UNIVERSITY OF MIAMI
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University of Miami, Physics Department Colloquium

Date: Wednesday, Feb 18, 2026
Time: 4:00 pm – 5:00 pm
Location: Physics Library – Rm 335, Knight Physics Building

The Role of Disorder in Recurrent Neural Networks

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Abstract

The mathematical study of brain networks has been an active field of research for over 50 years. One of its main challenges is the study of dynamics on networks with one or multiple sources of disorder. Sources of such disorder are for example quenched disorder at the level of the dynamic nodes or their connecting edges. In this colloquium, I will discuss different mean-field approaches that allow to study the role of structural disorder for the emergent network dynamics. I will put particular emphasis on the Ott-Antonsen ansatz and its application to the study of neural heterogeneity, highlighting my own contributions to this evolving field. Finally, I will discuss the relevance of these approaches to the study of structure-function relationships in the brain.