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Alternative energy calibration method for the DEAP-3600 experiment

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The DEAP-3600 dark matter experiment is at the forefront of our efforts to uncover the mysteries of the universe's dark abundance. In this presentation, we explore significant developments in energy calibration techniques used within the DEAP-3600 experiment, showcasing an innovative approach that uses high-energy gamma rays from both the background spectrum and the AmBe calibration spectrum. This new method not only improves the precision of energy calibration but also strengthens the experiment's ability to search dark matter particles.

We demonstrate the effectiveness of using high-energy gamma rays from the background spectrum to refine our understanding of the detector's response across a wider energy range, thus enhancing the DEAP-3600 experiment's capacity to identify potential dark matter interactions. Furthermore, it enables us to extend the utility of the detector to other rare event searches, including 5.5 MeV Solar Axions and Boron-8 neutrinos searches, broadening the scientific impact of our work.

This presentation will investigate into the alternative energy calibration techniques, providing insights into the recent results achieved by the DEAP-3600 experiment. Furthermore, we will explore the promising horizons offered by our detector upgrade. By doing so, we aim to emphasize the significance of these developments in advancing our understanding of dark matter.

Keyword-1

Dark matter, DEAP-3600

Keyword-2

Energy calibration

Keyword-3

Author: JIGMEDDORJ, Badamsambuu (Laurentian University)

Presenter: JIGMEDDORJ, Badamsambuu (Laurentian University)

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