

A new Optimal Transport distance between nonnegative Radon measures

LÉONARD MONSAINGEON

Affiliation: FCT, CAMGSD, Instituto Superior Técnico, Lisbon, Portugal

email: leonard.monsaingeon@ist.utl.pt

In this talk, I will introduce a new distance between nonnegative finite Borel measures in \mathbb{R}^d with arbitrary masses. The distance is constructed by a Lagrangian variational approach (minimization of an action functional), which is similar to the celebrated Benamou-Brenier formula for the quadratic Kantorovich-Rubinstein-Wasserstein distance between probability measures. In contrast with the classical theory of optimal transportation of probability measures, we allow for mass variations and do not require decay at infinity. I will present several topological and geometrical properties of the resulting metric space. If time permits, I will discuss the application to a fitness-driven model of population dynamics: once suitably interpreted as a gradient flow with respect to our metric, we show that the model satisfies exponential convergence to the unique steady state with explicit rates.

This is joint with D. Vorotnikov and S. Kondratyev (Univ. Coimbra).