

**PDC2017
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Submitted for consideration to the Impact Consequences Session

**IN PURSUIT OF IMPROVING AIRBURST AND GROUND DAMAGE PREDICTIONS:
RECENT ADVANCES IN MULTI-BODY AERODYNAMIC TESTING
AND COMPUTATIONAL MODELING VALIDATION**

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ABSTRACT

An airburst from a large asteroid during entry can cause significant ground damage. The damage depends on the energy and the altitude of airburst. Breakup of asteroids into fragments and their lateral spread have been observed. Modeling the underlying physics of fragmented bodies interacting at hypersonic speeds and the spread of fragments is needed for a true predictive capability. Current models use heuristic arguments and assumptions such as “pancaking” or point source explosive energy release at pre-determined altitude or an assumed fragmentation spread rate to predict airburst damage. A multi-year collaboration between German Aerospace Center (DLR) and NASA has been established to develop validated computational tools to address the above challenge.