ID de Contribution: **50** Type: **Talk**

CUPID-Mo: A Double beta decay experiment with Li₂¹⁰⁰MoO₄ scintillating bolometers

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nbsp; nbsp; nbsp; nbsp; Neutrinoless double beta decay is a hypothetical rare nuclear transition, whose observation can give us information about the neutrino absolute mass scale and hierarchy. The existence of this process will prove that lepton number conservation can be violated and consequently the Standard Model should be extended.

nbsp; nbsp; nbsp; nbsp; The subject of my PhD thesis is focused on the search for this decay in the isotope ¹⁰⁰Mo. My main activity aims at the preparation and operation of an underground bolometric pilot experiment named CUPID-Mo, which adopts the technology developed within the project LUMINEU. This approach foresees the use of cryogenic scintillating bolometers as detectors to search for double beta decay. They are made of scintillating crystals of Li2100MoO4 coupled to NTD Ge thermistors and light detectors, and work in the range 10-20 mK.

nbsp; nbsp; nbsp; nbsp; RD tests of enriched Li₂¹⁰⁰MoO₄ crystals were performed at the Underground Laboratory of Modane (LSM) during several runs, showing excellent results in terms of radiopurity and performance. The outcome of the RD allowed us to move to the next stage of the experiment, named CUPID-Mo demonstrator. This experiment will be performed in LSM before the end of 2017 with 20 enriched Li₂¹⁰⁰MoO₄ crystals, with the goal to achieve a background of 10⁻³ counts/keV/kg/y in the ROI and to prove that this technology meets the CUPID (CUORE Upgrade with Particle Identification) requirements for a ton-scale experiment.

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