



# INDIAN STATISTICAL INSTITUTE

Theoretical Statistics and Mathematics Unit, Kolkata

## ASHOK MAITRA MEMORIAL LECTURE

Date: February 21, 2024

Time: 04:15 PM

VENUE:

**L-infinity**

(5<sup>th</sup> Floor, A.N. Kolmogorov Bhavan), ISI Kolkata

TITLE:

**Metastability for a class of stochastic dynamics**

SPEAKER:

**Maria Eulalia-Vares**

Instituto de Matemática, Brazil

ABSTRACT:

*Metastability is a ubiquitous phenomenon in nature, with examples coming from different fields, including physics, chemistry, biology, climatology and economics. The objects of interest are systems that make transitions between metastable states or quasi-equilibria and the stable state. Metastable behavior is characterized by a long period of apparent equilibrium of a pure thermodynamical phase followed by an unexpected fast decay towards the stable equilibrium of a pure phase or a mixture. Interesting questions in metastability involve: the transition time, the characterization of a possible critical droplet that precipitates the fast convergence to equilibrium. I plan to recall some general aspects of metastability, keeping a closer look into the frame of stochastic dynamics. Based on a few concrete examples, I hope to discuss some of the motivations and to describe general features, concluding with a soft description of results for the stochastic Ising model in the two-dimensional lattice at fixed subcritical temperature, as obtained in [1].*

References:

[1] Gaudillière, A.; Milanesi, P.; Vares, M. E. Asymptotic Exponential Law for the Transition Time to Equilibrium of the Metastable Kinetic Ising Model with Vanishing Magnetic Field. *Jr. Stat. Phys.* 179, 263 - 308, 2020. <https://doi.org/10.1007/s10955-019-02463-5>

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