Optimal Quantization for Branched Optimal Transport

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We consider the problem of best approximation of a target measure by an atomic measure with N atoms, in branched optimal transport distance. We determine the asymptotic behaviour of optimal quantizers for absolutely continuous measures as N grows to infinity, and compute the limit distribution of the corresponding point clouds. New difficulties arise, because in previously known Wasserstein semi-discrete transport results the interfaces between "basins" associated with neighboring atoms had Voronoi structure and satisfied an explicit equation, here there is no explicit description, and the interfaces have noninteger Hausdorff dimension for which no equation is known. Even proving the precise value of this dimension remains an open problem. We determine N-dependent separation distance and covering radius controls for the basins, in case the target measure is uniform. This is joint work with Paul Pegon.