



LNGS SEMINARS

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Recent results from NEXT and future development

- Abstract -

The NEXT program is developing the technology of high pressure xenon TPCs with electroluminescent readout for neutrinoless double beta decay ($bb0\nu$) searches. During the last three years, we have been operating the NEXT-White detector, a radiopure TPC deploying 5 kg of mass. Next-White has convincingly shown the feasibility of the technology in terms of operational stability, energy resolution and background suppression capabilities thanks to the robust topological signature available in the detector. The next step for the program is the commissioning and operation of NEXT-100, which scales the longitudinal dimensions of NEW by a 2.5:1 factor and will deploy 100 kg of mass. NEXT-100 will search for $bb0\nu$ processes starting in 2020 and can reach a sensitivity close to 10^{26} year in the lifetime of the Xe-136 $bb0\nu$ decay. In addition, NEXT-100 will be a unique springboard for the next generation of detectors, which will set to explore the inverse hierarchy, deploying masses in the ton range and aiming to sensitivities of 10^{27} - 10^{28} in the $bb0\nu$ lifetime. In this talk I will review the results obtained by Next-White, and discuss the prospects of the technology, including the intriguing possibility of building a detector capable to tag the Ba^{++} ion produced in the Xe-136 decay, and thus providing a background free experiment.

June 27, 2019 - h 2:30 pm

LNGS - "E. Majorana" room

https://agenda.infn.it/e/gomez_cadenas_2019