

Advanced NaI detectors for Dark Matter search and other applications: the ANAIS+ project

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NaI(Tl) is a highly interesting target for dark matter searches due to its high light yield, which enables low energy thresholds, the combination of heavy and light nuclei, and the 100% presence of isotopes with nuclear spin and an unpaired proton. Moreover, it is the target material of the only experiment to date that has reported a positive signal (DAMA/LIBRA), and an ultra-low energy threshold search could resolve some of the remaining systematic uncertainties in the direct refutations involving the same target. Another interesting application is the search for coherent elastic neutrino-nucleus scattering, which also requires a very low energy threshold. A significant limitation in the use of these scintillators arises from the light noise introduced by the photomultiplier tube (PMT). The ANAIS+ experiment proposes to overcome this limitation by replacing PMTs with SiPMs and operating at cryogenic temperatures near 100 K, which enhances light emission when using pure NaI. In this talk, we will present the status of the first ANAIS+ prototype and discuss the prospects of this technique.

Collaboration you are representing

ANAIS

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