



## Poster session 4 – Friday 8 July

### P4.006 The COSINUS project: a NaI-based cryogenic calorimeter based for direct dark matter detection

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*on behalf of COSINUS collaboration*

The R&D project COSINUS (**C**ryogenic **O**bservatory for **S**ignatures seen in **N**ext-generation **U**nderground **S**earches) aims to develop a cryogenic scintillating calorimeter using NaI as target crystal for direct dark matter search.

Particles interacting with the detector material generate both a phonon signal and scintillation light. The phonon signal provides a precise determination of the deposited energy and yields sensitivity down to very low nuclear recoil energies. The simultaneously measured scintillation light allows for a particle identification on an event-by-event basis - a powerful tool to study material-dependent interactions and to suppress backgrounds. Using the same target material as DAMA/LIBRA, the COSINUS technique offers the unique possibility to shed light on the presently controversial situation in the dark matter sector. We find a first hint for the performance parameters for such NaI scintillating calorimeters from an R&D activity carried out on undoped CsI, another crystal belonging to the family of alkali halide. We present first results of a CsI based calorimeter with respect to detector performance parameters such as energy threshold, energy resolution and, in particular, particle discrimination. Furthermore, we report on the design planned for the NaI-based proof-of-principle detector and the objectives of using this detection technique in the light of direct dark matter detection.