

## Searching for the neutrinoless double beta decay with the SuperNEMO experiment

The SuperNEMO experiment is looking for the neutrinoless double beta decay which, if observed, would prove the Majorana nature of the neutrino. Under the assumption neutrinos are indeed identical to their antiparticles, the detector could not only constrain the effective neutrino mass but also identify precisely the mechanism responsible for the neutrinoless double beta decay among the several hypothesized today (light Majorana neutrino exchange, Right-Handed Currents, etc...).

The unique detector design combines tracking and calorimetry techniques allowing a full event topology reconstruction and thus, a powerful background identification and rejection. It also gives access to other rare processes such as the double beta decay to the excited states of the daughter nucleus.

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