

EXO-200

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EXO-200 is the first phase of the Enriched Xenon Observatory (EXO) experiment, which searches for neutrinoless double beta decay in Xe-136 to measure the mass and probe the Majorana nature of the neutrino. EXO-200 consists of 200 kg of liquid Xe enriched to 80% in Xe-136 in an ultra-low background TPC. Energy resolution is enhanced through the simultaneous collection of scintillation light (using Large Area Avalanche Photodiodes (LAAPD's) and ionization charge. It is being installed at the WIPP site in New Mexico, which provides a 2000 meter water-equivalent overburden. EXO-200 will begin taking data in 2009, with the expected two-year sensitivity to the half-life for neutrinoless double beta decay of 6.4×10^{25} years. According to the most recent nuclear matrix element calculations, this corresponds to an effective Majorana neutrino mass of 0.13 to 0.19 eV. It will also measure the two neutrino mode for the first time in Xenon 136.

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