

CUORE latest results and prospects

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The CUORE (Cryogenic Underground Observatory for Rare Events) experiment is one of the most sensitive probes to date of the fundamental nature of neutrinos.

CUORE is located deep underground in the Laboratori Nazionali del Gran Sasso (LNGS) in Italy, allowing for a sensitive search for neutrinoless double beta decay ($0\nu\beta\beta$) and other rare processes.

CUORE searches for $0\nu\beta\beta$ in Te-130 and utilizes an array of cryogenic calorimeters made of TeO₂ crystals, cooled down to below 15 mK.

CUORE has been continuously taking data since 2019, achieving a 90% uptime and having collected more than 2.5 ton yr of TeO₂ exposure. This is the largest dataset ever collected by a high-resolution solid-state $0\nu\beta\beta$ experiment.

CUORE's capabilities extend beyond $0\nu\beta\beta$ searches. In this talk, CUORE will present the most recent NLDBD results with a 2-ton-year dataset, one of the most precise measurements of the two-neutrino double beta decay half-lives and spectra and the complete reconstruction of backgrounds across a wide energy range. Moreover the future prospects will be discussed.

Poster prize

Given name

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First affiliation

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Collaboration (if any)

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