

Probing the Foundations of the Standard Model: From Precision Pion Decays to Large-Scale Neutrino Detectors

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How solid is our current understanding of the subatomic world? In this colloquium, we will explore two complementary experiments that test the Standard Model from vastly different scales. First, we'll dive into the PiENu (Pioneer) experiment, a high-precision measurement of pion decays that probes whether all leptons truly obey the same fundamental laws—known as lepton universality. Any tiny deviation here would shake the foundations of particle physics. Next, we'll shift to the Hyper-Kamiokande project, a colossal water Cherenkov detector designed to study neutrino oscillations, search for proton decay, and observe astrophysical neutrinos. Despite their contrasting approaches—one focusing on exquisitely precise measurements and the other leveraging massive detector volumes -both experiments target the same central question: Where, if at all, does the Standard Model break down? Join us to discover how these large- and small-scale efforts together advance our quest to understand the nature of matter, antimatter, and the forces governing our universe.

30 ABRIL
2025

13:00

Salón de Seminarios de
Gravitación y Física de
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