

Title: Quantum friction and its effects in the phase of a quantum system

Prof. Ricardo Decca, Indiana University-Purdue University, Indianapolis, USA

Date & Time- September 8th, Thursday at 10 am EST

SEMINAR LINK- <https://www.youtube.com/channel/UCAwzWog7PqFw5R0q90KI6KQ/featured>

**Bio:**

Prof. Ricardo Decca is the Department Chair of Physics and Co-Director of Nanoscale Imaging Center at Indiana University-Purdue University, Indianapolis. He obtained his Ph.D. in Physics from Instituto Balseiro, Universidad Nacional de Cuyo, Argentina, and subsequently held postdoctoral position at University of Maryland, College Park, MD. His research interests revolve around the use of Near-field Scanning Optical Microscopy (NSOM) to investigate the properties of condensed matter systems at the nanoscale. Main themes of his work include spectroscopic investigation of quantum systems, morphology of biomembranes, and search for new forces at the submicron range.

**Abstract:**

In this talk I will present our current efforts to perform a measurement of the elusive quantum friction. While there is now a more or less established theoretical picture on the expected friction experienced by a dipole moving in front of a dielectric plate, experimental results are lagging. At the heart of the problem is the issue that the force itself is minuscule, and the experimental approach to measure it is plagued with systematic contributions that will mask the desired signal. My theoretical collaborators have circumvented this problem by looking into the effects of quantum friction on the relative phase of a two-level system, akin the existence of a Berry phase.

I will show the elements of the calculation, the proposed system we are working on to see the results, and the current advances in our lab. I will discuss potential systematic errors and how to circumvent them.

