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Alexander Kiselev, Lenya Ryzhik, Yao Yao* (yaoyao@math.wisc.edu) and **Andrej Zlatoš**.

Finite time singularity of a vortex patch model in the half plane.

The question of global regularity vs. finite time blow-up remains open for many fluid equations. In this talk, I will discuss an active scalar equation which is an interpolation between the 2D Euler equation and the surface quasi-geostrophic equation. We study the patch dynamics for this equation in the half-plane, and prove that the solutions can develop a finite-time singularity. (Received January 10, 2015)