



Poster session 1 - Monday 4 July

P1.046 Optimization of metallic magnetic calorimeters arrays with embedded Ho-163 for the ECHO experiment

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The Electron Capture in ¹⁶³Ho (ECHO) collaboration plans to reach sub-eV sensitivity level of the electron neutrino mass by the analysis of high statistics of the electron capture spectrum of ¹⁶³Ho. We are using large arrays of metallic magnetic calorimeters (MMCs) with enclosed ¹⁶³Ho which are read out using microwave SQUID multiplexing. With first prototypes of MMCs having the ¹⁶³Ho source ion-implanted in the absorbers, operated at 25 mK an energy resolution $\Delta E_{\text{FWHM}} = 7.6$ eV and a signal rise time $\tau = 130$ ns was achieved, paving the way to the first stage of the experiment, ECHO 1k. We present the optimization of MMC arrays and of the methods to embed the high purity ¹⁶³Ho source in detector absorbers. In particular we discuss how to define the optimal activity per pixel considering the limits coming from the allowed unresolved pileup fraction and from the additional contribution of detector heat capacity related to the magnetic moments of ¹⁶³Ho.