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First NEXT TPC prototypes for neutrinoless double-Beta search

NEXT stands for Neutrino Experiment with a Xenon TPC. This is a double-β decay experiment, recently funded and approved for operation in the new underground facility, the Canfranc Underground Laboratory (LSC) in Spain. The purpose of NEXT is to build and operate at the LSC a 100 kg high-pressure xenon gas (HPGXe) TPC, enriched with 136Xe isotope, to measure its double-β decay, both with and without neutrinos. The NEXT collaboration is at present integrated by several Spanish Universities and research institutions as well as foreign institutions as University of Coimbra (Portugal), Saclay (France), LBNL (USA) and Texas A&M University (USA).
The NEXT TPC is an electroluminiscent (EL) TPC with separated energy and tracking functions to record the energy and the tracks of the double-beta events using different technologies.
The first NEXT prototype called NEXT-0 instrumented with one PMT and operated with xenon gas at a pressure of 10 Bar, is presently being commissioned at IFIC. A larger prototype called NEXT-1, instrumented with multi-PMT and multi-MPPC arrays, is being designed and constructed and will be commissioned in the fall of year 2010.
The first EL TPC prototypes NEXT-0 and NEXT-1 instrumented with PMTs and MPPCs are described and the results of the first measurements of the energy resolution and the primary scintillation yield are presented.

Summary (Additional text describing your work. Can be pasted here or give an URL to a PDF document):

Please refer to my very recent NIMA article available online at :

http://dx.doi.org/10.1016/j.nima.2009.10.076

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