

AbstractID: 11708 Title: To evaluate the intensity modulated split field using proprietary software

Purpose:

To evaluate the intensity modulated split field using proprietary software.

Method and Materials:

A very common method for the IMRT field's quality control is the verification of planar dose distributions with integrated images obtained from EPID detectors. We can compare the predicted dose calculated from Eclipse® treatment planning with measurements made with aSi 1000 Portal Vision® (Varian). Sometimes, the calculated fluencies for a specific incidence need to be divided into 2 or 3 fields because of the over travel limitation of the MLC. Therefore, each split field can only be calculated and evaluated separately with Varian Dosimetry® evaluation software. However, it's necessary to evaluate the sum of each split predicted and measured fields to verify the agreement in the superposition region. Proprietary software was developed in C# to sum each predicted split field and to compare with the same summed measured split field. The comparison was made using the Gamma method with the parameters distance to agreement (DTA) 2mm and dose difference (DD) 3%, where 98% of the points should be below Gamma 1 (score) for a specified ROI and maximum gamma 3.

Results:

144 fields were analyzed using the gamma method having an average score of 99,1% (98,2% - 99,8%) and average maximum gamma 1,8 (1,2 - 3,3).

Conclusion:

The developed software showed that the region of superposition is in agreement with the limits of the gamma index. However, we observed that the maximum gamma and score was influenced mainly because of the tongue-&-groove effect and interleaf transmission that is not well calculated by the treatment planning system.

Conflict of Interest (only if applicable):