

WEAK LAGRANGIAN SOLUTIONS FOR THE SEMI-GEOSTROPHIC SYSTEM IN PHYSICAL SPACE

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Proposed as a simplification for the Boussinesq system in a special regime, the Semi-Geostrophic (SG) system is used by meteorologists to model how fronts arise in large scale weather patterns. We shall argue that weak (Eulerian) solutions for the Semi-Geostrophic system in physical space exhibiting some mild regularity in time cannot yield point masses in the dual space. However, such solutions are physically relevant to the model. Thus, we shall discuss a natural generalization of Cullen & Feldman's weak Lagrangian solutions in the physical space to include the possibility of singular measures in dual space. This presentation is based on joint work with M. Feldman (UW Madison).