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Simulation of a setup for carbon analysis of soil sample

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Soil plays important role in food production, as well as participates in regulating the chemical composition of the atmosphere, so accurate determining the concentration of different chemical elements in soil today remains an important task for various fields of science.
Nowadays, it seems promising to determine the concentration of different chemical elements in the soil using so-called neutron-gamma analysis on fast neutrons. This method is based on neutron irradiation of the material and analysis of the spectra of gamma quanta. By the area of the characteristic gamma peaks, it is possible to determine the amount of a particular substance in the sample. The system used for such analysis, consists of a neutron source, a gamma detector (detectors) and data collection systems.
An important task in the development of a prototype device for analysis is to create a qualitative model of the designed system. This model can be done in the Geant4, a toolkit that models the passage of elementary particles through matter using the Monte Carlo method. This work involves computer modeling of the setup for analysis of soil sample in toolkit Geant4.

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