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Eulerian-Lagrangian Simulation of an Explosive Dispersal of Particles[1] BERTRAND ROLLIN, Embry-Riddle Aeronautical University, FREDERICK OUELLET, RAHUL KONERU, SUBRAMANIAN ANNAMALAI, CCMT - University of Florida — Explosive dispersal of solid particles can be observed in a wide variety of contexts, notably in natural phenomenon such as volcanic eruptions or in engineering applications such as detonation of multiphase explosives. As the initial blast wave crosses the surrounding layer of particles, compaction occurs shortly before particles disperse radially outward at high speed. During the dispersion phase, complex multiphase interactions occurs between particles and detonation products of the explosive. Using a Eulerian-Lagrangian approach, namely point particle simulations, we study the case of a bed of particles of cylindrical shape surrounding an explosive chord. Our interest lies in predicting the behavior of particles after detonation. In particular, capturing and describing the mechanisms responsible for late-time formation of stable particle jets is sought. Therefore, detonation of the explosive material is not simulated. Instead an equivalent energy source is used to initiate the simulation. We present a detailed description of our approach to solving this problem, and our most recent progress in the analysis of particles explosive dispersal.

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