

MODELING OF AN EXPLOSIVELY FORMED PROJECTILE (EFP) USING A COUPLED CFD/CSD METHODOLOGY

O. A. Soto, J. D. Baum, M. E. Giltrud, R Löhner

SAIC
1710 SAIC Drive, MS 2-6-9, McLean, VA 22102, USA
Orlando.A.Soto@saic.com

Outline

- ❖ **Objective:**
- ❖ **Approach: The coupled CFD/CSD Methodology**
- ❖ **Numerical simulations**
- ❖ **Lessons learned and conclusions**

Objective

- ❖ **Understand the physical processes controlling the formation and performance an EFP.**
- ❖ **EFP design optimization depends on:**
 - Explosive material
 - EFP length to diameter ratio
 - Explosive coupling to the structure
 - Detonation velocity
 - Ratio between detonation velocity and both the copper plate inertia and rate of deformation
 - material plate radius and shape
 - Plate thickness
 - Case material and fragmentation.
- ❖ **Coupling of several CFD and CSD processes is best performed by using a coupled CFD/CSD methodology.**