

CALDER: cryogenic light detectors for background-free searches

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CALDER is a R&D project for the development of cryogenic light detectors with an active surface of $5 \times 5 \text{cm}^2$ and an energy resolution of 20eV RMS for visible and UV photons.

These devices can enhance the sensitivity of next generation large mass bolometric detectors for rare event searches, providing an active background rejection method based on particle discrimination.

A CALDER detector is composed by a large area Si absorber substrate with superconducting kinetic inductance detectors (KIDs) deposited on it.

The substrate converts the incoming light into athermal phonons, that are then sensed by the KIDs.

KID technology combine fabrication simplicity with natural attitude to frequency-domain multiplexing, making it an ideal candidate for a large scale bolometric experiments.

We will give an overview of the CALDER project and show the performances obtained with prototype detectors both in terms of energy resolution and efficiency.

Primary author: Mr DI DOMIZIO, Sergio (University of Genova and INFN)

Co-authors: CRUCIANI, Angelo (INFN); D'ADDABBO, Antonio (INFN); COSMELLI, Carlo (Sapienza Università di Roma and INFN); TOMEI, Claudia (INFN); BELLINI, Fabio (Sapienza Università di Roma and INFN); COLANTONI, Ivan (Sapienza Università di Roma); CARDANI, Laura (INFN); MINUTOLO, Lorenzo (Sapienza Università di Roma and INFN); CASTELLANO, Maria Gabriella (INFN-CNR); MARTINEZ, Maria (Sapienza Università di Roma and INFN); CASALI, Nicola (INFN)

Presenter: Mr DI DOMIZIO, Sergio (University of Genova and INFN)

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