SRIM Simulation of the MEBT Absorber

April 25, 2012

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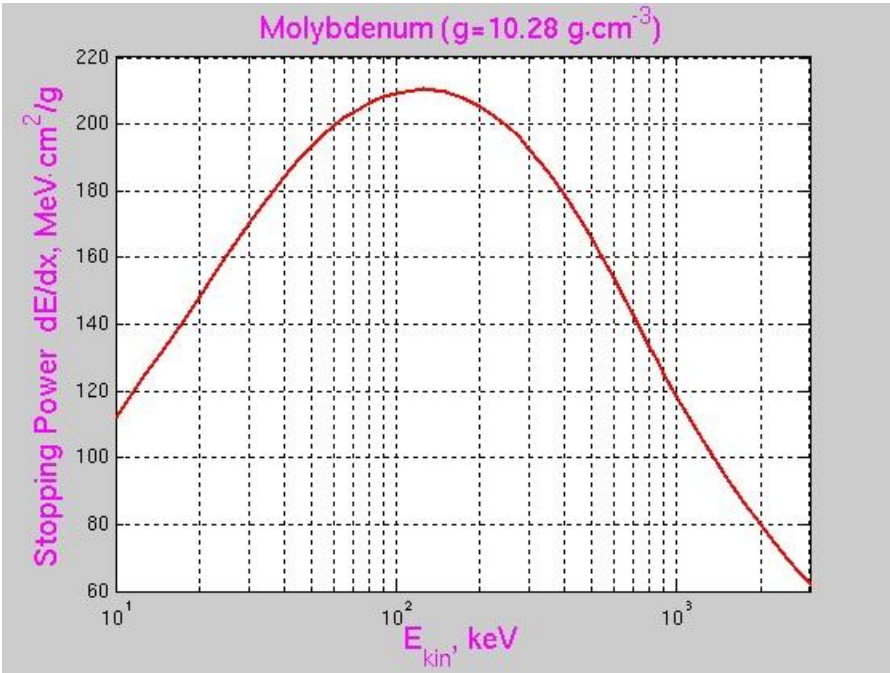
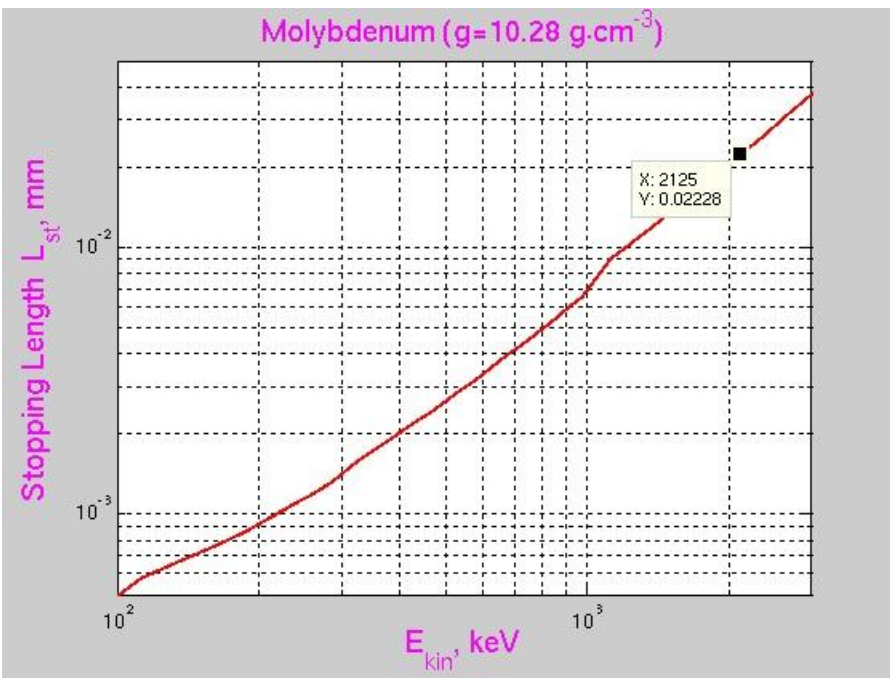
Multiple Scattering (Mo)

