LNGS SEMINARS

Pablo Garcia Abia

CIEMAT, Madrid

A new method to measure ultra low isotope contamination in liquid argon

Abstract

The DarkSide-20k (DS-20k) Dark Matter search experiment will operate with 23-ton radio-pure underground argon (UAr), extracted from the Urania plant in Cortez (USA) and purified in the Aria distillation plant (Sardinia, Italy). The 39Ar depletion factor in UAr with respect to atmospheric argon is expected to be below 1400. Assessing the purity of UAr in terms of 39Ar is key for the physics programme of DS-20k, as well as for future experiments of the Global Argon Dark Matter Collaboration (GADMC). DArT is a small (~1 L) chamber that will measure the depletion factor of 39Ar in UAr. The detector will be immersed in the LAr active volume of ArDM (LSC, Spain), which will act as a veto for gammas stemming from the detector materials and from the surrounding rock. DArT will use the SiPMs constructed for DS-20k and the cryogenic and DAQ systems of ArDM. Data taking is planned for 2019. In this talk, I will review the status of the DArT project, which comprises the chamber design and construction, as well as the background studies necessary to assess the expected performance of DArT.

July 25, 2019 - h 2:30 pm

LNGS - "B. Pontecorvo" room

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