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Overview of the AMoRE HONG JOO KIM, Kyungpook National University, AMORE COLLABORATION — Searching for neutrino-less double beta decay of Mo-100 using a cryogenic technique with Mo-100 enriched and Ca-48 depleted calcium molybdate (CaMoO4) crystal scintillators will be performed by AMoRE (Advanced Mo-based Rare process Experiment) international collaboration. The project aims to build a large-scale multi-detector with 200 kg of CaMoO4 crystals operating in in a deep underground laboratory in Korea for several years. Significant improvement of effective Majorana neutrino mass sensitivity is expected at the level of 20-50 meV covering the inverted hierarchy region. CaMoO4 crystals show the brightest scintillation light among variety of molybdate crystals at room and cryogenic temperatures. The AMoRE will run at milli-Kelvin temperature with CaMoO4 crystals and metallic magnetic calorimeters (MMCs) as a temperature sensor that shows excellent energy resolution. Optimization of scintillation properties of CaMoO4 crystals grown by Czochralski method with different conditions will be shown. The internal background study of large CaMoO4 crystals as well as background reduction methods using GEANT4 simulations will be presented. The current status and future plan of the AMoRE project will be also presented.

Hong Joo Kim
Kyungpook National University

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