

Comparison with a 4MeV X-ray Dose and Monte Carlo simulation using a Human Body Phantom

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[Purpose] It is not easy to evaluate the accuracy of a human body model in a dose simulation. For this reason, a mathematical phantom (voxel phantom) of a human body phantom is used as a model that can be compared with the measurement. The difference between the simulation and the measurement was examined.

[Method] A female human body phantom (made in the Phantom Laboratory company: Alderson RAND Phantom RAN-100 Type) was used. The Monte Carlo calculation code was used the Electron Gamma Shower Version 4 (EGS4). The depth doses in a RANDO phantom were measured using a radiophoto-luminescence glass dosimeter and thermo-luminescence dosimeter. Exposure conditions were performed using 4 MeV X-rays and Antero-posterio geometry.

[Results and Discussion] The difference between the calculation values and the measurements was about 10%. It is considered that is the values are different between the structure material and the domain setup of the RAND and voxel phantoms.