Optimal Transport, Martingales, and Skorokhod embedding

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Abstract:
We will explain a recently discovered connection between Optimal Transport and the areas of model independence/martingale inequalities in probability. This link has a number of fruitful consequences. For instance, the duality theorem from optimal transport leads to new super-replication results. Optimality criteria from the theory of mass transport can be translated to the martingale setup and allow to characterize minimizing/maximizing models in finance. Moreover, the transport viewpoint provides new insights to the classical inequalities of Doob/Burkholder-Davis-Gundy and Skorokhod embedding problem.