



ID de Contribution: 56

Type: **Ordinary**

Results of EXO

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EXO-200 is a double beta decay experiment, that uses ~200kg of liquid Xe, enriched to ~80% Xe-136, in a cylindrical time projection chamber. EXO-200 is located at the WIPP facility near Carlsbad, New Mexico. Double beta decay is a second order

weak process in the Standard Model $(A,Z)X \rightarrow (A,Z+2)Y + 2e + 2\nu$

(2 neutrino double beta decay) and has been measured with 11 even-even isotopes. The first measurement in Xe-136 was made by EXO-200 in 2011, with a half-life of $(2.23 \pm 0.017 \text{ stat.} \pm 0.22 \text{ sys.}) \times 10^{21} \text{y}$, which is the longest lived decay directly observed. If the neutrino has a Majorana mass, then it will be allowed to decay via neutrinoless double beta decay $(A,Z)X \rightarrow (A,Z+2)Y + 2e$, which violates B-L symmetry. The rate of 0 neutrino double beta decay is related to the Majorana mass of the neutrino. In this talk I will discuss EXO-200 result from summer 2012 for the 0 neutrino double beta decay half-life of greater than $1.6 \times 10^{25} \text{y}$ (90% CL), which, depending on the nuclear matrix model used, gives a Majorana neutrino mass of 140-380meV. I will also talk about future physics with EXO-200 and the planned tonne scale Xe-136 detector nEXO.

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Classification de Session: Neutrinos

Classification de thématique: Experiment