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Shock driven multiphase flow with particle evaporation JEEVAN DAHAL, JACOB MCFARLAND, Univ of Missouri - Columbia — The computational study of the shock driven instability of a multiphase system with particle evaporation is presented. The particle evaporation modifies the evolution of the interface due to the addition of the vapor phase to the gas. The effects can be quantitatively measured by studying various gas parameters like density, temperature, vorticity and particle properties like diameter and temperature. In addition, the size distribution of particles also modifies the development of instability as the larger size particles damp the evolution of interface in comparison to the smaller size particles. The simulation results are presented to study these effects using FLASH developed at the FLASH Center at the University of Chicago. The capabilities of FLASH for particle modeling were extended using the Particle in Cell (PIC) technique for coupling of mass, momentum, and energy between the particle and carrier gas. A seeded cylinder of gas with particles having either a single radius or a distribution of radii was studied. The enstrophy production and destruction mechanisms were explored to understand the reason for change in vorticity with particle size.

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