The analysis of obtained dose deviations in different regions showed that the largest difference between doses occurred behind the Bragg peak region. This can be explained by the large dose gradient in this region and the spatial accuracy, which is better for RCF than for 2D measurements using the semiconductor detector.

For an unmodulated beam the mean difference between the doses measured with the RCF and the semiconductor detector was larger than for a modulated beam, especially in the Bragg peak region. Also, the region where the dose measured with the semiconductor detector was higher was larger. This led to the conclusion that the underdosage as indicated by RCF was larger for the unmodulated than for the modulated beam. This result could be associated with the higher LET values in the Bragg peak region of the unmodulated proton beam. Probably the observed underdosage in the Bragg peak is caused by a decrease in RCF sensitivity for higher LET. Precise evaluation of the dose in the Bragg peak requires that RCF calibration be carried out in the Bragg peak region too. For determination of the dose in the whole proton range, an improvement in accuracy could be achieved by using a correction factor that takes into account LET variation with depth. The difference in uniformity for a single RCF sheet is less than 6%. This may explain the differences outside the Bragg peak region.

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