

On optimal matching of iid samples

Michel Ledoux

Université de Toulouse, France
E-mail: ledoux@math.univ-toulouse.fr

Abstract

Optimal matching problems are random variational problems widely investigated in the mathematics and physics literature. We discuss here the optimal matching problem of an empirical measure on a sample of iid random variables to the common law in Kantorovich-Wasserstein distances, which is a classical topic in probability and statistics. Two-dimensional matching of uniform samples gave rise to deep results investigated from various view points (combinatorial, generic chaining). We study in particular the case of Gaussian samples, first in dimension one on the basis of explicit representations of Kantorovich metrics and a sharp analysis of more general log-concave distributions in terms of their isoperimetric profile (joint work with S. Bobkov), and then in dimension two (and higher) following the PDE and transportation approach recently put forward by L. Ambrosio, F. Stra and D. Trevisan.