

High Pressure Xenon Detectors for Rare Physics Searches

Sunday, 8 September 2013 19:30 (0 minutes)

(On behalf of the NEXT collaboration) The existence of neutrinoless double beta decay and WIMP dark matter are both important questions that could be addressed by xenon gas-based detectors. We describe results obtained with the NEXT (Neutrino Experiment with a Xenon TPC) prototype for research and development towards the direct detection of neutrinoless Double Beta decay and Dark Matter (NEXT-DBDM). Good energy resolution (extrapolated to 0.5% FWHM at the ^{136}Xe double beta Q-value) and tracking capabilities have been demonstrated in approximately 15 bar xenon gas. The ability to distinguish between electron and nuclear recoils in xenon gas using the simultaneous observation of primary scintillation (S1) and ionization (S2) has also been demonstrated.

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