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Baryon number violation searches with CUORE

Tuesday 20 May 2025 14:45 (15 minutes)

The conservation of baryon number in the Standard Model originates from an empirical symmetry and does not derive from first principles. Any discovery of a phenomenon that indicates that this symmetry is broken would have far-reaching consequences for our understanding of the universe, in particular the origin of the matter-antimatter asymmetry. A proposed process that can violate baryon number is the tri-nucleon decay, which involves three nucleons in a nucleus decaying simultaneously. The products of this decay are emitted with GeV-scale energy, which can serve as an excellent signal in CUORE. We will present the details on the search signatures, the associated backgrounds and the analysis techniques employed. Other possible baryon number violation studies with CUORE will also be discussed.

Mini Symposia (Invited Talks Only)

Plenary (Invited talks only)

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Session Classification: Machine Learning

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