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**Charge-to-Mass Dispersion Methods in Knockout-Ablation Fragmentation Models**[1] LAWRENCE TOWNSEND, KRISTA BURTON, WOUTER DE WET, The University of Tennessee — Breakup of high-energy heavy ions in nuclear collisions is an important process in space radiation transport, shielding and risk assessment since the secondary particles produced by these collisions have ranges greater than their parent nucleus, and are damaging to humans and spacecraft components. This work uses a quantum-mechanical optical potential knockout-ablation model to estimate these collision cross sections in order to investigate differences in isotope and element production cross sections as a result of utilizing two different models of charge-to mass ratios for the projectile prefragments produced by the abrasion/knockout process. One model commonly used, a hypergeometric model, assumes that the distribution of abraded nucleons is completely uncorrelated. However, it permits some unrealistic distributions, such as removing all neutrons in the knockout stage, while leaving all protons intact. Another model, developed for use with a classical geometric, clean-cut abrasion model, is based upon the zero point vibrations of the giant dipole resonance of the fragmenting nucleus. In this work we compare fragment production cross section predictions using the two charge dispersion models with published experimental data.

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