

Study of bremsstrahlung photon in bulk media with 1 GeV electrons using MCNP

The aim of this research is to study the bremsstrahlung photon production in the different targets bombarded by 1 GeV electrons. The calculations were performed by the Monte Carlo code MCNP. The model consists of the electron beam with the Gaussian distribution with the full width a half maximum 0.90 MeV and the target. The six material of the target with the density between 2 to 20 g/cm³ were studied. The high bremsstrahlung photon scattered shows in the high density material as well as the photon flux is increasing. The copper shows a high performance due to high photon flux production, low scattered photon, and low electron flux. In addition, the copper target was varied with the difference thicknesses between 0.01 cm to 2.5 cm. The photon flux significantly increases when the target thickness increase from 0.01 cm to 1.5 cm while the electron flux is constant. Moreover, the angular distribution of the bremsstrahlung photon with angle between 0 to 120 degrees was carried out for the copper target thickness 0.01, 0.05, 0.25, 0.75 and 2.5 cm. The maximum angle of the photon scattered is about 20 degree.

Keywords: bremsstrahlung, electron beam, MCNP

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