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EXO-200: Detector Performance and neutrinoless double-beta decay search results WOLFHART FELDMEIER, Tech Univ Munich, EXO COLLABORATION — Neutrinoless double-beta decay provides a strong probe of physics beyond the standard model. The observation of such a process would establish that the neutrino and the anti-neutrino are the same particle - a so called Majorana particle - and would help determine the absolute mass scale of the neutrino. The Enriched Xenon Observatory (EXO) is an experimental programme designed to search for neutrinoless double beta decay of Xenon 136. Its current phase, EXO-200, consists of a time projection chamber with an active mass of more than 100 kg of liquid Xenon enriched to ∼80%. The system is situated at the Waste Isolation Pilot Plant in New Mexico and is continually taking data since early May 2011. The first search with an exposure of 32.5 kg-yr observed no signal with a background rate of 1.5E-3 counts/kg/yr/keV in the ?1 sigma region of interest. This sets a lower limit on the half-life of the neutrinoless double-beta decay T1/2 (136Xe) > 1.6E25 yr (90% CL), which translates into an effective light Majorana neutrino mass of less than 140 - 380 meV, depending on the matrix element calculation. This talk will discuss the performance of the EXO-200 detector and its latest physics results.

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