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Yanni Zeng*, Department of Mathematics, University of Alabama at Birmingham, Birmingham, AL 35294. *Nonlinear Stability and Large Time Behavior of Viscous Shock Wave with Physical Viscosity.*

This is a joint work with T.-P. Liu. We consider a general hyperbolic-parabolic system of conservation laws. Physical examples include the Navier-Stokes equations for compressible fluids and the equations of magnetohydrodynamics. We study the nonlinear stability of viscous shock waves and large time behavior of solutions. Under the basic Kawashima-Shizuta type assumptions we show that the solution of the Cauchy problem approaches to a particular translated shock profile at large time. Detailed information on the convergence is obtained. This includes optimal convergence rates in space and in time, together with explicit dependence on the shock strength. Our result recovers the optimal result for constant state perturbation as the shock strength tends to zero. (Received January 19, 2011)