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State-free Front Tracking for Compressible Multi-material Problems DANAIL VASSILEV, JAMES PECOVER, NICHOLAS HAWKER, NATHAN JOINER, ARTURAS VENSKUS, NICHOLAS NIASSE, THOMAS EDWARDS, JON HERRING, DAVID CHAPMAN, MARTIN READ, NIKITA CHATURVEDI, ADAM FRASER, First Light Fusion Ltd. — High energy density physics (HEDP) is a rapidly growing field studying interaction of matter and energy under conditions of extreme temperature, pressure and density. Numerical models capturing hydrodynamic instabilities and shocks are of crucial importance for understanding HEDP and designing different experimental components. Interface tracking methods, and specifically the front-tracking method with a fixed Eulerian mesh and a moving Lagrangian interface, have been applied to these types of problems with a best-in-class success Glimm2002.

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