

Dosimetry for enhanced dynamic wedge field

Various Enhanced dynamic wedge (EDW) fields from Varian C-series Linacs were measured with linear array detectors and small ion chambers. The 60° EDW field as well as the open field profiles were measured and the profile ratio of 60° EDW field to the open field was determined. This profile ratio is controlled by the software and machine independent. So the 60° EDW field can be generated by combining this profile ratio with the open field profile. Any other EDW wedge (10° to 45 °) profiles can be easily generated by combining the open field and the 60° EDW field with the appropriate weighting factors supplied by the manufacturer. The generated profiles of various EDW wedges are compared with the measurements done with linear array detectors and single ion chambers. Excellent agreement was obtained. The central axis (CAX) wedge factors can be calculated using the golden STT (GSTT) table for any field sizes. The calculated wedge factor is the ratio of the GSTT value at 0 (CAX) to that where the moving jaw stops ($Y_{\text{stationary}} - 0.5 \text{ cm}$). So the CAX wedge factors depend only on the stationary jaw position. The CAX wedge factors calculated using the GSTT table are compared with the actual ion chamber measurements. The agreement is within 1% except the 6 MV 60° EDW 20x20 field where the discrepancy was 1.7 %. The EDW wedge factors are independent of depth because there is no beam hardening and extra scattering associated with the physical wedges.