

Seminário, Segunda 04/11/2024 14:00h

Local: Auditório Pi

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Title: From reactor and solar neutrinos to neutrinoless double-beta decay

Abstract: The wide physics range of the SNO+ experiment The discovery of neutrinoless double beta decay (0vbb) would have a far-reaching impact in particle physics and cosmology, so its search is a key goal of the global neutrino physics community. One of the leading techniques for the experimental search of 0vbb is that of employing large liquid scintillator detectors, that allow very large masses of isotope, low intrinsic backgrounds and several background reduction strategies. The technique was suggested by Raghavan 30 years ago and first implemented by KamLAND-Zen, that uses Xenon gas dissolved in the scintillator. The SNO+ liquid scintillator experiment, successor of the Sudbury Neutrino Observatory in Canada, is taking data at SNOLAB and has been developing the loading of natural Tellurium for its upcoming double beta decay phase, which is expected to push the sensitivity with Te-130 and pave the way for future higher-loading (and higher mass) developments. However, the large mass and very stringent requirements on several types of backgrounds make SNO+ an excellent detector for other types of signal, chiefly solar, reactor and geo-neutrinos. This talk will review the motivations, the already achieved results, and the prospects for the various neutrino physics measurements that SNO+ will be able to carry out in the upcoming years.