Around unbalanced optimal transport

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Abstract

In this talk, we discuss the extension of optimal transport to the unbalancedsetting and in particular the Wasserstein-Fisher-Rao metric (also called Hellinger-Kantorovich). Then, we show how to adapt entropic regular- ization and the Sinkhorn algorithm for the two marginals setting; we also extend the Sinkhorn divergences to this unbalanced setting. We then discuss the connection between WFR metric and the Hdiv right-invariant metric on the group of diffeomorphisms and show that the Hdiv geodesic flow can be embedded in the incompressible Euler flows on a Riemannian manifold with a conic singularity. Last, we briefly discuss the link between this unbalanced optimal transport problem and fluid dynamic equations.