AbstractID: 10837 Title: Comparasion of entrance dose of uniform scanning and double scattering modes in proton therapy

Purpose: To investigate the difference in entrance dose by double scattering and uniform scattering modes in proton therapy. **Methods:** Four modulated beams in different energy groups (options) were selected to run in both double scattering (DS) and uniform scattering (US) modes. PDD was measured for each beam in both modes. In DS mode, the compete PDD scan was performed. In US mode, only the dose at the selected depths in the entrance region and the dose in the center of the Spread Out Bragg Peak (SOBP) were measured. This is because the normal PDD scan can not be done due to the layer by layer delivery nature of US. Measurements were done in a WP-1D water phantom using a PPC05 parallel-plate ionization chamber. The ISO was set at the center of the SOBP for each beam. 100MU was delivered in US mode for each run. **Results:** Data show that in the entrance region, the first few centimeters, the dose by US, is about 5% less than the dose by DS mode for lower energy beams. The entrance dose however is very similar for the selected high energy beam in both modes. **Conclusion:** for lower energy beams, the entrance dose by US is less than that of DS. The lower entrance dose is likely due to higher peak to entrance dose ratio of the pristine peak in US.