AbstractID: 1814 Title: Characterization of target dose in Stereotactic Body Radiation Therapy (SBRT) of lung by direct measurment in anthropomorphic phantom and by Monte Carlo calculation

Stereotactic Body Radiation Therapy (SBRT) represents an exciting new delivery paradigm in which hypofractionated, extremely conformal dose distributions may be delivered to lung and liver lesions. At our institution over 230 such fractions have been delivered to roughly 75 patients to date, yielding exciting short term follow up data. A standard delivery scheme for lung metastases at our facility entails the delivery of 3 fractions of 12 Gy, delivered Mon., Wed., and Fri. Of significant interest to the SBRT community at this time is the determination of the optimal dose and fractionation scheme for lesions of the lung. Dose fractionation schemes currently range as widely as 6 fractions of 6 Gy, to 3 fractions of 22 Gy. For the SBRT community to determine the optimal dose and fractionation scheme it is imperative that an accurate understanding of the dosimetry in the very low-density-environment of the lung be obtained. In this study we perform direct measurements of delivered target dose in a highly customized anthropomorphic phantom (CIRS Thoracic Phantom with custom modifications). High precision TLD's are utilized to directly measure the delivered dose to unit density, spherical targets of 1, 2, 3 and 4 cm embedded in lung equivalent media. Peregrine Monte Carlo (MC) dose calculations are also performed and target dose volume histogram (DVH) data is generated. Measured and MC calculated dose is compared with Nomos Corvus heterogeneity-corrected dose prediction. BANG gel measured isodose distributions will also be presented.

Dr. Salter holds patents and receives royalties related to Nomos' *AutoCrane*