1001-35-126 **Peter Howard** and **Kevin Zumbrun*** (`kzumbrun@indiana.edu`), Department of Mathematics, Indiana University, Bloomington, IN 47401. *Stability of undercompressive shock profiles.*

We establish phase-asymptotic orbital stability of general undercompressive, overcompressive, Lax-type, or mixed over–undercompressive shock waves by a single, unifying argument combining refined shock tracking with a simple pointwise iteration scheme, under spectral (Evans function) stability conditions necessary for linearized stability. This extends nonlinear results of Liu–Zumbrun for special systems and linear results of Zumbrun–Howard for general systems. In particular, our results apply to undercompressive phase-transitional shocks arising in models for mutiphase flow and elasticity, reducing their stability analysis to the study of the associated eigenvalue equation. (Received August 19, 2004)