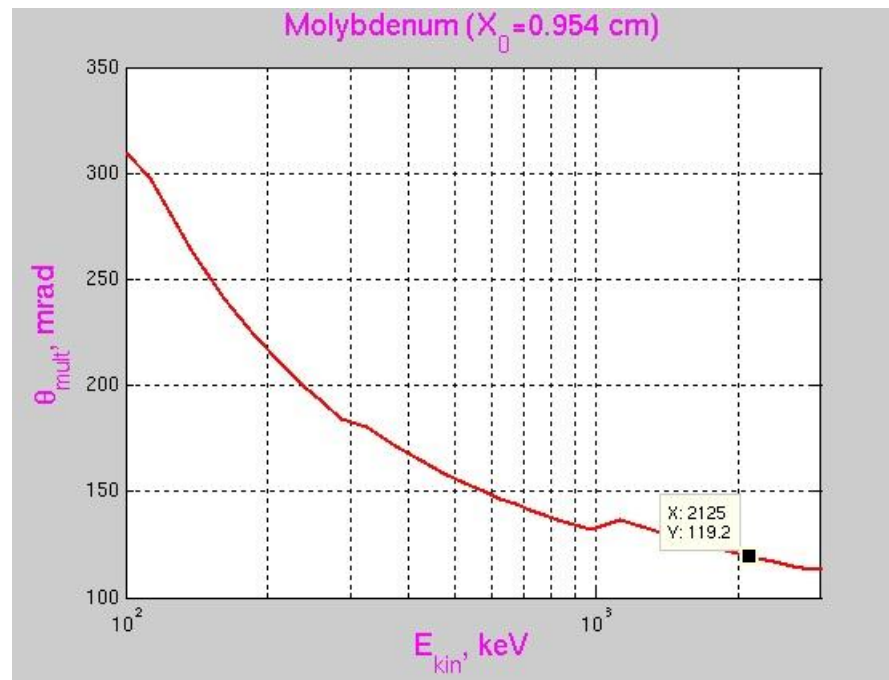


$$L_{st}(E_{kin}) = \int_0^{E_{kin}} \left(\frac{dE}{dx}\right)^{-1} dE;$$

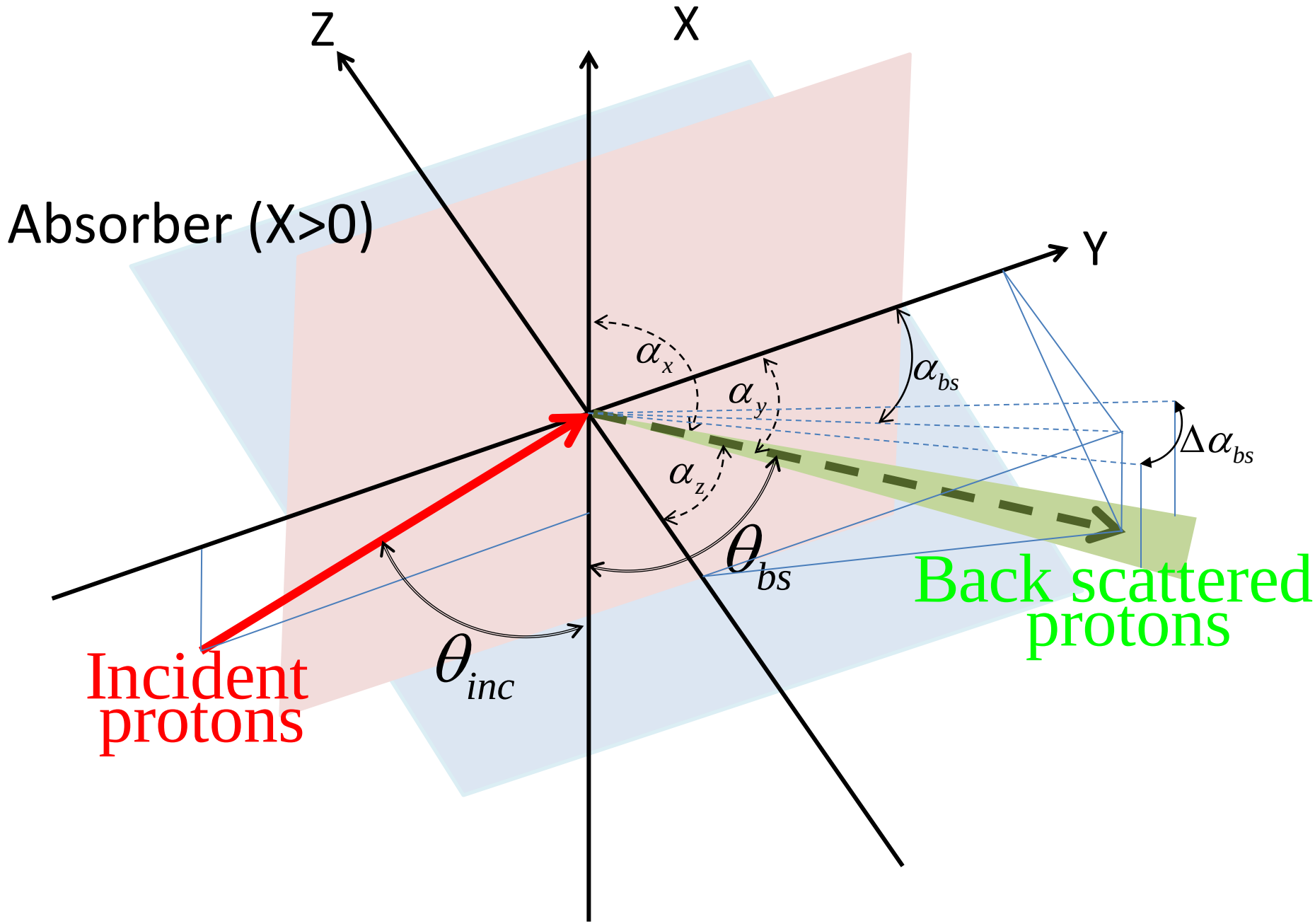
$$\beta cp = E_{kin}\frac{E_{kin}+2m_p}{E_{kin}+m_p};$$

