

Background reduction and status of the SuperNemo experiment

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The SuperNemo experiment is looking for neutrinoless double beta decay using the combination of tracking and calorimeter techniques. The aim of SuperNemo is to achieve a sensitivity for the neutrinoless double-beta decay half-life of 10^{26} y and Majorana mass scales ~ 50 - 100 meV.

The first module of SuperNemo which is under construction, will contain 7kg of ^{82}Se as $2\beta 0\nu$ source, in the form of thin foils. To achieve the sensitivity goals, the calorimeter, the tracker and the $2\beta 0\nu$ sources have been constructed taking very special care on the radiopurity.

The calorimeter employing 8-inch low radioactivity PMTs coupled to polystyrene scintillators is completed. The production of the tracker modules is also completed and dedicated measurements indicate that the Rn activity at the required level of $150 \mu\text{Bq}/\text{m}^3$ can be achieved with reasonable flow-rates. The source production is ongoing and long-term dedicated radiopurity measurements have been performed.

In this talk I will present the fabrication of the source foils and their radiopurity measurement, the control of the Rn diffusion and emanation as well as selected results of the material screening. I will also present the status of the construction of the first SuperNemo module.

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