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Search for neutrinoless double beta decay: from NEMO-3 to SuperNEMO

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The NEMO-3 detector aimed to study double beta (bb) decays in general and to search for neutrinoless mode (0nbb) particularly provides unique tracko-calorimetric technique able to register full bb-signature. This information is crucial for investigation of 0nbb-mechanism once 0nbb-decay will be discovered. Continuing to take data since February 2003 at the moment the NEMO-3 is the only working bb-detector reached sub-1eV sensitivity to effective Majorana neutrino mass, which is at level of world best 0nbb-results. Latest 0nbb-results will be presented at the conference as well as 2nbb-results.

The goal of SuperNEMO is to reach ~50 meV sensitivity to effective Majorana neutrino mass with 100 kg of Se-82 isotope extrapolating and improving successful NEMO-3 technique. This sensitivity scale is the main challenge for all leading next generation 0nbb-projects. SuperNEMO R&D program has been started at 2006 and currently collaboration is preparing to build first SuperNEMO module which must demonstrate the workability of the experimental technique. Latest R&D progress in calorimetry, tracking, low background measurements, software will be discussed.

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