$$\theta_{mult}(E_{kin}) = \frac{13.6\ \text{MeV}}{\beta cp}\sqrt{\frac{L_{st}}{X_0}}\left(1+0.038\cdot\ln\frac{L_{st}}{X_0}\right).$$

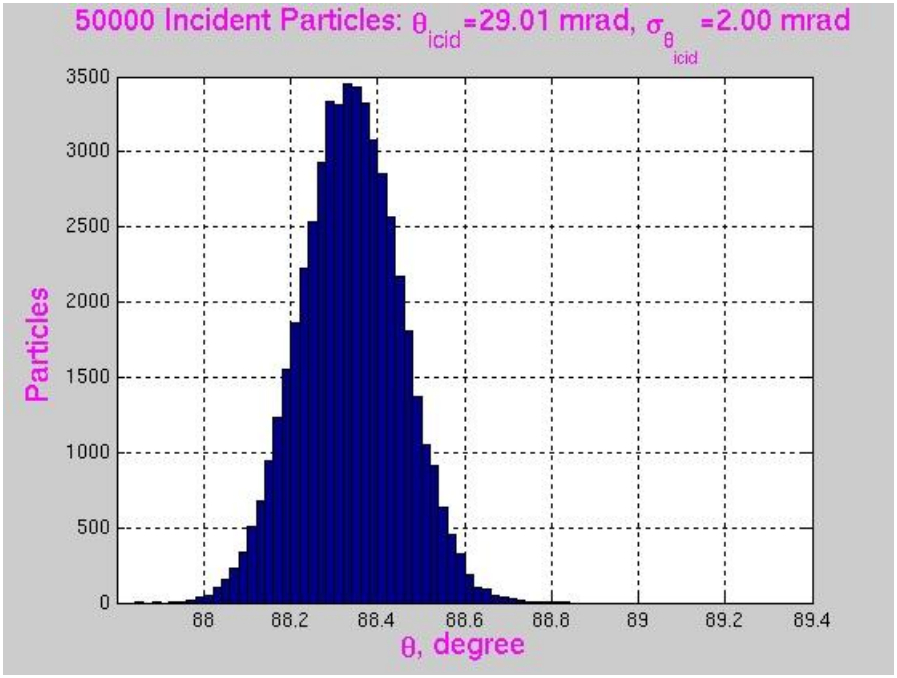




Geometry of the Back Scattering (for code SRIM)

