



# Theoretical Statistics and Mathematics Unit, Kolkata INDIAN STATISTICAL INSTITUTE

## SEMINAR

Date: January 19, 2026

Time: 04:15 PM

## VENUE:

**L- Infinity**

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

## TITLE:

**Contact process on interchange process**

## SPEAKER:

**Maria Eulalia Vares**

Federal University of Rio de Janeiro, Brazil

## ABSTRACT:

*We introduce a model of epidemics among moving particles on any locally finite graph. At any time, each vertex is empty, occupied by a healthy particle, or occupied by an infected particle. Infected particles recover at rate  $\lambda$  and transmit the infection to healthy particles at neighboring vertices at rate  $\lambda$ .*

*In addition, particles perform an interchange process with rate  $\nu$ , that is, the states of adjacent vertices are swapped independently at rate  $\nu$ , allowing the infection to spread also through the movement of infected particles. On  $\mathbb{Z}^d$ , we start with a single infected particle at the origin and with all the other vertices independently occupied by a healthy particle with probability  $p$ , if this is or empty with probability  $1-p$ . We analyze the asymptotic behavior of the threshold value for the infection rate as a function of  $\nu$  and  $p$ , i.e. above which the infection persists with positive probability, analyzing its asymptotic behavior as  $\nu$  tends to infinity for fixed  $p$ .*

*This is part of work in collaboration with M. Hilario, D. Ungaretti, and D. Valesin. (preprint: arXiv:2509.02747).*

**ALL ARE CORDIALLY INVITED**