

3.1-P18. New Beta-Gamma coincidence system for measurement of radioxenon isotopes using well-type NaI(Tl) and plastic scintillator detectors

In order to detect radioxenon isotopes, a homemade geometry detection system based on beta-gamma coincidence has been developed. The system consists of a well-type NaI(Tl) detector that surround plastic scintillator in the solid angle near the 4π . The well-type NaI(Tl) detector measure gamma or X-ray and plastic scintillator detect electron particles. The beta detector was calibrated using ^{137}Cs gamma Compton scattering in the plastic scintillator. It has been found that beta calibration curve depends to ^{137}Cs position therefore; to suppress this effect an effective point for beta calibration was determined and verified with ^{131}mXe conversion electron. The efficiency of gamma detector was measured using standard point sources. Since the detection system has a volume source therefore, the detection system was simulated by Gate7 and correction factor was obtained by least squares fitting of simulation results to experiment results. The accuracy of detection system performance was checked by injection of ^{214}Pb (daughter of ^{226}Ra) gas source.

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