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Implementation of void growth model to predict ductile fragmentation JESSICA MEULBROEK, K.T. RAMESH, Johns Hopkins University — Fragment sizes following an impact depend on the energy partitioning and material behavior at high strain rates. The kinetic energy of the incoming projectile is converted to energy to create new surfaces and the kinetic energy of the fragments. There are a number of models which predict the average fragment size for brittle materials (i.e. Grady-Kipp, Zhou-Molinari-Ramesh) by taking into account these factors. The fragmentation of ductile materials cannot be predicted by these models. Energy partitioning for ductile materials should also include dissipation to plastic work and failure mechanisms which are different from those present in brittle failure. In order to characterize ductile fragmentation, a recent model for dynamic void growth and interaction will be implemented into a 1D simulation. From the simulation, a model for 1D ductile fragmentation will be formulated and an average fragment size for different strain rates predicted.

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