

**BOSTON
UNIVERSITY**

**Boston University College of Arts & Sciences
Institute for Astrophysical Research**

2018 - 2019 ASTROPHYSICS SEMINAR SERIES

Revealing Young Planet Population from ALMA Large Program-DSHARP

Despite thousands of planets have been discovered, these planets are billions of years old and we know little about their formation processes. To understand planet formation, we need to study young planets which are still growing in protoplanetary disks. Ideally, we would like to know both the properties of each young planet and the demographics of the young planets as a single population. ALMA Large Program -DSHARP has provided us unprecedented images of 20 protoplanetary disks, each with the resolution that is the same as the famous HL Tau ALMA image. A variety of disk features have been revealed and many of them are consistent with features induced by young planets in disks. I will summarize planet-disk interaction theory and highlight some recent theoretical developments in the field. Then, I will present our systematic study on planet-disk interaction using numerical simulations including both gas and dust components. These simulations have been used to constrain the properties of potential planets in DSHARP disks. I will highlight some of the findings, including one system with remarkable agreements between the observation and theory. Finally, I will present the demographics of the derived young planet population from the DSHARP sample, compare it with the demographics of known exoplanets, and discuss its implications to the planet formation theory.



Monday, January 28th

3:30 - 4:30 p.m.

725 Commonwealth Avenue | Room 502



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