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Status of ongoing R&D for the EXO-GAS experiment KIRILL PUSHKIN, Department of Physics and Astronomy, University of Alabama, EXO COLLABORATION — The EXO collaboration searches for neutrinoless double beta decay using 80% isotopically enriched Xenon (^{136}Xe) to measure neutrino mass and probe its Majorana nature. A 200 kg liquid phase detector is currently running at WIPP. EXO is also conducting R&D on a high pressure xenon gas detector using natural Xe, with pressures of 1-10 atm. This technique may offer superior energy resolution than a liquid Xenon detector and may allow discrimination between single and double electron events thus suppressing detector background. A high pressure xenon detector would use secondary scintillation light to enhance energy resolution. Achieving good energy resolution requires very low concentration of electronegative impurities in the gas and, therefore, needs to exploit reliable purification techniques. Another opportunity offered by the gaseous phase may be to detect Ba^{++} ions which could be transported by high electric fields through the gas to a nozzle, extracted into a lower pressure region and detected in order to separate signal events from radioactive background. The status of the EXO-GAS experiment, its detector design, construction, Ba^{++} identification, gas handling system, purification, and vacuum-sampling system will be presented.

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