World Academy of Science, Engineering and Technology
International Journal of Nuclear and Quantum Engineering
Vol:9, No:09, 2015

The Next Generation Neutrinoless Double-Beta Decay Experiment nEXO

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Abstract : The nEXO Collaboration is designing a very large detector for neutrinoless double beta decay of Xe-136. The nEXO detector is rooted in the current EXO-200 program, which has reached a sensitivity for the half-life of the decay of 1.9x10^25 years with an exposure of 99.8 kg-y. The baseline nEXO design assumes 5 tonnes of liquid xenon, enriched in the mass 136 isotope, within a time projection chamber. The detector is being designed to reach a half-life sensitivity of > 5x10^27 years covering the inverted neutrino mass hierarchy, with 5 years of data. We present the nEXO detector design, the current status of R&D efforts, and the physics case for the experiment.

Keywords : double-beta, Majorana, neutrino, neutrinoless
Conference Title : ICHEP 2015 : International Conference on High Energy Physics
Conference Location : Istanbul, Türkiye
Conference Dates : September 28-29, 2015