



Figure 18: The americium spectrum measured in CERN in December 2010.

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Author(s): Antonín Krása and Arjan Plompen

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Abstract

High energy gamma-rays emitted by a 40 mg ^{241}Am source in the form of AmO_2 dispersed in a Al_2O_3 matrix were measured with a high purity germanium detector. The origin of the most intense gamma-rays was identified to the extent that these do not originate from the decay of ^{241}Am . These gammas are due either to the decay of ^{233}Pa (for energies below 400 keV), a daughter of the main actinide impurity (^{237}Np) or to alpha-induced reactions on aluminium (for energies from 844 to 4810 keV). For the latter, the most important is the $^{27}\text{Al}(\alpha, p)^{30}\text{Si}$ reaction, but one also observes gammas from the $^{27}\text{Al}(\alpha, \alpha')^{27}\text{Al}$ and $^{27}\text{Al}(\alpha, n)^{30}\text{P}$ reactions. There is no evidence for alpha-induced reactions on the isotopes of oxygen.

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