Abstract Submitted
for the APR11 Meeting of
The American Physical Society

Status of the EXO gas detector R&D KIRILL PUSHKIN, Department of Physics and Astronomy, University of Alabama, EXO COLLABORATION — The EXO collaboration is searching for neutrinoless double beta decay using 80% isotopically enriched Xenon (^{136}Xe). A 200 kg liquid phase detector running currently at WIPP is expected to reach a Majorana neutrino mass sensitivity of $\sim$135 meV. EXO is also conducting R&D toward a high pressure xenon gas detector using enriched ^{136}Xe at up to 10 bar of pressure. This technique might offer better energy resolution than a liquid Xenon detector and allow discrimination between single and double electrons thus suppressing detector background. The high pressure xenon detector would utilize scintillation light to attain high energy resolution. Achieving good energy resolution requires very low concentration of electronegative impurities in the gas and, in turn, reliable and robust purification techniques. Detection of Ba^{++} ions, not possible in liquid xenon, may be possible in the gaseous phase. Ba^{++} ions could be transported by high electric fields in the gas to a nozzle where they can be subsequently extracted and detected in order to separate signal events from radioactive background. The status of the detector design, construction, Ba^{++} identification, gas handling system, purification, and vacuum-sampling system will be presented.

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Date submitted: 14 Jan 2011 Electronic form version 1.4