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Using reference radiation source to test Monte Carlo simulations

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The environments that surround us contains some amount of radioactive (unstable) materials or radionuclides that are derived from primordial and cosmogenic sources. In addition to naturally occurring radioactive materials (NORMs), there are technologically enhanced naturally occurring radioactive material (TENORMs) and man-made radionuclides that have been introduced into ecosystems due to proliferation of different nuclear applications in industry, medicine and research. The main aim of this study is to assess level of concentration of natural and man-made radionuclides in environmental samples. To achieve this goal, we seek to use Monte Carlo simulations and gamma-ray spectroscopy method. For this conference we will be presenting the test result obtained from GEANT4. The trial runs aimed at environmental gamma-ray spectrometry analysis of ^{60}Co and ^{22}Na point source samples on Hyper Pure Germanium detector and are verified using a Monte Carlo simulation code (GEANT4). Preliminary comparison results will be discussed.

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