BOSTON UNIVERSITY

Astrophysics Seminar
Monday, October 26, 2015

Fire and ice: The role of energetic processes in the cold chemistry of planet-forming circumstellar disks

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3:15 pm
Refreshments
CAS Room 500

3:30 pm
Seminar
CAS Room 502

Abstract:

Planets form from the coldest, T<100 K, and densest parts of circumstellar disks around young stars. During this phase, the tempestuous nature of the star subjects the disk to relatively high fluxes of UV and X-ray photons and energetic particles. Simultaneously, the local star-forming environment may provide additional external UV and/or radioactive pollutants from recent massive stellar populations. These energetic agents play a vital role in protoplanetary disks' turbulent and thermal properties and in regulating important disk chemical reactions. Consequently, the overall molecular composition of the disk is impacted in distinct and observable ways, enabling the use of sensitive sub-mm observations of molecular emission to measure and eventually ``map out'' ionization in disks. Through such explorations we can begin to decipher where and to what extent these important energetic and ionizing processes operate, which will more broadly improve our ability to model and understand their underlying chemical and dynamical nature.

Next Week

- *Anna Pancoast*
  Harvard-Smithsonian CfA
- TBD

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