

AbstractID: 1715 Title: Localization of the Treatment Isocenter with the New Generation of Flat Panel Positioner

The geometric instability in time and space of portal imaging system components has forced the use of a reticule attachment as point of reference for patient alignment. The reticule occasionally superposes the radio-opaque markers used in prostate treatments. Moreover the clinical procedure necessitates an extra entrance in the room to remove the reticule prior to treatment which increases the treatment duration and the risk of non-corrected patient motion. The objective of this work is to evaluate the possibility of locating the treatment isocenter directly with the position given by the EPID system. A plumb bob located at the isocenter was used to measure the detector sagging for different gantry positions. A RID 1640 Perkin Elmer Amorphous-Si Flat Panel is installed on a Siemens Primus linear accelerator. The Siemens Oncor mechanical mount is used to support the Flat Panel. The array dimension is 41×41 cm² and the sagging results presented were performed at a Source-Detector-Distance (SDD) of 145 cm. Maximum saggings of 0.8 and 4.0 mm were observed for the transversal and longitudinal directions respectively. Although only four full sets of measurements were acquired with one-week interval, sagging standard deviations of 0.2 mm on average for both directions suggests great positioner stability. This would make possible the use of viewing tools where the images would be corrected for mechanical sagging at different gantry angles. The mechanical behavior of the imaging system over time needs to be verified before we can confidently rely on the EPID position.

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