Abstract Submitted
for the DFD16 Meeting of
The American Physical Society

Jetting instability of a shocked cylindrical shell of solid particles. ANDREAS NYGAARD OSNES, University Graduate Center at the University of Oslo, MAGNUS VARTDAL, Norwegian Defence Research Establishment (FFI), BJOERN ANDERS PETTERSSON REIF, University Graduate Center at the University of Oslo — Explosive dispersion of cylindrical or spherical shells of liquid or solid particles features jetting phenomena and the underlying mechanism generating these is not well understood. Previous studies have indicated that the jets originate from structures formed during a very short time interval after the passing of the shock wave. This study utilizes LES simulations to examine the jetting phenomena occurring during impulsive dispersal of solid particles. The problem considered is the dispersion of a ring of particles inside a Hele-Shaw cell by a shock-wave, as previously examined experimentally by [Rodriguez, V., Saurel, R., Jourdan, G., Houas, L. (2013). Solid-particle jet formation under shock-wave acceleration. Physical Review E, 88(6), 063011]. Various degrees of coupling between the flow field and the solid particles are tested, and results are compared. The simpler case of replacing the shock-tube by a constant high pressure and high density region inside the solid particle ring is also examined and compared to the original problem.

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Date submitted: 28 Jul 2016 Electronic form version 1.4