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A Simple Method for Detecting and Computing Shock Speeds on the Fly[1] TANNER NIELSEN, JONATHAN REGELE, Los Alamos National Laboratory — Tracking the motion and speed of shocks as they propagate throughout the computational domain during hydrodynamic calculations remains a challenging unsolved problem. We present a straight-forward approach to tracking shocks and computing their speeds in an arbitrary Lagrangian-Eulerian (ALE) framework that uses artificial viscosity for the handling of shocks. The method consists of two parts: shock detection, followed by the calculation of the shock speed. The shock detection algorithm operates with a cell-based tracking of a shock profile, which is based on the ratio of shock work to material work (i.e. large near shocks and near zero otherwise). During this process, the pre-shock and post-shock density and pressure are stored, which are then used to compute the shock speed based on a simple relation derived from the Hugoniot condition. Preliminary results show that this approach computes 1D normal shock speeds within 1

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