

1110-35-370

**A. Vasseur** and **C. Yu\*** ([yucheng@math.utexas.edu](mailto:yucheng@math.utexas.edu)). *Existence of Global Weak Solutions for the Degenerate Compressible Navier-Stokes Equations.*

In this paper, we prove the existence of global weak solutions for the compressible Navier-Stokes equations with degenerate viscosity. The method is based on the Bresch and Desjardins entropy conservation. The main contribution of this paper is to derive the Mellet-Vasseur type inequality for the weak solutions, even if it is not verified by the first level of approximation. This provides existence of global solutions in time, for the shallow water equations, for any  $\gamma > 1$ , with large initial data possibly vanishing on the vacuum. This solves an open problem proposed by Lions. (Received February 24, 2015)