HAMED MAROOFI
Georgia Institute of Technology

Weak Solution to the Semigeostrophic Equations in Dual Variables

The semi-geostrophic equations are an approximation to the 3-D Euler equations for an atmosphere where the effects of rotation dominate. They are used by meteorologists to model the formation of fronts. Mathematically rigorous results were obtained by Benamou- Brenier and Cullen-Gangbo in the incompressible case. In this paper we extend their results to the fully compressible case and show existence of weak solutions to a reformulation of these equations in so- called dual variables. The Monge - Kantorovich theory appears as a material tool in our study.