Seminar

Wednesday, 4 February 2026 - h. 14:00

Sala Tazzari (Dipartimento di Fisica)

Dr. Zeyu LI

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"Generative AI for Physical Systems"

Abstract

Recovering spatiotemporal dynamics based on observation data is essential for scientific research and engineering applications, helping us better understand and predict the physical world. However, partial observations, which can be extremely sparse and noisy, make reconstruction difficult, and conventional methods based on numerical simulation are computationally expensive. In this seminar, I will discuss our research into deep generative models as a scalable alternative for data-driven physics. Specifically, I will present a framework based on diffusion models that enables the high-fidelity reconstruction of turbulent flow fields from highly limited sensor data. We demonstrate that these models can effectively capture the complex structural dependencies of dynamical systems, offering a path toward more efficient and accurate predictive modelling in fluid mechanics.