## AbstractID: 11328 Title: Dose in Buildup Region of Flash: PBC, AAA Calculation vs Measurement

Purpose: In this paper, results are presented comparing AAA and PBC dose calculation algorithms with dose measured in the buildup region where flash is of concern. Flash is of primary interest for breast, sarcomas, and whole brain radiotherapy treatments.

Method and Materials: A cylindrical phantom was scanned on a GE LightSpeed Advantage Sim with slice thickness of 2.5 mm. On an Eclipse TPS (Version 8.2.24), AAA and PBC (Modified Batho inhomogeneity correction) dose calculation algorithms were used to calculate the dose distribution for photon beam energies of 6 MV and 18 MV and field size 12 x 12 cm<sup>2</sup> with a calculation grid size of 2.5 mm. The fields were arranged as parallel opposed pair incident on a cylindrical phantom with 3 cm of flash. Dose profiles were compared at 1.5, 4.0, 6.5, and 9.0 mm depths from the end of the cylindrical phantom. Gafchromic EBT film was exposed, in the same dose planes, on a Varian Trilogy Clinac. Measured and calculated dose profiles were compared using RIT113 V5.0 Radiation Therapy Dosimetry Software.

Results: Calculations show a difference in excess of 7% in dose between the two algorithms at a depth of 4 mm. The AAA produces dose distributions better resemble the measured dose distribution.

Conclusion: Preliminary results indicate that the AAA algorithm more closely calculates dose in the buildup region where flash is of concern.

Conflict of Interest: No conflict of interest.