



BOSE COLLOQUIUM

23RD FEBRUARY, 2018 | 02:30PM | FERMION HALL



SPEAKER

Professor Debashish Chowdhury, *FNA, FASc, FNASc*.
"Prof. S. Sampath Chair" Professor, J.C. Bose National Fellow, and
Head of the Department, Department of Physics, Indian Institute of
Technology, Kanpur

TITLE

Nano-machine: bear on a mountainous landscape or frog in a lily pond?

ABSTRACT

The operation of a nano-machine can be described in terms of trajectories on a free energy landscape or as a sequence of discrete jumps on a network of mechano-chemical states. In this lecture, I'll establish the power of both these approaches with the specific example of a ribosome.

This machine not only transduces energy from one form to another but also processes information. I'll show how the competing demands of speed of translocation and accuracy of information processing by this machine leads to a thermodynamics uncertainty principle. I'll also discuss how we have utilized both these approaches in connecting thermodynamic quantities, obtained from cryo-electron microscopy, with kinetic data collected in single-molecule FRET experiments.