

Seminário, Quarta-feira 14/12/2022 16:00h

Local: Auditório: Méson Pi - DRCC

Caio Licciardi (SNOLAB/McDonald Institute)

Titulo: Search for new physics with rare events at SNOLAB

SNOLAB is the deepest cleanest lab in the world. Its location at 2 km underground in Sudbury, Canada, allows searches for hypothetical rare events that would provide a window beyond our Standard Model (SM) of particle physics. This talk will take you on a journey into some of the ongoing activities in the lab, with emphasis on searches using xenon. The primary focus of our group is neutrinoless double beta decay (0vbb) in Xe-136. If observed, this process would show for the first time violation of the lepton number conservation, a global symmetry of the SM. SNOLAB's Cryopit is the intended home for nEXO, a liquid xenon time-project chamber with sensitivity of the order of 10^{28} yr to 0vbb half-life. We will describe our contributions to this experiment that includes machine learning for data analysis and Monte Carlo simulations. This talk also covers our efforts to build a successor for this tonne-scale detector, the Xe-Still Project, that is investigating cryogenic distillation as an alternative for xenon enrichment.