QPhysics
AT QUEENS COLLEGE

Colloquium Notice

Mordecai-Mark Mac Low

American Museum of Natural History

The Formation of Molecular Clouds and Massive Stars

In this talk I consider two questions. First, I investigate the formation of molecular clouds from diffuse interstellar gas. It has been argued that the midplane pressure controls the fraction of molecular hydrogen present, and thus the star formation rate. Alternatively, I and others have suggested that the gravitational instability of the disk controls both. I present numerical results demonstrating that the observed correlations between midplane pressure, molecular hydrogen fraction, and star formation rate can be explained within the gravitational instability picture. Second, I discuss how ionization affects the formation of massive stars. Although most distinctive observables of massive stars can be traced back to their ionizing radiation, it does not appear to have a strong effect on their actual formation. Rather, I present simulations suggesting that stars only ionize large volumes after their accretion has already been throttled by gravitational fragmentation in the accretion flow. At the same time these models can explain many aspects of the observations of ultracompact H II regions.

Monday
February 14, 2011
Starts at 12:15 PM
Coffee at 12:00 PM
Physics Conference Room, SB B326