
El Departamento de Matemática y Física Aplicadas tiene
el agrado de invitar al seminario

A Deep Learning Approach for Quantum Entanglement and Quantum Discord Discrimination



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Resumen:

In this work, we propose a deep learning-based approach for quantum resource classification using convolutional autoencoders (CAE). We train models to distinguish entangled from separable states for $d \times d$ systems with $d = 2, \dots, 7$, which enables identification of bound and free entanglement. Through extensive numerical simulations across various quantum state families, we demonstrate that our model achieves high classification accuracy. Furthermore, we leverage the learned representations to generate samples of bound entangled states—the rarest form of entanglement and notoriously difficult to construct analytically. We separately train the same CAE architecture for detecting the presence of quantum discord and show that the model also exhibits high accuracy while requiring significantly less training time.

Miércoles 19 de Noviembre 2025, 16:10 hrs
Auditorio San Agustín (Facultad de Ingeniería)