998-65-166   **Richard Sanders*** (`sanders@math.uh.edu`), Department of Mathematics, University of Houston, Houston, TX 77204-3008. *Singular Shocks.* Preliminary report.

First order hyperbolic conservation laws appear in many areas of application. There are examples of these however which exhibit some surprising phenomena when applied to the initial value problem with large initial data. In particular, it is possible for a conservation law to have a globally smooth flux which is strictly hyperbolic and genuinely nonlinear, yet at any fixed positive time solutions to its viscous regularization blow up in L^∞ as the coefficient of viscosity vanishes. In certain situations of this type, the notion of a singular shock makes sense out of what a solution to the first order problem is when it is regarded as a viscous limit.

In this talk we give a brief review of what defines a singular shock, and we state some current theoretical results concerning them. Several of these results are then illustrated by numerical study. (Received February 24, 2004)