Convex integration for a class of active scalar equations
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**Abstract:** In this talk we will describe the method of convex integration applied to construct "wild" solutions to a general class of non-dissipative active scalar equations. Specifically, we find bounded solutions in which the scalar takes value zero outside a finite time interval, and absolute value one a.e. inside the interval. This shows non-uniqueness in the class of bounded solutions, when no smoothness is imposed. Such solutions have been previously constructed for the Euler equation in a groundbreaking work of De Lellis and Szekelihidy and later for the 2D porous media equation by Cordoba, Gancedo and Faraco. This present work is a direct generalization of the latter and includes other equations such as one arising in magnetostrophic turbulence in the Earths fluid core.