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Dated: 06.01.2025

DEPARTMENT SEMINAR NOTICE

SPEAKER: Ms. Aritra Ghosh
Prime Minister's Research Fellow
School of Basic Sciences
Indian Institute of Technology, Bhubaneswar, India

TITLE: Some classical and quantum exactly-solvable systems
with an equispaced spectrum

DATE & DAY: 07 January 2025 Tuesday

VENUE: Seminar Hall

TIME: 3.30 P.M.

ABSTRACT: Isochronous oscillators are those whose period of oscillation is independent of the energy / amplitude. While the harmonic oscillator is the chief example, there is another (unique) rational potential, namely, the isotonic oscillator that satisfies this requirement. In quantum mechanics, such potentials admit an equispaced spectrum of energies. I will first review the basics of these potentials, including the supersymmetric connection between the two. Then, I will present two nonlinear systems that are exactly solvable both classical and quantum mechanically. These systems belong, respectively, to the Liénard I and II class of equations. I will describe the full analytical solutions of these systems, both classically and quantum mechanically. If time permits, I will also discuss some pseudo-Hermitian extensions of the harmonic and isotonic oscillators.

All interested are cordially invited to attend.


Chairperson