

Abstract Submitted
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Momentum Transfer in Soft X-ray - Induced Shock Loading of Meteorite and Planetary Materials¹ JOHN REMO, Harvard University Center for Astrophysics, MICHAEL FURNISH, Sandia National Laboratories — The response of meteorite and planetary materials to high- intensity <1 keV x-rays from Z-pinch sources is described. These materials include iron and stony meteorites, magnesium rich olivine (dunite), and Al and Fe calibration samples. Input stresses varied from 6.1 to 12.4 GPa, attenuating to \sim 1.4 to 2.5 GPa for the iron meteorites, \sim 0.3 to 1.9 GPa for the stony meteorites, and 1.64 to 1.91 GPa for dunite. The calibration (pure) metals showed less attenuation than the highly inhomogeneous natural materials: 9.5 to \sim 5 GPa for Fe and 12.4 to 10.6 GP for Al. Methods for deducing momentum and energy coupling into these materials from the radiation are discussed. These data are useful for planetary and astrophysical modeling and for near-Earth object mitigation studies requiring momentum coupling, and momentum enhancement coefficients.

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