



**TIFR Centre for Interdisciplinary Sciences,
Narsingi, Hyderabad 500075**

Colloquium

Composite Fermions: The Magical Beauty of Emergence

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It is perhaps surprising that we can make any progress at all in understanding the behavior of a collection of a large number of interacting particles, given that even the problem of three interacting particles resists exact solution. The trick is to guess, guided by experiment, the emergent principles. I will give an overview of the quintessential many-body phenomenon of the fractional quantum Hall effect, and show how the emergence of new particles called composite fermions provides an explanation of this effect by unifying it with the well understood integer quantum Hall effect, while also revealing a treasure trove of new phenomena. I will also report on some recent work in collaboration with A. C. Archer that illustrates how the extraordinary quantitative accuracy of the composite-fermion theory helps resolve certain longstanding experimental mysteries.

Wednesday, Sep 18th 2013

4:00 PM (Tea/Coffee at 3:30 PM)

Conference Hall, TCIS