First order methods for Wasserstein distance and barycenter problems

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Abstract: We discuss the applicability of first order saddle-point algorithms (including an extension of a primal-dual algorithm with Line-search of T. Pock and Y. Malitsky to the non-linear setting) for approximately solving optimal transport problems (including barycenter problems, and possibly non-linear problems).
We show that in the linear case we recover the state-of-the art rates of convergences, and competitive results with respect to the similar literature. This is a joint work with Juan Pablo Contreras (U A. Ibanez, Santiago)