

AbstractID: 13331 Title: Present status of IAEA/AAPM recommendations on small and composite field dosimetry

Purpose: An international IAEA/AAPM working group is preparing recommendations for reference dosimetry in small fields and composite fields. A proposed formalism for dosimetry in small and composite fields was published that introduces machine specific reference (msr) fields for static small fields and plan-class specific reference (pcsr) fields for composite fields such as an IMRT sequence. The status of present activities, based on the proposed formalism, will be reviewed.

Method and Materials: For msr fields a literature review is conducted and for some modalities experiments and Monte Carlo simulations are performed. For composite fields various routes are explored to arrive at suitable pcsr fields. Some of these start from clinical plans and try to distil most representative reference deliveries, while others start from treatment unit specific features to arrive at relevant modulated plans. Experiments and Monte Carlo simulations are performed as well to determine correction factors for ionisation chambers in pcsr fields and to evaluate their suitability to represent a class of clinical plans. One idea being explored is that for a composite field where full charged particle equilibrium is established, the overall correction factor equals the reciprocal of the gradient correction factor in the conventional reference field. **Results:** State-of-the-art results on the correction factors for msr and pcsr fields will be reviewed. Experimental work performed on pcsr fields in TomoTherapy and step-and-shoot prostate plans indicates that correction factors for suitably sized ion chambers are not more than 1% different from unity. Monte Carlo simulations confirm this. Studies are underway to test the sensitivity of the correction factors to characteristics of the pcsr field. **Conclusion:** Results indicate that reference dosimetry in msr and pcsr fields is feasible with acceptably small corrections. A working document on static small field dosimetry is aimed for by the end of this year.