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First results of CROSS underground measurements with massive bolometers

CROSS (Cryogenic Rare-event Observatory with Surface Sensitivity) project is focused on $0\nu 2\beta$ decay searches with surface-sensitive bolometers, aiming to develop a mid-scale demonstrator with $\text{Li}_2^{100}\text{MoO}_4$ bolometers and Al coating, which allows rejecting near-surface events thanks to pulse shape modification, induced by the superconducting film. Several bolometers were installed in 2019 with the goal to verify the required performance for CROSS needs. Li_2MoO_4 crystals and Ge light detectors, instrumented with NTD sensors, were measured over 5 months with $\sim 90\%$ duty cycle. A study of pulse shape discrimination with $0.2 \mu\text{m}$ Al coating on the lateral side of Li_2MoO_4 cylindrical crystal (mass ~ 210 g) is performed.

Cubic Li_2MoO_4 crystals show excellent performance of the dual heat-light read-out, efficient particle identification, and hints on high crystal radiopurity.

Mini-abstract

Excellent performance, particle discrimination of massive bolometers in CROSS underground facility

Experiment/Collaboration

CROSS collaboration

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