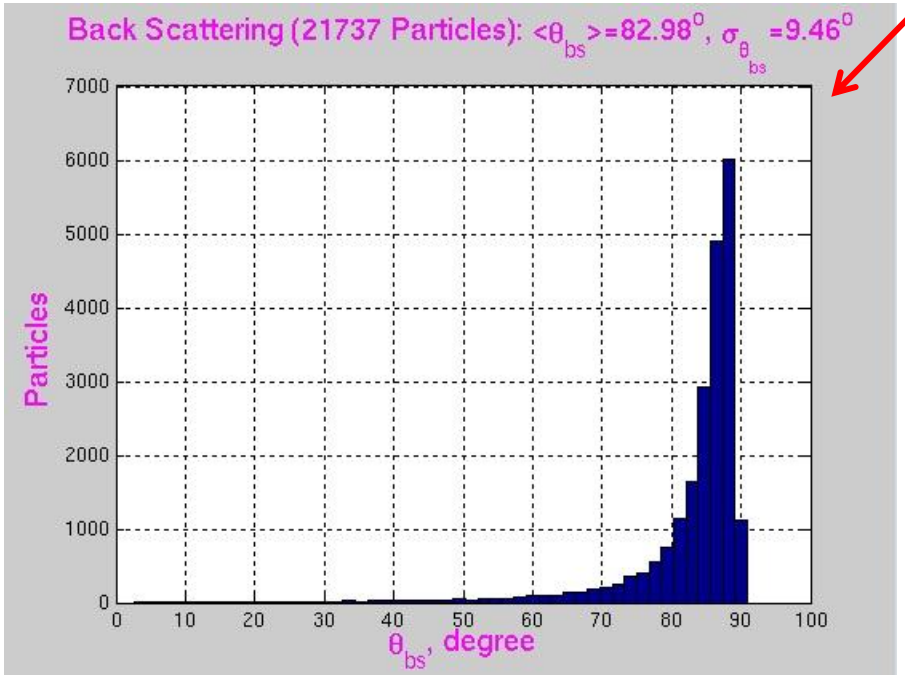


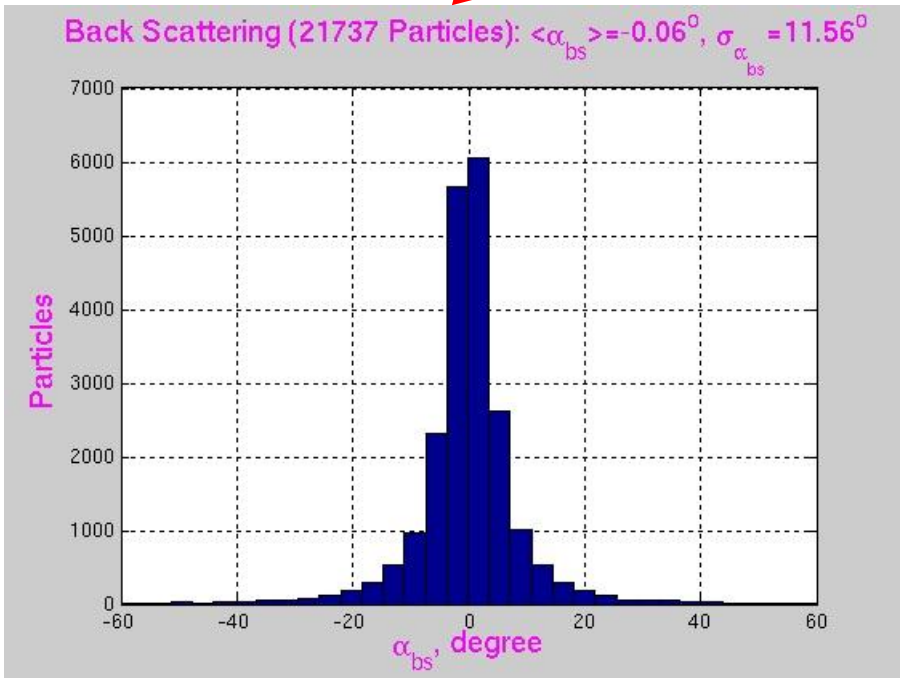
Incident and Back Scattered Particle Distributions



