Global Existence of weak solutions for some transport equations with nonlocal velocity fields

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Abstract

In this talk,we study nonlocal and quadratically nonlinear transport equations. Prototypical examples are the surface quasi-geostrophic equation, the incompressible porous medium equation, Stokes equations, magnetogeostrophic equation and their variants. In this talk, we address the global existence of weak solutions of some model equations with rough initial data. To this end, we carefully choose dissipative quantities to minimize conditions of initial data mainly using the entropy.

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