Meeting: 1001, Evanston, Illinois, SS 6A, Special Session on Nonlinear Partial Differential Equations and Applications

1001-35-113 **David Hoff*** (hoff@indiana.edu), Department of Mathematics-Rawles Hall, Indiana University, Bloomington, IN 47405-5701. Uniqueness of weak solutions of the Navier-Stokes equations of multidimensional, compressible flow.

We prove the uniqueness and continuous dependence on initial data of weak solutions of the Navier-Stokes equations of compressible flow in two and three space dimensions. The analysis is sufficiently general to accommodate solutions which are discontinuous across hypersurfaces of physical space, and gives bounds for L^2 differences in velocity and H^{-1} differences in density in terms of L^2 differences in initial velocities and densities. The key premise of the analysis is that solutions are most naturally compared in a Lagrangean framework, and it is this which enables us to treat solutions with minimal regularity. (Received August 18, 2004)