Energy Calibration of Plastic Scintillator Detector

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Abstract. This paper is devoted to a plastic scintillator detector calibration method. We calibrated the large volume polystyrene gamma detector SPD200.200.100 by NUVIA Group. The essential issue of the plastic scintillator is that Compton scattering is the dominant effect of photon interaction within the detector and it is no apparent full energy absorption peak in a spectrum. Our approach is based on MCNP code simulation where the detector was modeled. Then measured and calculated spectra are compared to Gaussian energy broadening effect determining. Finally, the measured spectra can be calibrated using Compton maximum and Compton edge energy. The results of this study show that measured and calculated spectra are in good agreement.