Purpose: To compare the range of the protons measured in the treatment room to the range predicted by Xio.

Methods: Depth dose curves were measured using a multi layer ionization chamber for various ranges and modulations. Ranges and modulations were increased in one centimeter increments. The depth dose curves were then analyzed and the measured range was determined. The range is defined as the point where the distal edge of the depth dose curve is equal to 90% of the average value of the dose across the spread out bragg peak. The measured range was then compared to the range predicted by the treatment planning system. The treatment planning system used was Xio.

Results: The maximum deviation was found to be 1.6 mm, with the majority of range/modulation combinations falling under 1 mm.

Conclusions: The difference in range being modeled by the treatment planning system compared to the range measured in the treatment rooms is acceptable, and an uncertainty of 1.5mm is used for treatment planning.

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none