

“LiquidO: Fundamental Particle Detection Beyond Transparency”

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Resumen:

For several decades, radiation detection has been vital to society and humanity, forming the experimental foundation of much of our understanding of the Universe. Most light-based detection technologies, such as those relying on scintillation and Cherenkov radiation, rely on a fundamental principle: the medium's impeccable transparency, enabling detection with only a handful of photons. This requirement becomes especially critical in large instrumented volumes, such as those used in neutrino physics. While these technologies have achieved significant success, including several Nobel Prize-winning discoveries, they are constrained by notable limitations. In particular, event-wise particle identification is rare and often impractical. As a result, experiments rely on cumbersome and costly shielding, such as deep underground laboratories, to mitigate overwhelming cosmic-ray backgrounds.

In this seminar, I will introduce the innovative LiquidO technology, which uniquely utilises light detection in “opaque” media and has also pioneered the notion of opaque scintillation. LiquidO enables event-wise imaging of subatomic particles, allowing event topology and fast timing to facilitate particle identification even at energies as low as a fraction of a MeV. I will conclude with highlights on prospects for LiquidO-based experiments.

Fecha: viernes, 23 de mayo de 2025

Hora: 12:00 horas

Lugar: Seminario de Física Atómica, Molecular y Nuclear