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*Shocks, Rarefactions and Triple Points in Multidimensional Conservation Laws*

For the past few years, our research team (Canic, Chern, Jegdic, Kim, Lieberman and Keyfitz) has been working on a self-similar approach to the analysis of systems of conservation laws in two space dimensions. Following work of Tesdall and Hunter [SIAP, 2003] which found a new shock reflection pattern in the unsteady transonic small disturbance equations, we (Tesdall, Sanders and Keyfitz) have now exhibited this Guderley Mach reflection in numerical simulations of a number of systems—specifically the nonlinear wave system and the Eulerian gas dynamics equations for compressible adiabatic flow in two space dimensions. Within this complicated pattern, the details of how the rarefaction wave interacts with the sonic line form a mathematically appealing subproblem. We present some numerical and analytical results on this problem.