

On the generalized solution of the Navier-Stokes equations via optimal transportation

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Abstract

In 1965, V.I. Arnold [1] introduced the L^2 -Riemannian metric on the group of volume-preserving diffeomorphisms and proved that the incompressible Euler equation is a geodesic with respect to this metric. In 1999, Y. Brenier [2] used the theory of optimal transportation to study the generalized solution to the Euler equation. Recently, M. Arnaudon and A. B. Cruzeiro [3] proved that the incompressible Navier-Stokes equation can be realized as the Euler-Lagrangian equation of the Nelson type kinetic energy on the group of volume-preserving diffeomorphisms. In this talk, we present our recent work [4] on the study of generalized solution of the Navier-Stokes equations via the optimal transportation.

References

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