

DEPARTMENT OF ASTRONOMY & ASTROPHYSICS

ASTRONOMY SEMINAR

November 1, 2011

Speaker : Prof. Igor Zinchenko
Russian Academy of Sciences, Russia.

Title : Structure and properties of high mass star
forming regions on various scales.

Day, Date & Time : Tuesday, November 15, 2011 at 1600 hrs

Venue : Lecture Theatre (AG-66)

(A. Gopakumar)

Abstract

On the basis of our multiline and continuum observations of a sample of high mass star formation (HMSF) cores we discuss their structure and properties on various scales, in particular variations of molecular abundances, radial profiles of density, temperature and velocity dispersion, etc. There are indications of small scale clumpiness in the cores. The parameters of the clumpiness are estimated from the smoothness of the line profiles. A few objects, in particular S255, were observed with SMA, VLA and GMRT at an angular resolution of a few arc seconds. SMA observations covered broad frequency ranges around 220, 230, 279 and 288 GHz. The continuum emission and about 50 spectral lines from about 20 different species were detected. VLA observations provide data on NH₃ (1,1) and (2,2) while at GMRT we mapped the 610 and 1280 MHz continuum emission. We combine these data to obtain a rather complete picture of this area. Distributions of various molecules are quite different. Several new clumps are revealed; some of them have no visible counterpart in continuum. In both components high velocity outflows and disk-like structures are present. We estimate physical parameters of the observed objects and discuss their chemistry.