

Study of Radon background in the SuperNEMO detector

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The goal of the SuperNEMO experiment is the search for neutrinoless double-beta decay ($0\nu\nu\beta\beta$), the observation of which would prove that the neutrino is a Majorana particle. As $0\nu\nu\beta\beta$ is a hypothetical and extremely rare process, it is essential to have the lowest level of background possible. ^{222}Rn is a gaseous isotope which could emanate from the detector materials or diffuse from the air of the laboratory into the detector, and its daughter isotope ^{214}Bi with $Q_{\beta}=3.27$ MeV can contribute to the double-beta background. The ^{222}Rn activity inside the SuperNEMO tracker demonstrator module must be significantly reduced down to 0.15 mBq/m³. This poster will detail anti-radon strategies used in SuperNEMO and present the status of the ^{222}Rn analysis based on first data compared to simulation using the topology of the ^{214}Bi - ^{214}Po decay event, i.e. one electron followed by a delayed alpha.

Alternate track

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Yes

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