

AbstractID: 1155 Title: A novel combined intensity map technique for ultra fast IMRT QA using a single perpendicular film

A novel *Combined Intensity Map* (CIM) technique is described for *ultra-fast* IMRT QA. The technique is as follows: A *single-sheet* of Kodak EDR2 film is placed at a source-to-surface distance of 95 cm at a depth of 5 cm in a solid water phantom. Using a fixed gantry angle of 180° so that the beam direction is *perpendicular* to the film plane, the patient-specific IMRT fields are sequentially used to irradiate the film according to the planned monitor units. In this way a single film provides a record of the actual entire treatment. Using the same beam geometry, a second film is used for calibration to dose. The technique is advantageous to the alternative approach where a single film is used in a *parallel mode* and irradiated in a phantom using the patient specific gantry angles to simulate the treatment. The advantages are: (1) it provides information about the *entire* intensity-modulated field for each beam as compared to the *parallel* mode approach, which only provides information about the intensity modulation of a narrow band, typically only a single-leaf pair. (2) The *perpendicular* approach is less controversial than *parallel* mode approach, which has shown mixed/questionable results in the literature. Using the CIM technique, the time required to verify a typical 7-field IMRT plan from the instance the plan is approved to the final print out of the IMRT QA report is under 20 minutes. This can significantly reduce the workload of clinics that treat a large number of IMRT patients.