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Search for Neutrinoless Double-β Decay of ^{100}Mo in the final NEMO-3 dataset

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The NEMO-3 detector, installed in the Modane underground laboratory, ran between February 2003 and January 2011. The NEMO-3 experiment employed a tracker and calorimeter detector technology to fully reconstruct the topology of the events generated in thin foils of active material. Thanks to its unique design, NEMO-3 studied the details of the Double-β decay in seven isotopes (^{100}Mo, ^{82}Se, ^{116}Cd, ^{150}Nd, ^{96}Zr, ^{48}Ca and ^{130}Te). We searched for neutrinoless Double-β (0νββ) decay of 100Mo, the largest sample of NEMO-3, using the complete set of collected data. With an exposure of 34.7 kg·y, no evidence for the 0νββ signal has been found, yielding the best limit for the light Majorana neutrino mass mechanism in this isotope. Taking into account nuclear model uncertainties this result is in the same sensitivity range as recently reported constraints on for the isotopes of ^{136}Xe and ^{76}Ge. The same dataset is used to constrain other lepton number violating mechanisms of the 0νββ decay. In particular the most stringent constraints so far have been obtained for right-left symmetric and SUSY models. We describe this measurement.

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