ID de la contribución : **150** Tipo : **Poster**

Latest results of NEXT-DEMO, the prototype of the NEXT-100 double beta decay experiment

In this poster we present the latest results of NEXT-DEMO, a 1:4.5 scale prototype of the NEXT100 detector, a high-pressure xenon gas TPC that will search for the neutrinoless double beta decay of Xe-136.

X-ray energy depositions produced by the de-excitation of Xenon atoms after the interaction of gamma rays from radioactive sources have been used to characterize the response of the detector obtaining the spatial calibration needed for close-to-optimal energy resolution. Our result, 5.5% FWHM at 30 keV, extrapolates to 0.6% FWHM at the Q value of Xe-136.

Additionally, alpha decays from Radon have been used to measure several detection properties and parameters of xenon gas such as electron-ion recombination, electron drift velocity, diffusion and primary scintillation light yield. Alpha spectroscopy is also used to quantify the activity of Radon inside the detector, a potential source of background for most double beta decay experiments.

Summary

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Clasificación de temáticas : Neutrino Physics