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Poster Session–Submission of Abstract

Submitter: Giulio Pizzigoni, Dipartimento di Fisica, Universita' di Genova, Italy, giulio.pizzigoni@ge.infn.it

Autor: B. Alpert¹, M. Balata², D. Bennett¹, M. Biasotti^{3,4}, C. Boragno^{3,4}, C. Brofferio^{5,6}, M. De Gerone^{3,4}, R. Dressler⁷, M. Faverezani^{5,6}, E. Ferri^{5,6}, J. Fowler¹, F. Gatti^{3,4}, A. Giachero^{5,6}, S. Heinitz⁷, G. Hilton⁷, U. Köster⁹, M. Lusignoli⁸, M. Maino^{5,6}, J. Mates¹, S. Nisi², R. Nizzolo^{5,6}, A. Nucciotti^{5,6}, G. Pessina⁶, G. Pizzigoni^{3,4}, A. Puiu^{5,6}, S. Ragazzi^{5,6}, C. Reintsema¹, M. Ribeiro-Gomes¹⁰, D. Schmidt¹, D. Schumann⁷, M. Sisti^{5,6}, D. Swetz¹, F. Terranova^{5,6}, J. Ullom¹

¹National Institute of Standards and Technology (NIST), Boulder, Colorado, USA

²Laboratori Nazionali del Gran Sasso (LNGS), INFN, Assergi (AQ), Italy

³Dipartimento di Fisica, Universita' di Genova, Italy

⁴Istituto Nazionale di Fisica Nucleare (INFN), Sezione di Genova, Italy

⁵Dipartimento di Fisica, Universita' di Milano-Bicocca, Italy

⁶Istituto Nazionale di Fisica Nucleare (INFN), Sezione di Milano-Bicocca, Italy

⁷Paul Scherrer Institut (PSI), Villigen, Switzerland

⁸Istituto Nazionale di Fisica Nucleare (INFN), Sezione di Roma 1, Italy

⁹Institut Laue-Langevin (ILL), Grenoble, France

¹⁰Centre for Nuclear Physics, University of Lisbon, Lisbon, Portugal

Title of the Poster: Fabrication of Absorber with Ho-163 for the Neutrino Mass Searches in the HOLMES project

Abstract Text: Ho-163 Electron Capture Decaying isotope as probe for direct neutrino mass search, is presently the most appealing option for a calorimetric measurement in the framework of the micro calorimeter technology that has been developed. A small amount of Ho-163 atoms per detector, at a level of $10^{11} - 10^{13}$, is enough for making high statistics measurements with micro-calorimeters with "standard" metallic absorbers. TES micro calorimeter with gold absorber containing Ho-163 isotopes can achieve spectral resolution as good as the ones developed for X-ray astrophysics. Respect to the former TES calorimeter they can be fabricated with in order to minimize the absorber volume, optimize the Absorber-TES coupling in order to achieve a higher signal rise time. But the most important issue is the chemical forms in which Ho can be incorporated in the Absorber. As already stated, we show that the most easy method for Ho-163 production is the neutron irradiation of enriched Er-162 samples, which is typically in form of oxide, therefore the final product is composed mainly by Ho and Er oxides. The high precision required by the neutrino mass

measurement need the knowledge of the chemical status of the Ho-163, in order to study the effect of the chemical bound on the end-point energy. Ho-oxide and Ho-metal in metal absorber are here considered. Both are incorporated in metal absorber and studied form the chemical an structural point of view.