Boston University College of Arts & Sciences
Institute for Astrophysical Research

2017-2018 Astrophysics Seminar Series

Shedding New Light on Star Formation, from Molecular Clouds to Disks.

Star formation is a multi-scale process. Star-forming clouds in our galaxy have sizes of a few tens of parsecs. Dense condensations within clouds, where individual (or groups of) stars form, are smaller by more than two orders of magnitude. Circumstellar envelopes and disks are even smaller. A complete picture of the star formation process thus requires understanding the gas structure and kinematics over a very wide range of spatial scales. I will present new interferometer (sub)millimeter data that have allow us to study the star formation environment at superb resolution, over a wide range of scales -from the scales of giant molecular clouds (~10pc) to the scales of circumstellar envelopes and disks (~100AU). New molecular line maps of the nearest high-mass star-forming cloud (the Orion molecular cloud) probe a variety of structures —such as filaments, bipolar outflows, shells, bubbles, and photo-eroded pillars - that reveal the dynamic and chaotic environment where stars forms. I will also present new ALMA observations that probe the infall of dense gas onto young protostellar systems and the impact outflows have on the circumstellar envelope —the main mass reservoir of the forming star. With even higher resolution, ALMA have allowed us to study the distribution of disk sizes and masses in the Orion Nebula Cluster.

Monday, March 19 at 3:30PM
725 Commonwealth Avenue
Room 502

Héctor Arce
Yale University