The initial value problem for the Euler equations of incompressible fluids viewed as a concave maximization problem

We consider the Euler equations of incompressible fluids and attempt to solve the initial value problem with the help of a concave maximization problem. We show that this problem, which shares a similar structure with the optimal transport problem with quadratic cost, in its "Benamou-Brenier" formulation always admits a relaxed solution that can be interpreted in terms of sub-solution of the Euler equations in the sense of convex integration theory. Moreover, any smooth solution of the Euler equations can be recovered from this maximization problem, at least for short times.

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Conférence de Yann Brenier

CNRS, CMLS, École Polytechnique

25 & 26 Octobre 2017

à l’Université de Caen, UFR des Sciences

Amphi S3-xx

site web: edp–normandie4.sciencesconf.org