Abstract Submitted
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Development of a multiple wavelength extinction diagnostic for measuring ejecta particle size distributions.[1] PAUL STEELE[2], STEVE COMPTON, BARRY JACOBY, Lawrence Livermore Natl Lab, CATALIN FILIP, National Security Technologies, MATTHIAS FRANK, DANIAL PHILLIPS, JOSE O. SINIBALDI, Lawrence Livermore Natl Lab — Mie's solution of Maxwell's equations for the interaction of light with spherical particles shows that particle diameter has a dramatic impact on the amount of light scattered or absorbed by a particle. The ratio of particle size to wavelength is particularly important. By measuring the transmission through a sheet of ejecta at multiple wavelengths and making certain assumptions, it is possible to estimate the ejecta particle size distribution. The Multiple Wavelength Extinction (MWE) diagnostic is being developed at Lawrence Livermore National Laboratory (LLNL) to do just that. Various potential system configurations were initially evaluated using a computer model developed in MATLAB. Inexpensive hardware (MWE Beta) was acquired for a basic proof-of-concept experiment using calibrated test particles. Encouraging results enabled procurement of better hardware. Characterization and testing of this MWE 1.0 system is ongoing. MWE 2.0 is now being designed. Ejecta experiments require a high explosive drive, an array of ejecta diagnostics and containment vessels, all of which are readily available at LLNL's High Explosives Application Facility. LLNL-ABS-723858

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[2]Presenting

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