COSINUS – A Nal cryogenic calorimeter to resolve the long standing DAMA/LIBRA dark matter claim.

Monday 7 July 2025 14:30 (20 minutes)

Over the past twenty-eight years, the DAMA/LIBRA experiment has observed an annual modulation signal that is consistent with a dark matter explanation. Unfortunately, the signal is contradicted by the null results of numerous experiments utilizing different target materials. In order to perform a truly model-independent investigation of the DAMA/LIBRA result, a study with the same target material is required. The COSINUS (Cryogenic Observatory for SIgnatures seen in Next-generation Underground Searches) experiment, located at the Gran Sasso underground laboratory, will use NaI crystals operated as cryogenic scintillating calorimeters to cross-check the DAMA/LIBRA result. These detectors will be cooled to milli-Kelvin temperatures and provide a measurement of both the phonon and scintillation light signals via transition edge sensors (TES). This is the first cryogenic measurement of NaI detectors, and the dual channel capability will allow particle discrimination between electron and nuclear recoils on an event-by-event basis. This talk will discuss the latest results from COSINUS prototype detectors, the status of the muon veto for the low-background facility, and the last steps of the commissioning towards starting the first physics data-taking campaign in late 2025.

Author: Dr STUKEL, Matthew (SNOLAB)Presenter: Dr STUKEL, Matthew (SNOLAB)Session Classification: Parallel 1