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Calibration of Organic Liquid Scintillator EJ-315 and Unfolding of Gamma Spectra

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This work presents the methodology and results of calibrating an organic liquid scintillator (EJ-315) [1] for gamma-ray spectroscopy using standard gamma sources, followed by spectral unfolding using a pre-determined detector response matrix using GEANT4 [2]. Energy calibration was performed via identification of known gamma peaks, and their Compton edge positions from Ba-133, Co-60, Na-22, and Cs-137 sources. Mathematical modelling of the detector's linear light yield response was implemented. The calibrated spectra were unfolded using the GRAVEL [3] iterative technique to reconstruct the incident photon energy distribution.

References:

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Author: Mr SAIKIA, Trinayan (Rajiv Gandhi university)

Co-authors: Dr SINGH, Lakhwinder (Central University of South Bihar); Dr GUPTA, Sonika (Rajiv Gandhi University); Prof. SINGH, Venktesh (Central University of South Bihar)

Presenter: Mr SAIKIA, Trinayan (Rajiv Gandhi university)

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