

Search for neutrinoless double beta decay: latest results from NEMO-3 and plans for SuperNEMO

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The NEMO-3 experiment, located in the Modane Underground Laboratory, is searching for neutrinoless double beta decay since 2003. We will present the latest results for seven isotopes used on NEMO-3: ^{48}Ca , ^{96}Zr , ^{82}Se , ^{100}Mo , ^{116}Cd , ^{130}Te and ^{150}Nd . We observe no evidence for neutrinoless double beta decay and based on ^{100}Mo data set an upper limit on the effective Majorana neutrino mass to be in the range 0.45 - 0.90 meV, depending on the nuclear matrix element. NEMO-3 data can also be interpreted in terms of alternative transition models, such as weak right-handed currents or Majoron emission.

SuperNEMO is a next-generation experiment exploiting the successful tracking plus calorimetry technology of the NEMO-3 experiment. SuperNEMO will use about 100 kg of ^{82}Se and is designed to reach sensitivity to a half-life greater 10^{26} years. We will briefly describe main challenges before SuperNEMO and the current status of the project.

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