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Dallas Albritton* (dallas.albritton@nyu.edu). *Self-similar solutions of active scalars with critical dissipation.*

In PDE analyses of fluid models, often we may identify a so-called critical space that lives precisely at the borderline between well-posedness and ill-posedness. What happens at this borderline? We explore this question in two active scalar equations with critical dissipation. In the surface quasi-geostrophic equations, we investigate the connection between non-uniqueness and large self-similar solutions that was established by Jia, Sverak, and Guillod in the Navier-Stokes equations. This is joint work with Zachary Bradshaw. In the critical Burgers equation, and more generally in scalar conservation laws, the analogous self-similar solutions are unique, and we show that all front-like solutions converge to a self-similar solution at the diffusive rates. This is joint work with Raj Beekie. (Received August 30, 2020)