

A Dose Distribution Approach Using Monte Carlo Simulation in Dosimetric Accuracy Calculation for Treating the Lung Tumor

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Abstract : This paper presents a Monte Carlo (MC) method-based dose distributions on lung tumor for 6 MV photon beam to improve the dosimetric accuracy for cancer treatment. The polystyrene which is tissue equivalent material to the lung tumor density is used in this research. In the empirical calculations, TRS-398 formalism of IAEA has been used, and the setup was made according to the ICRU recommendations. The research outcomes were compared with the state-of-the-art experimental results. From the experimental results, it is observed that the proposed based approach provides more accurate results and improves the accuracy than the existing approaches. The average %variation between measured and TPS simulated values was obtained 1.337 \pm 0.531, which shows a substantial improvement comparing with the state-of-the-art technology.

Keywords : lung tumour, Monte Carlo, polystyrene, Elekta synergy, Monaco planning system

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