

Results of nEXO detector development

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The nEXO collaboration is developing a low-background detector to search for neutrinoless double beta decays in 5 tonnes of liquid xenon enriched in the isotope Xe-136. The detector concept is based on the success of the EXO-200 detector. However, the more than 20-fold increase in xenon mass would benefit greatly from the development of new technologies to record 175 nm scintillation light and charge signals of events within the detector. The nEXO collaboration identified Silicon photon multipliers (SiPMs) and charge readout tiles as the devices of choice for this application. Inside the detector, an area of about 4m^2 has to be covered with SiPM devices to achieve an anticipated energy resolution of $< 1\%$ with nEXO. Recent measurements with small-scale prototypes of these devices demonstrated their suitability for the application in nEXO. Parallel to these developments, radioactivity studies of materials for the construction of nEXO are performed and HV tests are conducted to ensure that a drift field of at least 400 V/cm can be applied to nEXO without causing HV breakdowns. The development of the nEXO baseline concept is well advanced and results of the development will be presented.

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