1131-35-102 **Lei Li*** (leili@math.duke.edu), 120 Science Drive, Durham, NC , and **Jian-Guo Liu**. *p-Euler equations and p-Navier-Stokes equations.*

We propose new systems of equations which we call p-Euler equations and p-Navier-Stokes equations. p-Euler equations are derived as the Euler-Lagrange equations for the action represented by the Benamou-Brenier characterization of Wasserstein-p distances, with incompressibility constraint. p-Euler equations have similar structures with the usual Euler equations but the 'momentum' is the signed $(p-1)$-th power of the velocity. By adding diffusion presented by γ-Laplacian of the velocity, we obtain what we call p-Navier-Stokes equations. We show the global existence of weak solutions for the p-Navier-Stokes equations in $\mathbb{R}^d$ for $\gamma = p$ and $p \geq d \geq 2$ through a compactness criterion. (Received July 07, 2017)