

Dynamic Multileaf Collimation (DMLC) has been employed at MSKCC for over two years as a means of generating intensity-modulated beams for prostate patients. The DMLC algorithm includes a head scatter correction factor by adding to the primary source, which is a point source located at the origin, a secondary component distributed about the origin. The algorithm also takes into account leaf edge effects using a partial transmission function determined with ray-tracing techniques. For prostate patients agreement between desired and measured dose distributions is generally very good though, occasionally, discrepancies of 3-4 % are observed. To better understand the source of the disagreement the issues of the head scatter and leaf edge effects are more closely examined. It is shown that a) they can very easily cause disagreements of several percent, b) these disagreements increase as the leaf separation decreases, c) the disagreements are more sensitive to the position of the upper jaw than that of the lower.