

ICTS Seminar

- Title** : The Faraday Instability- Physical Phenomena, Mathematical Modeling, Experimental Evaluation
- Speaker** : Ranga Narayanan, University of Florida, USA
- Date** : Thursday, August 3, 2017
- Time** : 11:30 AM
- Venue** : Emmy Noether Seminar Room, ICTS Campus, Bangalore
- Abstract** : The Faraday instability occurs when vertically stacked fluid bilayers in bounded containers are subject to periodic accelerations in a direction that is normal to their common interface. The instability has its origins in the resonance between the imposed frequency and the system's natural frequency. Models show that curves of critical amplitude versus imposed frequency vary non-monotonically with the imposed frequency, for fixed cell widths. The competition arises between viscous damping at large frequency and small accelerations at small frequencies. The dip in a typical curve shifts with gravity level and this means that gravity can either stabilize or destabilize the system depending on the cell width. Our talk will focus on the theory and also display experiments in finite cells showing remarkable agreement with theoretical predictions. The presence of multiple energy states or co-dimension two points will be shown and the effect of gravity will be predicted.

1) in Collaboration with Kevin Ward (Univ. Florida), William Batson (New Jersey Inst Tech- Mathematical Sciences) and Farzam Zoueshtiagh (2) IEMN CNRS 8520, Team FILMS, Université Lille)