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Alexis Vasseur and **Cheng Yu*** (yucheng@math.utexas.edu). *Existence of Global Weak Solutions for 3D Degenerate Compressible Navier-Stokes Equations.*

In this talk, we will talk about the existence of global weak solutions for 3D 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 compressible Navier-Stokes equations, for any $\gamma > 1$ in two dimensional space, and for any $1 < \gamma < 3$ in three dimensional space, with large initial data possibly vanishing on the vacuum. This solves an open problem proposed by Lions. This is a joint work with Alexis Vasseur. (Received August 14, 2015)