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Investigation of Gamma Spectra unfolding with EJ-315 Liquid Organic Scintillator.

In the present work, we measured the response of the EJ-315 liquid organic scintillator to gamma rays. The EJ-315 detector was calibrated using Compton edges obtained from standard gamma sources, the calibration accuracy verified through Monte Carlo simulations. To facilitate gamma spectra unfolding, a response matrix was calculated using GEANT4, and a procedure was developed to determine the unfolded spectra from the measured pulse height spectra using Gravel iterative algorithm. The pulse height resolution of the scintillator was also estimated to improve the precision of gamma flux measurements. This study provides a framework for accurate gamma detection and spectra unfolding for coverage of large area, supporting applications in radiation monitoring.

Field of contribution

Experiment

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Track Classification: Future experiments and detector development