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Kinetic Inductance Detectors as light detectors for neutrino and dark matter searches.

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Large-mass arrays of bolometers proved to be good detectors for Neutrinoless Beta Decay (0vDBD) and Dark Matter (DM) searches. The CUORE and LUCIFER 0vDBD experiments at Laboratori Nazionali del Gran Sasso will start to take data in 2015. The potential of CUORE
could be increased by removing the background due to alpha particles, by detecting the small amount of Cherenkov light (100 eV) emitted by the beta signal and not by alphas. LUCIFER could be extended to detect also Dark Matter, provided that the background from beta/gamma particles (100 eV of scintillation light) is discriminated from nuclear recoils of 10 keV energy (no light).
Our aim is to develop light detectors for CUORE, LUCIFER and similar bolometric experiments. In order to reach the high sensitivity and large number of pixels needed, we plan to use Microwave Kinetic Inductance Detectors, which have already shown impressive
results in millimeter astronomy.
Since these devices are easily multiplexable and not strongly limited by the operation temperature, they possibly represent the best choice for the realisation of large-area phonon-mediated light detectors. Our aim is to monitor the whole face of each bolometer (about 25 cm2) at an operating temperature of 10 mK.
First devices have been already designed and fabricated; first tests and results are expected during the summer.

Author: Mr BELLINI, Fabio (University of Roma Sapienza and INFN)

Co-authors: COPPOLECCHIA, Alessandro (Dipartimento di Fisica, Sapienza Universita di Roma); D'ADDABBO, Alessandro (Institut Ne´el - Centre Nationale de la Recherche Scientifique/Universite Joseph Fourier); CRUCIANI, Angelo (Dipartimento di Fisica, Sapienza Universita di Roma); COSMELLI, Carlo (Dipartimento di Fisica, Sapienza Universita di Roma); PINCI, Davide (Istituto Nazionale di Fisica Nucleare - Sezione di Roma); Mr BATTISTELLI, Elia (Dipartimento di Fisica, Sapienza Universita di Roma); CASTELLANO, Gabriella (Istituto di Fotonica e Nanotecnologie-Consiglio Nazionale delle Ricerche); VIGNATI, Marco (Istituto Nazionale di Fisica Nucleare - Sezione di Roma); DE BERNARDIS, Paolo (Dipartimento di Fisica, Sapienza Universita di Roma); Ms BAGNI, Roberta (Dipartimento di Fisica, Sapienza Universita di Roma); DI DOMIZIO, Sergio (Dipartimento di Fisica, Universita di Genova and Istituto Nazionale di Fisica Nucleare - Sezione di Genova); MASI, Silvia (Dipartimento di Fisica, Sapienza Universita di Roma); BUCCI, carlo (Laboratori Nazionali del Gran Sasso INFN); CARDANI, laura (Dipartimento di Fisica, Sapienza Universita di Roma)

Presenter: Mr BELLINI, Fabio (University of Roma Sapienza and INFN)

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