

A few contributions to dynamical optimal transport

Initiated in the 1780's by Gaspard Monge, optimal transport has been revived in the last 20 years and the theory has recently seen spectacular developments and proven to be extremely fruitful, leading to a very wide range of applications such as, for example, functional inequalities, metric geometry in nonsmooth spaces, dissipative numerical methods for PDEs, and so on. In its classical Monge-Kantorovich formulation, optimal transport is a static problem. However, owing to a fundamental result of J-D. Benamou and Y. Brenier in 2000, there also exists an equivalent dynamical (fluid-mechanical) version which is extremely flexible and amenable both to numerics and theoretical extensions of the model/problem. In this expository talk I will discuss a few of my contributions to such extensions. Depending on time I will try to cover: unbalanced optimal transport, bulk/interface interactions, and entropic relaxations in metric spaces.

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