

THE CONTINUITY EQUATION WITH NON-SMOOTH VELOCITY FIELD. AN OVERVIEW AND THE TWO-DIMENSIONAL CASE

GIANLUCA CRIPPA
UNIVERSIT DI PARMOA

ABSTRACT. In the first part of the talk I will give an overview on some recent advances on the study of the continuity equation when the velocity field is non-smooth. This kind of equation appears very often in problems originating from the dynamics of fluids, and the lack of regularity of the velocity field is due to "irregular" physical behaviors, like shocks or turbulence. I will motivate the need for the use of geometric measure theory for this kind of analysis, and I will illustrate the approach based on the notion of renormalized solutions used by DiPerna-Lions and by Ambrosio to study the Sobolev and the bounded variation cases, respectively.