



## SCATTER DOSE IN PATIENTS IN RADIATION THERAPY

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Patients undergoing radiation therapy are often treated with high energy radiation ("bremsstrahlung") which causes scatter doses in the patients from various sources as photon scatter coming from collimator, gantry, patient, patient table or room (walls, floor, air) or particle doses resulting from gamma-particle reactions in the atomic nucleus if the photon energies are above 8 MeV. In the last years new treatment techniques like IMRT (esp the "step-and-shoot"- or the MIMIC-techniques) have increased interest in these topics again.

In the lecture an overview about recent measurements on scatter doses resulting from gantry, table and room shall be given.

Scatter doses resulting from the volume treated in the patient to other critical parts of the body like eyes, ovarii etc. have been measured in two diploma works in our institute and are compared with a program (PERIDOSE; van der Giessen, Netherlands) to estimate them. In some cases these scatter doses have led to changes of treatment modalities.

Also an overview and estimation of doses resulting from photon-particle interactions is given according to a publication from Gudowska et al. [1]. Energy dose has been calculated with Monte Carlo-methods and is compared with analytical methods for 50 MV bremsstrahlung. From these data biologically effective doses from particles in different depths of the body can be estimated also for energies used in "normal" radiotherapy.

- [1] Gudowska I, Brahme A, Andreo P, Gudowski W, Kierkegaard J. Calculation of absorbed dose and biological effectiveness from photonuclear reactions in a bremsstrahlung beam of end point 50 MeV. *Phys Med Biol* 1999; 44(9):2099-2125.

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