

Numerical modelling of hypervelocity impact phenomena

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This research presents a modification of “finite-size particle in cell” method developed for numerical modeling of processes at high energy density. It uses the Lagrangian–Eulerian representation of media which allows one to match contact and free surfaces and to calculate flows with strong deformations. Efficient models of thermodynamic properties, elastic–plastic deformation and fragmentation have been employed in the gas dynamic code adapted for parallel computations. 3D and 2D numerical modeling of plates penetrations by impactors of different geometry has been done in a wide range of velocities. The influence of used materials properties models on numerical results has been investigated.