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COSINUS water Cherenkov muon veto status and material screening results

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For over twenty-five years the DAMA/LIBRA (formerly DAMA/NaI) experiment has observed an annual modulation signal that is consistent with a dark matter explanation. This signal is, currently, in tension with the null results observed by other searches that utilize different target detectors. The COSINUS experiment will perform a model-independent cross-check of the DAMA/LIBRA result by using the same target material, NaI crystals, operated as scintillating calorimeters.

By measuring both temperature and light the NaI crystals in COSINUS will be able to distinguish between electron and nuclear recoils on an event-by-event basis. However, background events induced by cosmic-rays, environmental radioactivity or the intrinsic contamination of the materials used in the crystal, shielding and infrastructure can pose an issue to any analysis and must be mitigated as well as possible. We report on the status of the development and simulations for an active water Cherenkov muon veto, as well as the results of a comprehensive radiogenic material screening.

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