Open Talk

4th November, 2019 **3:00 PM** **Fermion**

SPEAKER

Dr. Aditya N Roy Choudhury

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TITLE OF THE TALK

Nonlocal vortex dynamics in type II superconducting thin films - effects of low rigidity

ABSTRACT

Vortices in superconductors are nanometer to micron sized objects occurring in large numbers in presence of magnetic fields. Vortices repel each other, feel an attraction towards a surrounding (pinning) potential, and respond to externally applied forces. Thus they exhibit a resemblance with electrons, and forms the basis for several fundamental condensed matter studies. In clean (defectless) superconducting systems, vortices also arrange themselves with a crystalline periodicity which exhibits long range elasticity effects. In this work we explore nonlocal force-velocity dynamics of a collection of vortices. Force is applied to the vortex ensemble at a point, and its motion is probed at a distance far away. Motion decreases at larger lengthscales owing to loss of ensemble rigidity. Some planned experiments in Nb and NbN superconducting thin films will be discussed.

HOST FACULTY

Dr. Atindra Nath Pal

Assistant Professor

Department of Condensed Matter Physics & Material Sciences

S. N. Bose National Centre for Basic Sciences