



Contribution ID: 37

Type: Poster

## A two-phase Cryogenic Avalanche Detector in Ar with THGEM/GAPD-matrix optical readout

Two-phase Cryogenic Avalanche Detectors (CRADs) with THGEM multipliers have become an emerging technique for rare-event experiments. In this work we describe the performance of a two-phase CRAD in Ar with double-THGEM charge multiplier combined with a matrix of Geiger-mode APDs (GAPDs), optically recording THGEM avalanche signals in the Near Infrared (NIR) spectral range. The charge and light yields and the spatial resolution of such a combined THGEM/GAPD-matrix multiplier have been measured in the two-phase Ar CRAD. The applicability of such a technique to dark matter search and coherent neutrino-nucleus scattering experiments, in terms of providing ultimate (single-electron) sensitivity at higher (sub-cm) spatial resolution, is discussed.

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Cryogenic Avalanche Detectors

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**Track Classification:** Gaseous Detectors