

NAOC SEMINAR

Time: Tuesday 2:30 PM, May 5th Location: A601 NAOC

The Evolution of Star-Forming Cores in Molecular Clouds: Using Theoretical Models to Inform Observations

Prof. Doug Johnstone

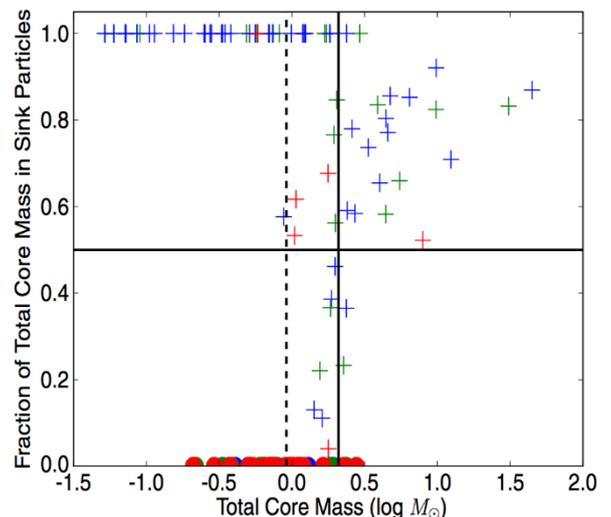
National Research Council of Canada (NRC-Herzberg)



Doug Johnstone received his Ph.D. degree in 1995 from Berkeley. He held an NSERC Fellowship at the Canadian Institute for Theoretical Astrophysics and then moved up a floor to become a professor at the University of Toronto. In 2001, he joined the National Research Council's Herzberg Institute of Astronomy as a research astronomer. For two years, from mid-2012 to mid-2014, he was the Associate Director of the James Clerk Maxwell Telescope in Hawaii.

Abstract

In this talk I will begin with a brief history of star formation studies at the James Clerk Maxwell Telescope and then will discuss two recent investigations that I have performed with graduate students and collaborators. The first investigation, with graduate student Steve Mairs, compares the formation of starless and protostellar cores in simulations with observations of cores real molecular clouds. We find that in hydrodynamic simulations the thermal Jeans instability measure can be used to predict the presence of protostars within cores and that the instantaneous mass of the core is not a great predictor of the final mass of the star. In the second investigation, we consider how a protostellar envelope should react to changes in the accretion luminosity of the deeply embedded protostar and how time-domain observations of the bolometric luminosity and spectral energy distribution might provide critical measures related to the underlying physics responsible for accretion.



Fraction of a total core's mass (protostar and envelope) found in the protostars contained within the object's boundaries plotted against total core mass for all objects in all three projections observed at three time steps.

All are welcome! Tea, coffee, biscuits will be served at 2:15 P.M.