

AbstractID: 1261 Title: A calibration procedure for MLC and jaws of an Elekta Sli linear accelerator

For IMRT optimal calibration of the MLC and jaws is required. In order to obtain the accuracy of the positioning of the jaws and MLC leaves of the Elekta linac a detailed calibration procedure was set up.

Measurements were performed using a diode in a waterphantom as well as using film. It has been shown that for the Elekta system the sensitivity of the positioning of the X jaw, back-up jaw & MLC leaves was respectively 0.028, 0.053 & 0.132 mm per unit. For the X jaw a junction (at the collimator axis) could be achieved with no over- or underdosage, combined with an accuracy of 0.3 mm in field width. Junctions were optimised at a depth of 5 cm. For the central MLC leaf a minimal over- or underdosage of 3 % was found for junctions on the collimator axis. Combined with an accuracy of 0.3 mm in field width. For the entire range of leaf positions (-12.5 till +20 cm) 10 % was found. For the non-central leaves, within 10 cm from the collimator axis, 10 % underdosage was observed and for the outer leaves (> 10 cm off axis) 15 % underdosage at junctions. Finally, the positioning of the back-up jaws was optimised using film. The achieved accuracy is considered adequate for step-and-shoot IMRT, but not for DMMLC IMRT.