Rochester in 2018 with a Ph.D. degree. Zhuo's research interests include radiation hydrodynamics, planet formation, stellar evolution, and high-performance computing.

