

# Seminario

## Departamento de Física Teórica

# *“Cryogenic observatories for astroparticle physics”*

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### Abstract:

Cryogenic underground observatories based on transition-edge sensors (TES) provide a powerful and versatile platform for astroparticle physics, combining low energy thresholds, excellent energy resolution, and intrinsically low-background operation in deep underground environments. The RES-NOVA project exemplifies this approach through the deployment of  $\text{PbWO}_4$  crystals grown from archaeological lead. The use of archaeological lead ensures extremely low intrinsic radioactivity, while the high density of lead enables compact detector configurations with enhanced sensitivity to coherent elastic neutrino–nucleus scattering (CEvNS). The primary scientific objective is the detection of supernova neutrinos. While waiting for the next galactic supernova, the same infrastructure enables competitive searches for dark matter across different mass regimes, as well as sensitivity to other rare processes beyond the Standard Model. This contribution will discuss the underlying detector technology, the key experimental challenges, and the projected physics reach of next-generation cryogenic observatories.

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Hora: 16:10 horas

Lugar: Seminario de Física Atómica, Molecular y Nuclear