

**AbstractID: 9087 Title: Relative Intensity Map and 2D-Dose Profile Verification in IMRT using an aS500 EPID**

This study evaluates the use of an aS500 portal detector for both intensity map verification and 2D-dose profile verification. A software program was developed to read the intensity map from the portal imager and compare it with that predicted by the treatment planning system. For this purpose the pixel values along each bixel (beamlets of varying intensity) were normalized to the maximum pixel value in the map. For dose verification purposes, a calibration curve relating the pixel values and dose rate (cGy/MU) was determined. 2D-dose profiles were extracted for 5 Intensity Modulated Beams (IMBs) from the treatment planning system and compared with that extracted from the imager. In spite of the inter-leaf and intra-leaf leakage from the multileaf collimator and the inherent scatter from the portal imager, the relative pixel intensity was found to yield an accurate estimate of the planned intensity map for 15 IMB's to within  $-1.2 \pm 2.7$  %. For the 2D-dose profile verification, the portal imager yielded results for 133 bixels to within  $0.7 \pm 3.1$ % of the treatment planning system. Thus, a pre-treatment validation tool for verifying intensity maps and dose profiles has been developed which, when used with a secondary MU checker, could circumvent the need for cumbersome ion-chamber and film validation measurements.