THE FINAL RESULTS OF THE NEMO-3 EXPERIMENT AND STATUS OF THE SUPERNEMO PROJECT

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The SuperNEMO project is aimed to search neutrinoless double beta decay ($0\nu\beta\beta$), which would be an indication of new fundamental physics beyond the Standard Model, such as the nature of neutrino (either Dirac or Majorana), the absolute neutrino mass scale, and neutrino hierarchy. Observation of $0\nu\beta\beta$ would also help to resolve the topical puzzles of fundamental physics: CP violation, Leptogenesys, GUTs.

SuperNEMO is a next generation $0\nu\beta\beta$-experiment based on the improved successful NEMO-3 tracking and calorimetric technology. The goal of SuperNEMO is to reach sensitivity on the Majorana effective neutrino mass of 50–100 meV with an exposure of 500 kg*y by using ~ 100 kg of enriched ^{82}Se.

Final results on ^{82}Se [1] and ^{100}Mo [2] for the NEMO-3 will be presented and discussed, as well as the progress in the construction of the Demonstrator (first module) of the SuperNEMO project (shown in Fig.1), the data taking of which will start at the end of this year.

Fig. 1. The Demonstrator of the SuperNEMO under antiradon tent built in the underground laboratory (Modane, France).

1. R.Arnold *et al.* // Eur. Phys. J. C. 2018. V.78. P.821.
2. R.Arnold *et al.* // arXiv:1903.08084, submitted to the EPJC.