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Mikhail Feldman and **Adrian Tudorascu*** (adriant@math.wvu.edu), Department of Mathematics, 320 Armstrong Hall, Morgantown, WV 26506. *The Semi-Geostrophic system on the 2D torus: Weak-Strong uniqueness under uniform convexity.*

The Semi-Geostrophic (SG) equations (Eliassen 1948, Hoskins 1975) are used by meteorologists to describe how fronts arise in large scale weather patterns. They model rotation-dominated atmospheric flow, and can be obtained from the Boussinesq equations under the assumption of a small Rossby number. We are interested in solutions satisfying the Cullen-Purser stability condition, which has been related to a physical stability condition required for the Semi-Geostrophic approximation to remain appropriate (Cullen & Shutts 1987). Uniqueness of such solutions is a long standing open problem, with only two results published so far; both on the 2D torus and each proving uniqueness in some class of sufficiently regular solutions. I will present the main ideas of a recent proof of weak-strong uniqueness for SG on the 2D torus under uniform convexity for the strong solution. This generalizes both previous results. (Based on joint work with Mikhail Feldman). (Received January 04, 2018)