S N BOSE NATIONAL CENTRE
FOR BASIC SCIENCES
Block JD, Sector III, Salt Lake, Kolkata 700 106

DEPARTMENTAL SEMINAR

Department of Astrophysics and High Energy Physics

25th May,2023 **11.30 AM** **ONLINE/ FERMION**

SPEAKER

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TITLE OF THE TALK

Magnetic Fields in Massive Star-forming Regions (MagMaR)

ABSTRACT

The importance of magnetic fields (B-fields) in the high-mass star-forming process is a long-standing question. Indeed, several observational properties in high-mass star-forming regions (e.g., high/low level of core fragmentation) are frequently explained invoking B-fields, despite the lack of direct evidence of their presence or their importance with respect to turbulence and gravity. Some efforts have been attempted to address the importance of B-fields by observing statistically significant samples, for example, with SMA and CARMA, but not so far with ALMA. Here, we introduce the first ALMA survey, Magnetic Fields in Massive Star-forming Regions (MagMaR). In MagMaR, 30 high-mass star-forming regions have been observed at 1.2 mm, resulting in ~0.3" resolution (~1000 au). A large variety of B-field morphologies is detected: (1) "simple" spiral- or hourglass-like, with little/no fragmentation; (2) filamentary, with B-field vectors sometimes parallel to the elongated dust emission and characterized with aligned fragmentation; (3) complex B-field morphology with highly clustered fragmentation. The initial findings of the survey and the results of some case studies will be presented in this talk.

HOST FACULTY

Dr. Ramkrishna Das, Associate Professor
Dept. of ASTROPHYSICS AND HIGH ENERGY PHYSICS

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