# VERIFICATION OF INTENSITY MODULATED BEAMS IN RADIOTHERAPY

M. Fix[1], P. Manser[1], H. Keller[1], E. Born[2], D. Vetterli[2], R. Mini[2], P. Ruegsegger[1]
[1]Institute for Biomedical Engineering and Medical Informatics, ETH Zurich, Switzerland
[2]Division of Med. Radiation Physics, Clinic of Radio-Oncology, Inselspital-University of Berne, Switzerland

In this work a procedure is suggested for a qualitative verification of intensity modulated beams, realized by the sliding window technique. The feasibility of the Varian PortalVision imaging system for this verification procedure was investigated.
The verification procedure is divided in several steps: 1. Verification of the input fluence distribution before the treatment (without patient). During the application of the dynamic MLC field, portal images are acquired continuously. The sum of these images corresponds to the time integrated fluence distribution and can be compared to the fluence matrix which was used to calculate the leaf motion. 2. Verification of the patient setup. An open field image, with the patient positioned, is acquired to get an anatomical image and for comparison with the fluence image of step 1. 3. Verification of the patient dose. Acquisition of a fluence image during the patient irradiation, analogous to step 1, and a comparison with a calculated portal dose distribution is carried out.
The results showed that the sum of continuously acquired portal images can be used to verify the location of the extremes of a given fluence distribution. Conversion of the individual portal images to dose allows a comparison with a calculated portal dose image.