A preliminary Monte Carlo simulation study of the Varian TrueBeam Linear Accelerator

**Introduction:** The Varian TrueBeam STX is among the most technologically advanced linear accelerators on the market today. It is the first commercially available medical linear accelerator to offer beam energies available without the presence of a flattening filter. Monte Carlo algorithms are rapidly becoming a common feature in the environment of the medical physicist. Both vendors and researchers are adapting these advanced computer simulations to more accurately predict external beam radiation dosimetry. To benchmark the quality of Monte Carlo simulations prior to their clinical implementation, the simulated data must be compared to directly measured beam data. In this study, a Monte Carlo simulation of the Varian TrueBeam is compared to the commissioning data collected from a TrueBeam Accelerator.

![Figure 1](image1.png)

**Figure 1.** A typical comparison between simulated dose profiles with measured commissioning data.

![Figure 2](image2.png)

**Figure 2.** A typical comparison between simulated PDD distribution with measured commissioning data.