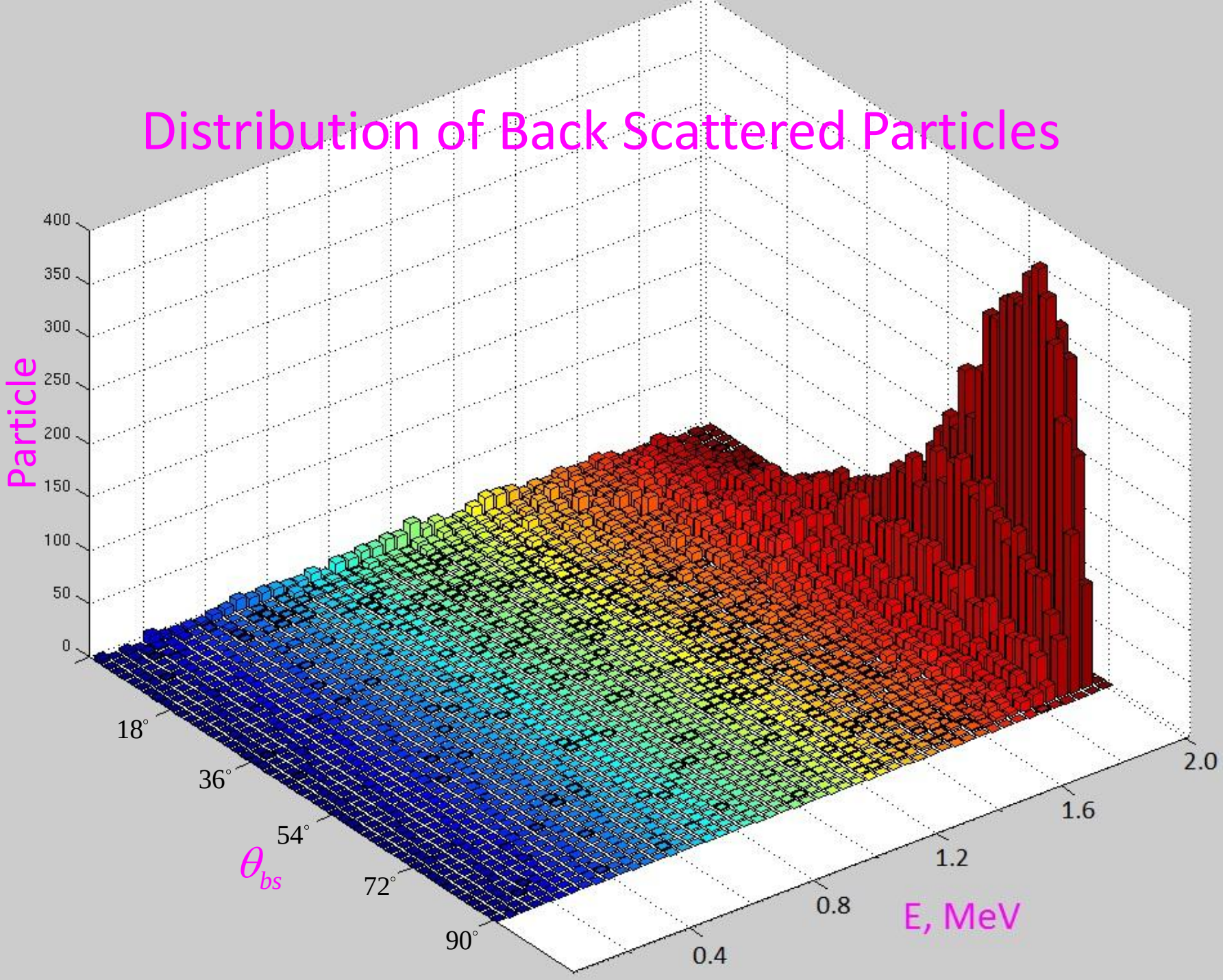
Along the direction of the "reflected" beam

