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Measurements of gamma-ray production cross sections of proton beam at energies of 80-125 MeV with calcium target.

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Abstract content
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During cancer treatment therapy a lot of proton particles with incident energy of 200 MeV enter the human body of the patient. They interact with the elements in the body such as 40Ca, 16O, 14N and release their energy step by step in nuclear reaction processes. To understand well the processes we need to know the probability of the proton interactions with each of the elements inside the patient's body as a function of the proton energy. In this work gamma-ray spectra obtained when calcium is bombarded by accelerated protons in the energy range from 80 to 125 MeV are analysed. This analysis yields experimental data for cross sections for gamma-ray production in these nuclear reactions. The results on the cross sections and their importance for medical therapy will be discussed.

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