Derivation of the Abrasion-Ablation Model Using Corrections to the Phase Function SANTOSH BHATT, LAWRENCE TOWNSEND, The University of Tennessee — The analytical abrasion-ablation model has been used for the quantitative predictions of the neutron and light ion spectra from nucleus-nucleus and nucleon-nucleus collisions. The abrasion stage of the current model is based on the Glauber's multiple scattering theory and applies the small angle approximation which assumes the longitudinal momentum transfer for the scattering amplitude to be small, where the expansion of the scattering amplitude is only considers first order terms. However the validity of the small angle approximations for the current model is not clear for light ions and nucleons. In this work, we have re-derived the phase functions, χ, for the calculation of nuclear cross-sections using a perturbation approach and expanded Fourier-Bessel arguments of scattering amplitude in terms of Legendre polynomials, thus eliminating the small angle approximation. We have computed the differential cross-section for various projectile-target data sets at different energies for different scattering angles and compared our results with the usual Glauber model.

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Date submitted: 24 Aug 2011

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