

Seminário Extraordinário DRCC, Segunda 10/03/2025 14:00h

Local: Auditório DRCC

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Title: From Neutrinos to QCD and Dark Matter: Looking Forward for Exciting Physics

Abstract: Physics searches and measurements at high-energy collider experiments traditionally focus on the high- p_T region. However, for light and weakly-coupled particles, this emphasis may be misguided as light particles tend to be highly collimated around the beam line, allowing sensitive searches with small detectors. The FASER and SND@LHC experiments were specifically designed to capitalize on this opportunity, expanding the LHC's physics potential by searching for feebly interacting particles and studying neutrino interactions at TeV energies. In this talk, I will discuss the potential of this emerging forward physics program to offer unique insights into forward particle production, probe proton structure in otherwise inaccessible regimes, address unresolved issues in astro-particle physics, and search for a diverse array of new particles. Furthermore, I will demonstrate how improvements in QCD precision calculations and new Monte Carlo generator tunes can enhance our ability to achieve these goals.