

AbstractID: 1434 Title: An On-line Patient Dose Verification System for IMRT

An IMRT patient dose verification system comprised of the BEAMnrc Monte Carlo code to predict transmission dose, and an amorphous silicon EPID (aS500, Varian) for on-line patient dose verification is presented. The BEAMnrc code was used to calculate the transmission dose at 140 cm source-to-detector distance for a clinical case of IMRT treatment based on CT images of a patient. To improve the simulation efficiency, fluence maps obtained directly from clinical treatment planning systems at the exit of the treatment head were implemented into the modified DOSXYZ. The accuracy of this approximation was verified by film dosimetry in a homogeneous solid water phantom. The calculation results serve as the predicted dose distribution and were compared to the dose distribution measured with the EPID. The linearity of the dose and dose rate response of the EPID was verified with a farmer-type ion chamber and film dosimetry.