

Abstract Submitted
for the MAR11 Meeting of
The American Physical Society

Superficial dose distribution in breast for tangential radiation treatment of breast cancer ROUMIANA CHAKAROVA, MAGNUS GUSTAFSSON, ANNA BAECK, NINNI DRUGGE, ASA PALM, ANDREAS LINDBERG, MATTIAS BERGLUND, Sahlgrenska University Hospital, Dept. of Medical Physics and Biomedical Engineering, Gothenburg, 413 45 Sweden — The superficial (0-2 cm) dose distribution in a cylindrical phantom is examined theoretically and experimentally when irradiated by tangential photon beams. The lateral superficial part of the phantom is shown to receive full dose beyond 2 mm whereas the build-up region is up to 7 mm where the beams enter. Eclipse AAA calculations agree well with the experimental and Monte Carlo data while Eclipse PBC underestimates the entrance dose the first 3-4 mm and fails to give a correct lateral dose close to the surface up to 10 mm depth. The performance of the Eclipse algorithms is evaluated in a number of clinical cases with Monte Carlo results. Examples are given to illustrate how differences in geometrical presentation of the body structure in the treatment planning system and the Monte Carlo simulation as well as the patient voxelization may affect the evaluation results.

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Date submitted: 27 Nov 2010

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