Direction across the "reflected" beam

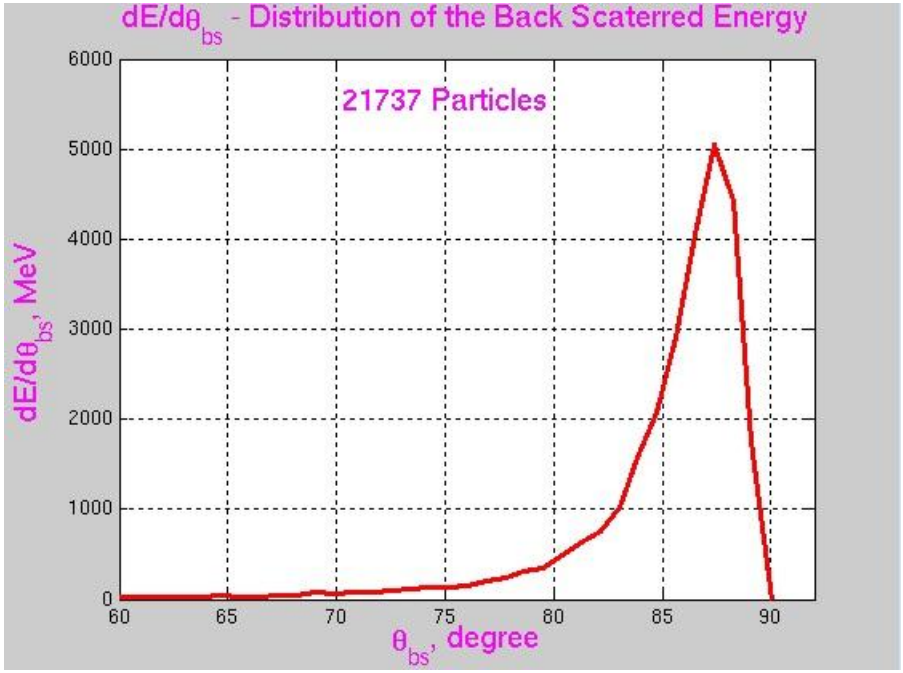


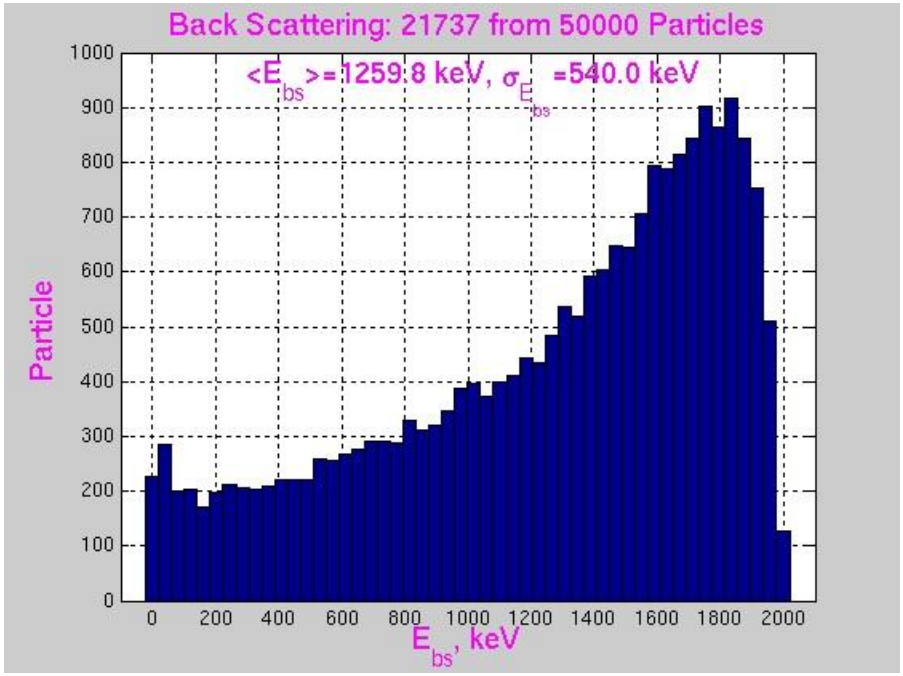


Distribution of Back Scattered Particles



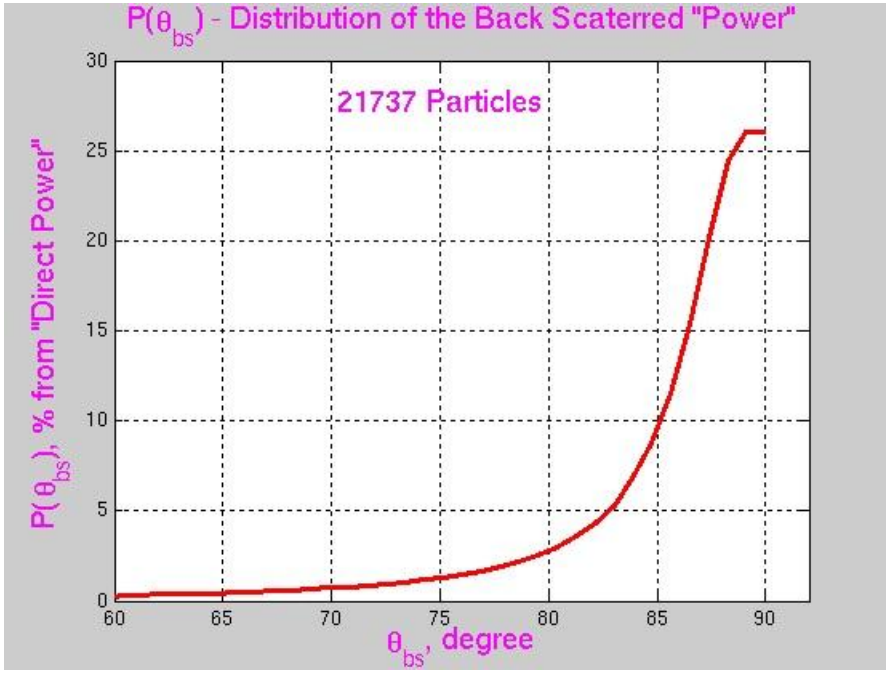
Energy Characteristics of the Back Scattered Particles



