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*On the representations and the regularity properties of the transport density*

In the talk we discuss some properties of the transport density, a measure arising in a natural way in connection with the optimal transport problem in the case when the cost function is a distance. We prove the equivalence of some different representations of the transport density and we use this equivalence to prove some regularity properties of it. Regularity results for the Bouchitté–Buttazzo mass optimization problem follow as a byproduct.