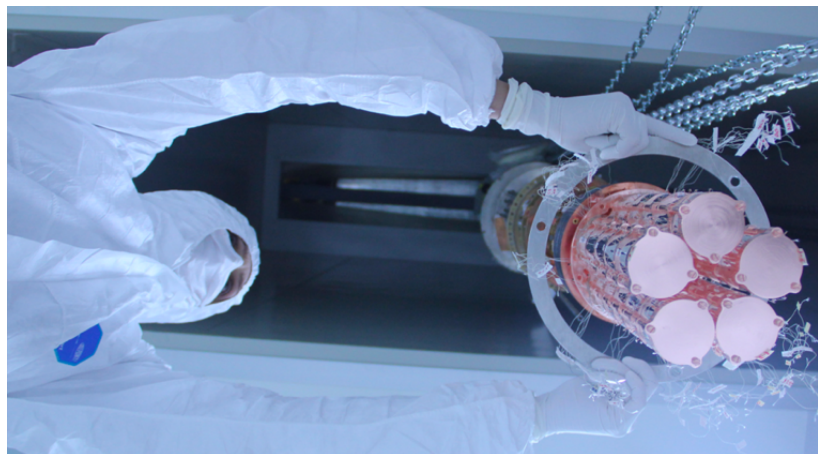


Press Release 2021

CUPID-0: DEMONSTRATED A NEW TECHNOLOGY FOR THE HUNTING OF MAJORANA NEUTRINOS



Neutrino physics: a new article recently published on Physical Review Letters demonstrates the validity of the technology used by the CUPID-0 experiment, active at the INFN Gran Sasso National Laboratories, in the hunt for a very rare phenomenon known as "neutrinoless double beta decay", which would confirm, if observed, that the neutrino is a Majorana particle, coincident with its antiparticle.

Active from 2017 to 2020 in the "cosmic silence" of the Gran Sasso National Laboratories, where the rock allows to suppress the "noise" generated by cosmic rays by about a factor of one million, CUPID-0 is a detector of about 10 kg consisting of scintillating bolometers, i.e. detectors operating at a temperature of just 0.01 degrees above absolute zero (-273.14°C). Despite the modest dimensions of the detector, with respect to the real giants in the sector, the experiment has reached levels of sensitivity that demonstrate the great potential of the bolometric technique and led to the establishment of a wider international collaboration, CUPID, committed to creating a one-ton scale detector based on this methodology, firstly developed by INFN researchers.

The main innovation of CUPID-0 was the addition of a light detector to each bolometer (sparkling bolometers), allowing to identify and discard most of the background events in the region of interest for the search for double beta decay without neutrinos of the Selenium isotope (Se-82).

About 50 researchers from various national and international institutions participate in the experiment, together with other INFN structures, such as the Legnaro National Laboratories and the INFN divisions of Rome, Milan and Genoa.