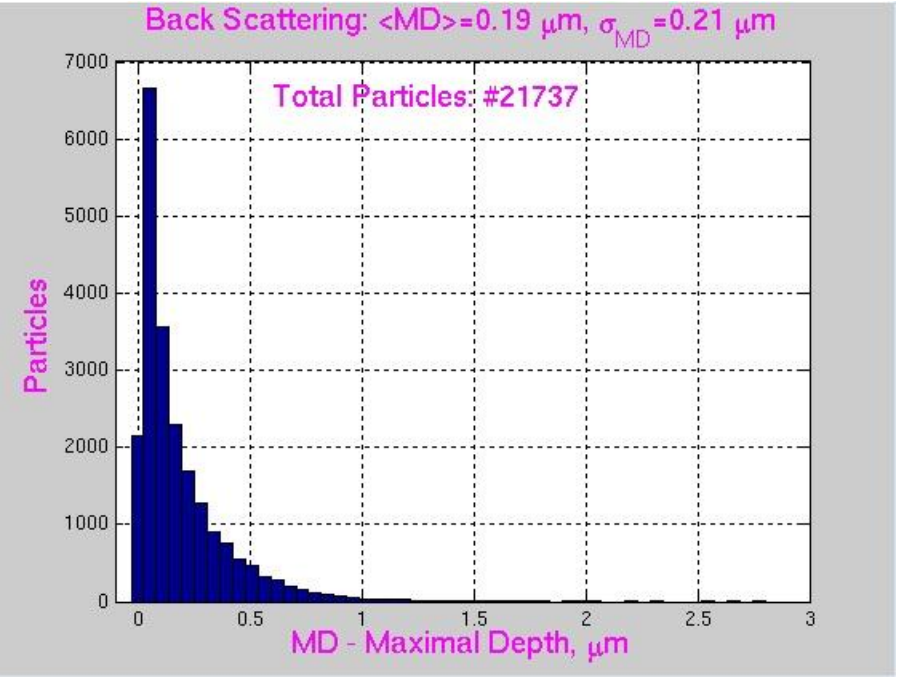


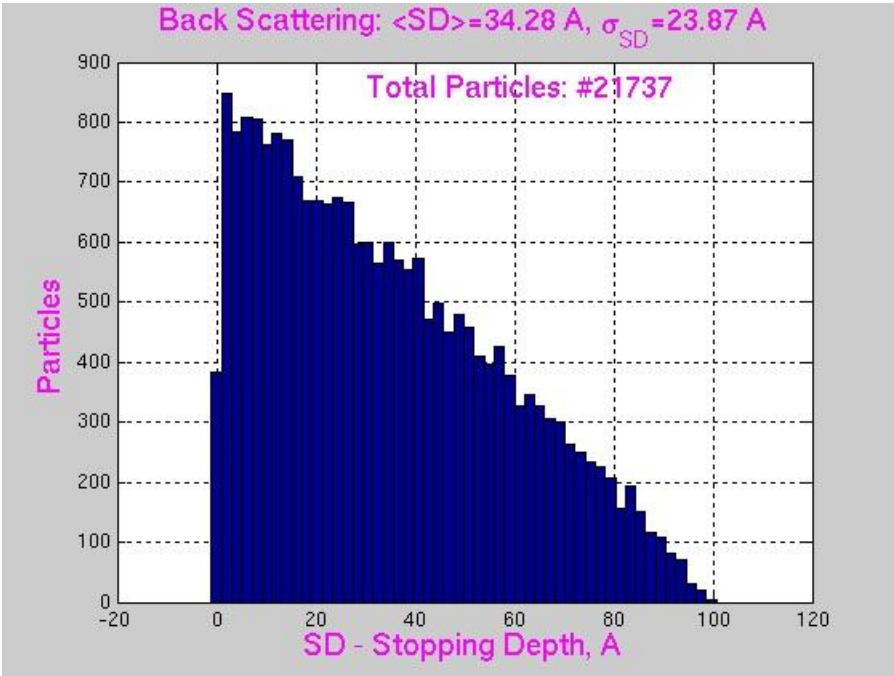
$$P(\theta_{bs}) = \frac{1}{P_{Direct}} \int_0^{\theta_{bs}} \frac{dE(\theta')}{d\theta'_{bs}} d\theta',$$

where $P_{Direct} = \sum_{\substack{\text{all incident} \\ \text{paricles}}} E_i.$

