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Search for neutrinoless double beta decay with the NEMO-3 detector and R&D for SuperNEMO

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The NEMO-3 (Neutrino Ettore Majorana Observatory) experiment, located in the Modane Underground Laboratory, searches for neutrinoless double beta decay. The experiment has been taking data since 2003 with seven double beta isotopes and completed data acquisition in late 2010. Two neutrino double beta decay results for the main isotopes (7 kg of 100Mo and 1 kg of 82Se), new results for 150Nd and 130Te, as well as results for 96Zr, 48Ca, and 116Cd are presented. NEMO-3 uses a unique technique that allows for the in situ measurement of background contamination. No evidence for neutrinoless double beta decay has been found to date. The data are also interpreted in terms of alternative models such as weak right-handed currents and Majoron emission. In this talk, I will discuss the measurements made with NEMO-3 and discuss the status, research and design of the next generation experiment, SuperNEMO.

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