

Investigation of Bremsstrahlung, Braking Radiation from Beta-Emitting Radioactive Sources

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Abstract : Usage of high energy charged particles for diagnosis and treatment has been widespread in medicine. The main purpose is to investigate that Bremsstrahlung which occurs by tissue interactions with charged particles should not be neglected. Nuclear stopping power (Bremsstrahlung) was calculated for lung, brain, skin, muscle, bone (cortical) and water targets for the energies of electrons obtained from LINAC used in radiotherapy and of β^+ sources used in positron emission tomography (PET). These calculations were done by using the four different analytical functions including classical Bethe-Bloch, Tsoulfanidis, modified Bethe-Bloch and modified Tsoulfanidis equations. It was concluded that obtained results were compatible with that of National Institute of Standards and Technology (NIST-ESTAR).

Keywords : β^- emitting source, bremsstrahlung, therapeutic radionuclides, LINAC

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