

Dosimetry of Asymmetric Jaws for Matching Junctions

Matching junction technique using independent movable jaw of a linear accelerator is a routinely performed setup technique in the clinic. The procedure involves moving the independent jaw to the center of a symmetric field. The radiation beam thus produced will have a non-divergence beam edge that is conceptually easier to match with other field. However, this non-divergence is lost if the moving jaw is not perfectly at the center of the symmetric beam.

This study will examine the dosimetry of non-perfectly placed moving jaw which may be due to machine setup and/or machine tolerance. The dose profiles will be scanned at the depth of d_{max} , 5, 10, 15, and 20 cm for a defined position independent beam edge. The independent jaw will be moved for a range of 2 cm before and 2 cm after the beam center in step of 0.5 cm. The penumbra defined between the 20% and 80% level will be measured. Based on the location of the minimum penumbra width, profiles will be taken again and matched with mirror radiation field. Profiles will also be acquired at the various depths for a displacement of 2 mm before and 2 mm after the center of the beam. The quality of the matching of the fields will be discussed.