

Abstract Submitted
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Xenon purity measurements via mass spectroscopy for the EXO-200 double beta decay experiment¹ YUNG-RUEY YEN, University of Maryland, EXO COLLABORATION — We report on the construction and operation of a gas sampling and measurement system for the EXO-200 double beta decay experiment. In order to observe ionization charge and scintillation light from the double beta decay event, EXO requires the concentration of electronegative impurities such as oxygen to be less than one part per billion. We have constructed a dedicated gas sampling and measurement apparatus to monitor for the presence of these impurities and to determine their source. Half-liter samples of xenon gas are collected at various points in the EXO-200 gas handling system, and their composition is analyzed using a RGA mass spectrometer. In order to achieve the required sensitivity, the apparatus includes a cold trap which removes most of the bulk xenon from the sample before it reaches the RGA. This system has allowed us to certify the purity of the commercial xenon source cylinders before detector filling and to monitor the effectiveness of the gas purifiers.

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