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## **The NEXT experiment to search for the neutrinoless double beta decay of Xe-136 ( $15' + 5'$ )**

*Friday 5 August 2016 17:00 (20 minutes)*

The NEXT collaboration aims to build a 100 kg scale detector for neutrinoless double beta decay searches. The NEXT-100 is a gaseous Time Projection Chamber (TPC) operating with Xenon enriched at 90% in the Xe-136 isotope. Phase-I of the NEXT-100 detector, NEXT-White (NEW), is starting operation in spring 2016. With about half of the NEXT-100 linear dimensions (about 10 kg of xenon), NEW has the right size for demonstrating and fully understanding the different technological solutions to be implemented in NEXT-100, while keeping the number of sensors at a reasonable level. Furthermore, NEW is the first NEXT detector that is built with highly radio pure materials and that it will be operating underground in the Laboratorio Subterráneo de Canfranc (LSC). Its operation will permit a first in-situ measurement of the backgrounds to be expected in NEXT-100.

In this talk I will explain the NEXT principle of operation and its unique advantages over alternative detection techniques in the search for neutrinoless double beta decay. I will describe the technical solutions adopted for the NEW detector. Finally, I will present a status of the project and the first results on detector performance from the initial period of operation.

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