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Curvature and continuity of optimal transport

We will discuss continuity of optimal transport maps, in view of a pseudo-Riemannian structure which we have formulated recently. A necessary condition for the continuity is given as some non-negativity condition on the curvature of this pseudo-Riemannian metric. This result gives a natural geometric frame work and new perspectives for the regularity theory of Ma, Trudinger, Wang and Loeper on the potential functions of optimal transport; it also yields some extensions of previous results and new examples.

This is joint work with Robert McCann (University of Toronto).