



Contribution ID: 116

Type: **Poster**

Backgrounds and sensitivity of the NEXT double beta decay experiment

The NEXT experiment will search for the neutrinoless double beta decay ($bb0\nu$) of Xe-136 using an electroluminescent high-pressure xenon gas time projection chamber. Such a detector boasts two important technological advantages for $bb0\nu$ searches: excellent energy resolution (better than 1% FWHM at the Q value of Xe-136) and event topology reconstruction to identify signal and background. The experiment is approved for operation at the Laboratorio Subterráneo de Canfranc (LSC), in Spain. In this poster, we describe the background model of the experiment, which makes use of a detailed detector simulation and the results of material screening to predict a background rate, $5E-4$ counts/(keV kg yr), which is among the lowest in the field. This translates into excellent sensitivity to the effective Majorana neutrino mass, exploring the degenerate region of neutrino masses down to 100 meV after a 5-years run.

Primary author: MARTÍN-ALBO, Justo (IFIC (CSIC & Universitat de Valencia))

Co-authors: GOMEZ-CADENAS, J.J. (IFIC (CSIC & Universitat de Valencia)); MUÑOZ VIDAL, Javier (IFIC (CSIC & Universitat de Valencia)); NEBOT GUINOT, Miquel (IFIC (CSIC & Universitat de Valencia)); FERRARIO, Paola (IFIC (CSIC & Universitat de Valencia))

Presenter: MARTÍN-ALBO, Justo (IFIC (CSIC & Universitat de Valencia))

Track Classification: Neutrinoless Double Beta Decay