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The relaxation of the Coulomb multi-marginal optimal transport cost and applications

Multi-marginal optimal transport costs are relevant for several applications. In particular the Coulomb repulsive cost play a role in certain energies in quantum mechanics. Some times, these energies don't allow to obtain compactness in the space of probability measures and then one needs to define, in a physically meaningful way, the transport cost for a sub-probability measure. After describing briefly the motivations, I will introduce the problem and two formula for the relaxed cost. If time allows I'll address the dual problem for the relaxed functional too. (From joints works with Guy Bouchitté, Giuseppe Buttazzo and Thierry Champion).