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# The PTOLEMY project

The PTOLEMY project aims at taking a snapshot of the first second of the Universe, when the Cosmic Neutrino Background (C$\nu$B) decoupled, which has been for a long time a dream in the field of Cosmology. The PTOLEMY detection principle relies on C$\nu$B capture on a target of beta-unstable elements, since in this process mono-energetic electrons are emitted just above the beta-decay endpoint. The extremely low cross section imposes a large target mass resulting in a prohibitive rate of background events. For this reason a novel concept dynamic electromagnetic-filter, capable of selecting electrons in the region of interest has been developed. The usage of beta-unstable element, as target, imposes an extreme energy resolution to disentangle electrons from beta-decays from those emitted in the case of neutrino capture. This makes a possible detector of relic neutrinos a perfect instrument to measure neutrino mass. This neutrino mass measurement has the advantage that can be achieved with much less target mass while the technology for relic neutrino detection is being validated. This pushed the collaboration to concentrate on a project to measure the neutrino mass while the final goal of designing a C$\nu$B detector is achieved.

**Authors:** Prof. RUOCCO, Alessandro (University of Roma3); Dr COCCO, Alfredo Giuseppe (LNGS-INFN); Prof. COLJN, AukePetr (Nikhef and University of Amsterdam); Dr DE LOS HEROS, Carlos Perez (University of Uppsala); Prof. TULLY, Christopher (Princeton University); Prof. GATTI, Flavio (University of Genova); Prof. CAVOTO, Gianluca (University Sapienza); MESSINA, Marcello (LNGS-INFN); BORGHESI, Matteo; Dr RAJTERI, Mauro (INRIM); Dr TOZZINI, Valentina (CNR-Pisa, Nano)