

# Continuity and two-dimensional Euler equation with $L^1$ vorticity

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## Abstract

In this talk we present a uniqueness result for continuity equations with a velocity field whose derivative can be represented by a singular integral operator of an  $L^1$  function. The proof is based on a combination of a stability estimate via optimal transport techniques -a' la C.Seis- and some elaborate tools from harmonic analysis introduced by Crippa-Bochut. As an application we show that two-dimensional Euler solutions obtained via vanishing viscosity are renormalized even when the initial vorticity is only  $L^1$ .

**Keywords:** Euler equations, continuity equations, uniqueness, optimal transport techniques.