# Multiscale shock hydrodynamics

Typical finite element algorithms for shock hydrodynamics are effective only on quadrilateral meshes in two dimensions and hexahedral meshes in three dimensions. In the case of Lagrangian meshes, we developed a new technology based on SUPG and multi-scale stabilization. Numerical results show very good agreement with state-of-the-art methods on quadrilateral or hexahedral meshes. In addition, results of the same quality can be obtained on triangular or tetrahedral meshes. The option of tetrahedral meshes is very appealing when combined with adaptive and/or automatic mesh generation techniques. An arbitrary Lagrangian-Eulerian (ALE) method is currently under development.

Sedov test on a triangular mesh: Density contours.
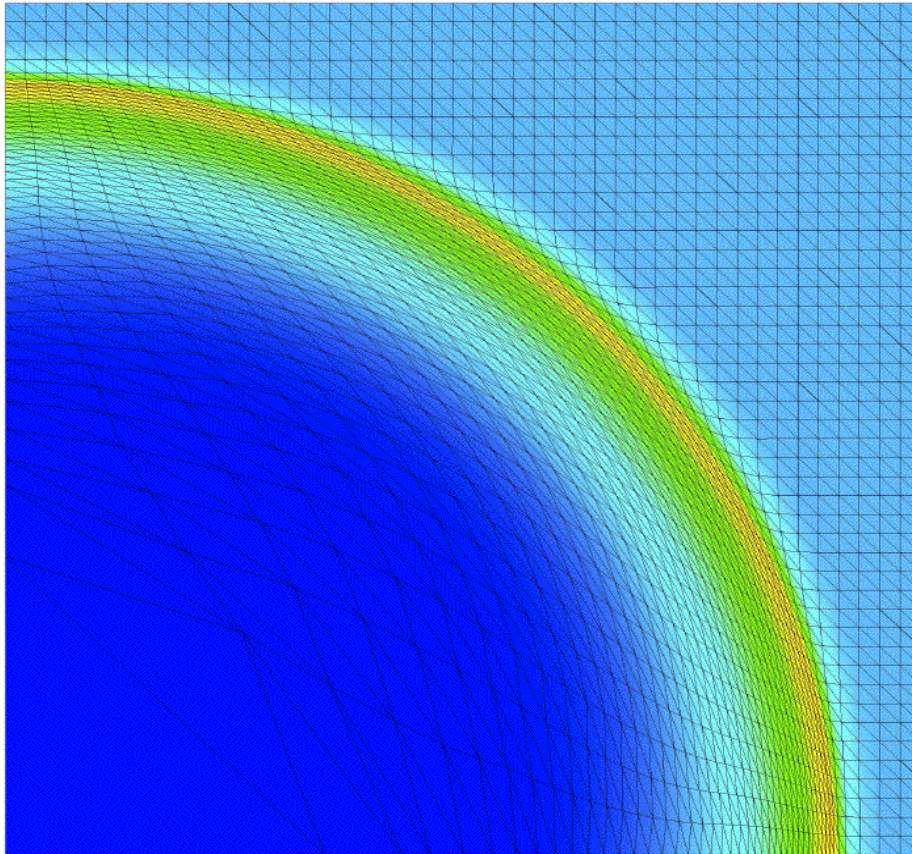
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