

## **ICTS Seminar**

- Title : Instabilities in strongly magnetized accretion disks and jets
- Speaker : Upasana Das, JILA University of Colorado Boulder, USA
- Date : Tuesday, November 20, 2018
- Time : 3:30 PM
- Venue : Emmy Noether Seminar Room, ICTS Campus, Bangalore
- Stability is a fundamental issue in the study of accretion disks Abstract : and jets, both of which are strongly governed by magnetic fields. First, we examine strongly magnetized accretion disks, which have a subthermal vertical magnetic field but a super-thermal toroidal field. Such disks can resolve several observational shortcomings of the standard accretion disk model. We perform a global linear stability analysis and find that the famous magnetorotational instability, which is believed to trigger angular momentum transport in accretion flows, gets suppressed in these disks. Next, we carry out a similar analysis of magnetized cylindrical jets to study the small-scale, internal instabilities. We analyze the importance of a thermal pressure gradient in a toroidal-field-dominated region, which are potential sites of magnetic energy dissipation that is essential to explain particle acceleration and radiation observed from jets. Interestingly, our findings lead us to a generic instability criterion.