Contribution ID: **126** Type: **Oral**

Update on the ECHo Experiment

Thursday 28 August 2025 14:00 (20 minutes)

The ECHo experiment measures the energy spectrum of the Electron Capture decay in Holmium-163 to determine the effective mass of the electron neutrino. Arrays of metallic magnetic calorimeters enclosing the ^{163}Ho, operated at temperatures around 20mK, are used for the high energy resolution measurement of the spectrum. In the first phase of the experiment, ECHo-1k, a ^{163}Ho spectrum with more than 200 million events has been acquired with detectors enclosing an average activity of 0.7 Bq. The analysis of this spectrum set the current most stringent limit on the effective electron neutrino mass of 19eV at 95%C.L..
The success of the first phase of the ECHo experiment sets the basis for the development of the next phase with the aim of acquiring more than 10^{13} ^{163}Ho events and, with that, be able to achieve sub-eV sensitivity for the determination of the effective electron neutrino mass. The necessary upgrade of the hardware and the challenges in data reduction and analysis of the spectrum will be presented.

Collaboration you are representing

ECHo

Author: PANDEY, Raghav (Kirchhoff Institute for Physics, Heidelberg University)

Co-authors: Mr BEHREND-URIARTE, Daniel; Mr BÖHM, Frederic (Kirchhoff Institute for Physics, Heidelberg University); Dr GASTALDO, Loredana (Kirchhoff Institute for Physics, Heidelberg University); Mr CALZA, Lorenzo (Kirchhoff Institute for Physics, Heidelberg University); Mr JESKE, Rasmus (Kirchhoff Institute for Physics, Heidelberg University)

Presenter: PANDEY, Raghav (Kirchhoff Institute for Physics, Heidelberg University)

Session Classification: Neutrino Physics and Astrophysics

Track Classification: Neutrino Physics and Astrophysics