



ID de Contribution: 122

Type: Oral presentation

The R2D2 project for $\beta\beta 0\nu$ research

Understanding whether a neutrino is its own antiparticle is a crucial question for particle physics and cosmology.

The most sensitive and direct experimental probe of the Majorana nature of neutrino is the search for $\beta\beta 0\nu$ decay, which consists of the emission of only two electrons whose total energy is equal to that of the transition.

For decades, numerous detection techniques have been tested to reveal this ultra-rare process.

Launched in 2027, the R2D2 project has developed an innovative approach to this exploration, bringing significant improvements in terms of detection performance, material budget, background reduction, and cost.

These advances are based on the use of a single-anode radial TPC detector, operating in ionization mode and filled with high-pressure Xe.

This presentation will focus on the experimental results of this work as well as the expected performance of the final detector.

Title

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Topic

Gas detectors

Auteur: LAUTRIDOU, Pascal (CNRS-IN2P3)

Orateur: LAUTRIDOU, Pascal (CNRS-IN2P3)