

AbstractID: 1672 Title: Photon Radiation Dose as a Damped Travelling Wave

One problem associated with the Convolution formalism for the calculation of photon radiation dose is the inability to appropriately handle the calculation of dose deposition at sites at or near material interfaces. In order to address this problem, in this work the concept of Damped Travelling Dose Wave is introduced. With it, time-dependent propagation of the energy deposited in a medium from the point of the photon interaction can be carried out. It is shown that the dose deposition process as a function of time can indeed be represented by means of a damped travelling dose wave, whose amplitude decreases exponentially as the wave moves through the medium. Monte Carlo calculations of these dose waves are shown for water and at the interface between water and B-100 (bone-equivalent) material, at several distances from the point of the photon interaction. The use of this damped waves to calculate photon dose is discussed.

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