

## AbstractID: 8673 Title: An Exploration of the Use of Custom Compensators for Modulated Electron Radiotherapy

**Purpose:** To explore the use of custom compensators for modulated electron radiotherapy (MERT).

**Methods and Materials:** Several simple compensators, made of acrylic and paraffin, were placed in the 10x10 cm<sup>2</sup> electron applicator of a Varian 2100C linear accelerator. Kodak EDR2 film was placed at various depths in a solid water phantom located at a SSD of 100 cm. Simulated treatments were delivered using either a single energy or multiple energies to demonstrate the effect of the compensator on the resulting dose distribution. Dose distributions for the compensator-shaped fields were obtained from film measurements and compared to distributions measured for open 10 x 10 cm<sup>2</sup> fields.

**Results:** The use of compensators with multiple electron energies resulted in complex dose distributions that cannot be formed easily with standard electron cutouts. A relatively smooth gradient was observed at locations where compensator thickness changed rapidly. It was observed that the compensator-shaped fields exhibited more gradual dose drop-off at the edges of the field. The penumbra for the compensator-shaped fields was somewhat larger than that for the open single-energy fields.

**Conclusion:** The use of custom compensators for modulation of electron beam energy and intensity is a promising technique that may be of clinical use in MERT treatments.