Introduction to scalar conservation laws

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Timetable: 16 hrs. First lecture on February 3, 2025, 14:30 (dates already fixed, see on Calendar of Activities at https://dottorato.math.unipd.it/calendar), Torre Archimede, Room 2BC30.

Credits: 3

Course requirements: calculus, measure theory.

Examination and grading: oral presentation of a research paper

SSD: MAT/05

Aim: introduce the theory of entropy solutions of scalar conservation laws. Both the classical theory initiated by Kruzkov and the kinetic formulation will be presented.

Course contents:

- Well-posedness of scalar conservation laws in the class of bounded entropy solutions: approximation schemes, Kruzkov a priori estimate
- Kinetic formulation of scalar conservation laws
- Lagrangian description of entropy solutions

Bibliography:

KRUŽKOV, S. N., First order quasilinear equations with several independent variables, Matematicheskiĭ Sbornik, 81 (123), 1970.
PERTHAME, B., Kinetic Formulation of Conservation Laws, Oxford Lecture Series in Mathematics and Its Applications.