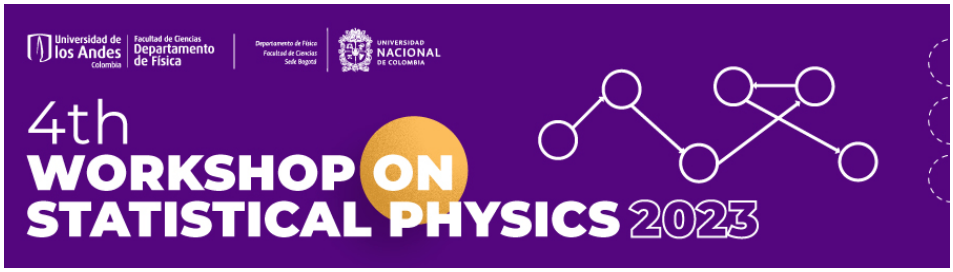

Contribution ID: **30** Tipo: **Invited talk**

Distinguishability versus Indistinguishability of Agents in Metapopulation Epidemic Models

jueves, 5 de octubre de 2023 10:30 (20 minutos)

The analysis of contagion-diffusion processes in metapopulations is a powerful theoretical tool to study how mobility influences the spread of communicable diseases. Here we address the impact that recurrent patterns of mobility, and the spatial distribution of distinguishable agents, have on the development of epidemics in large urban areas. We incorporate the distinguishable nature of agents with respect to both their residence and their usual destination. The proposed model allows both a rapid calculation of the spatiotemporal pattern of the epidemic trajectory and the analytical calculation of the epidemic threshold. This threshold is calculated as the spectral radius of a mixing matrix that encompasses the residential distribution and the specific travel patterns of the agents. We demonstrate that the simplification of indistinguishable individuals overestimates the value of the epidemic threshold, and we will also show the usefulness of the addition of distinguishability in designing epidemiological control and surveillance strategies.

Autor primario: Prof. GÓMEZ GARDEÑES, Jesús (Universidad de Zaragoza)

Presentador: Prof. GÓMEZ GARDEÑES, Jesús (Universidad de Zaragoza)

Session Classification: Invited Talks

Track Classification: Statistical Physics