Contribution ID: **100** Type: **Talk**

The CUPID neutrinoless double-beta decay experiment

Tuesday 27 August 2024 16:40 (20 minutes)

The search for neutrinoless double beta ($0\nu\beta\beta$) decay is ongoing and aims to determine whether the neutrino is Majorana in nature. Discovery of such a process would immediately imply lepton number violation and represent new physics beyond the standard model. This search has been ongoing for a few decades with multiple experimental strategies and choices of isotope. CUPID (CUORE Upgrade with Particle ID) is a next generation experiment searching for $0\nu\beta\beta$ decay in 100Mo using enriched scintillating lithium molybdate (LMO) crystals and profiting from several years of experience gained with its predecessor, CUORE (Cryogenic Underground Observatory for Rare Events). CUPID will consist of 1596 LMO crystals operated as bolometers, coupled to 1710 light detectors allowing for the simultaneous readout of both heat and light energy. This strategy allows for the rejection of alpha events, a dominant source of background in CUORE, by exploiting the different ratio of heat to light energy for beta/gamma induced events compared to alpha events. With this CUPID can reach a sensitivity greater than 1e27 yr. At present ongoing studies, simulations, and R&D projects are all working towards the finalization of the CUPID detector design and to assess its performance and physics reach. In this presentation we will provide an overview of the CUPID program and highlight upcoming milestones towards the construction of the experiment.

Internet talk

No

Is this an abstract from experimental collaboration?

Yes

Name of experiment and experimental site

CUPID (https://cupid-webservice.lngs.infn.it/doku.php?id=cupid_pub:start)

Is the speaker for that presentation defined?

Yes

Details

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Session Classification: High Energy Particle Physics

Track Classification: Main topics: High Energy Particle Physics