

Production, Separation and Implantation of ^{163}Ho for Neutrino Mass Measurements

The ECHo collaboration aims at measuring the electron neutrino mass by recording the spectrum following electron capture of ^{163}Ho using metallic magnetic calorimeters (MMCs). The radioisotope ^{163}Ho is produced from enriched ^{162}Er in the ILL high flux nuclear reactor, chemically purified and mass separated and is fully embedded into the $180 \times 180 \mu\text{m}^2$ Au-absorber of the ECHo MMCs. Resonance ionization mass separation guarantees elemental and isotopic selectivity for ultra-pure ^{163}Ho ion implantation with a sub millimeter beam spot size. On-line in-situ deposition of Au using pulsed laser deposition (PLD) ensures homogeneous $^{163}\text{Ho}/\text{Au}$ layer formation in the implantation area. To verify the purity of the ECHo source material from production up to implantation and data taking a variety of different analytical techniques is applied, including X-ray spectrometry, NAA, ICP-MS and RIMS.

Authorship annotation

for the ECHo collaboration

Session and Location

Monday Session, Poster Wall #9 (Robert-Schumann-Room)

Poster included in proceedings:

no

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