

The status of the MARE experiment with ^{187}Re and ^{163}Ho isotopes

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The goal of the MARE project (Microcalorimeter Array for a Rhenium Experiment) is the direct and calorimetric measurement of the electron neutrino mass. The design is based on arrays of thermal detectors to study the beta decay of ^{187}Re and the electron capture (EC) of ^{163}Ho . The measurement of ^{163}Ho EC is an appealing alternative to the ^{187}Re beta decay measurement because few nuclei are needed and it is a self-calibrating measurement.

Regarding the Rhenium isotope, MARE has started to perform an experiment in Milan using one 6×6 array of phosphorus-implanted silicon thermistors equipped with AgReO_4 absorbers. The purposes of this experiment are to achieve a neutrino mass sensitivity of few eV and to investigate the systematic errors present in ^{187}Re neutrino mass measurement, focusing on those caused by the Beta Environmental Fine Structure and the beta spectrum theoretical shape. While this experiment is carried out, the MARE collaboration is focusing on the production of the radioactive ^{163}Ho isotope and the possibility to embed it in a Sn absorbers.

We report here the status of MARE in Milan with Rhenium and the results of radioactive ^{163}Ho production together with the first spectra acquired with Sn/Ho/Sn multilayer absorbers in the framework of MARE.

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