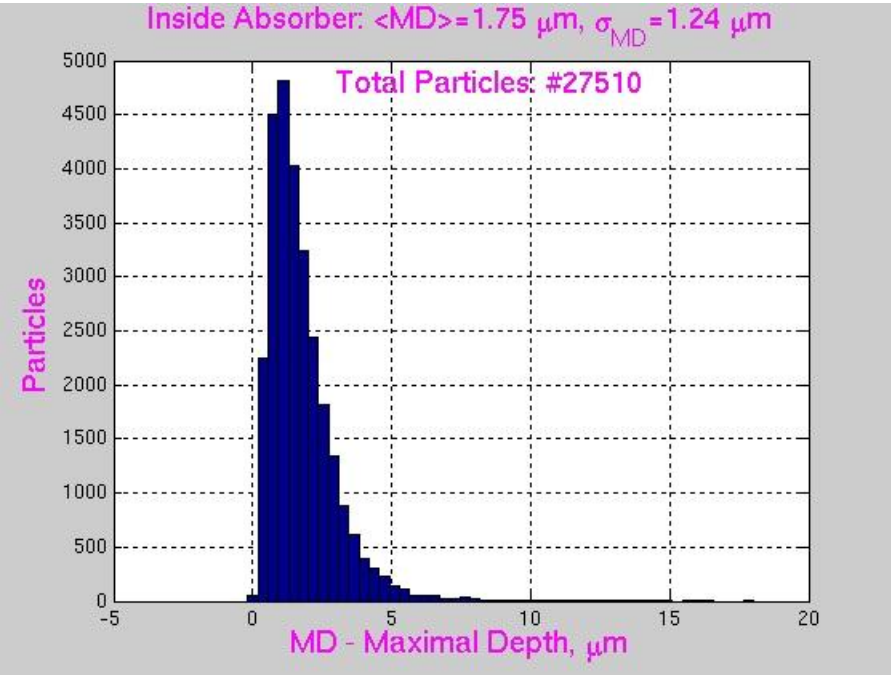


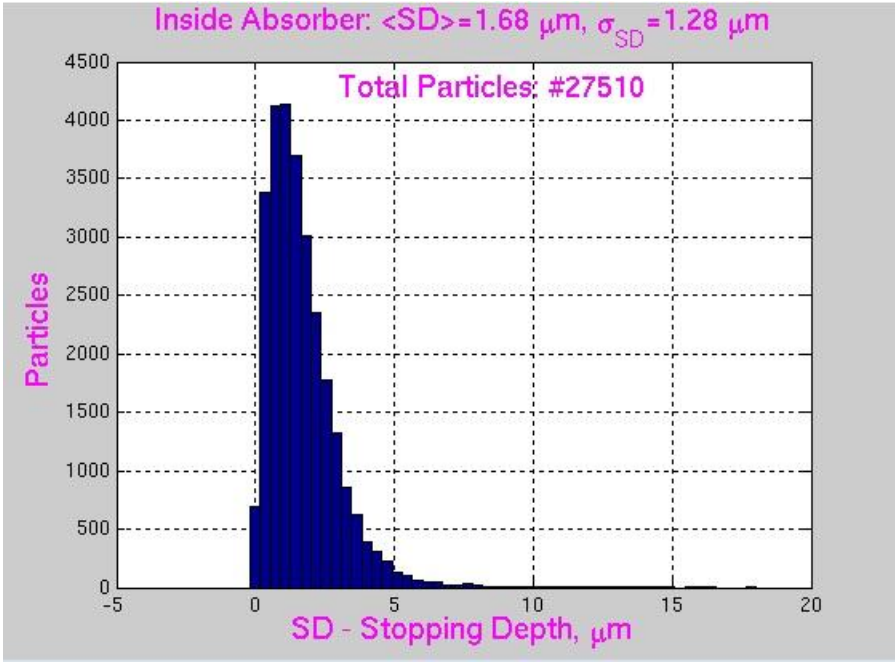
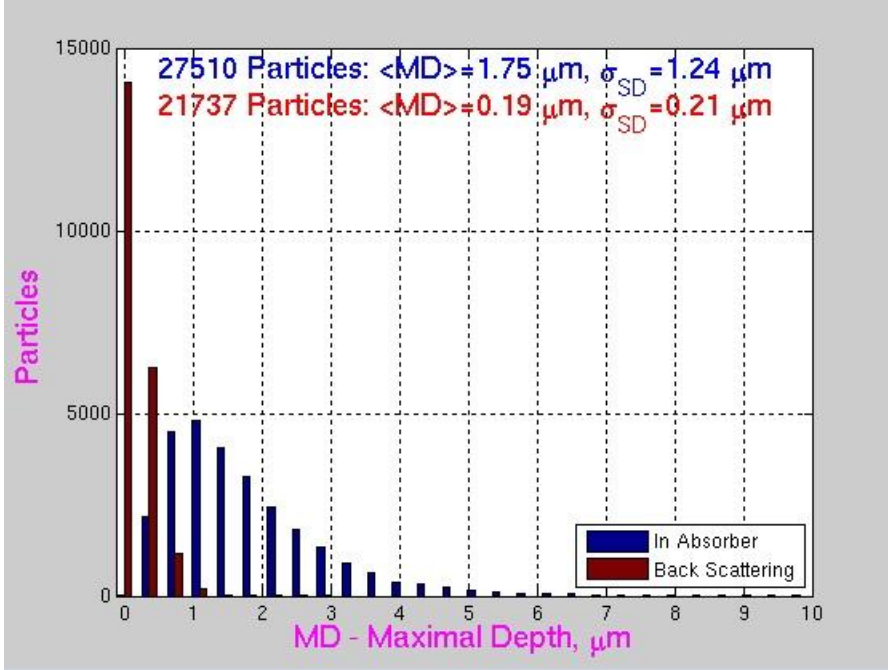
Penetration of the Back Scattered Particles to the Absorber





Penetration of the "Direct" Particles to the Absorber





Comparison of the penetration to the absorber of incident and back scattered particles