Lagrangian critical points in optimal quantization problems.

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Abstract : Consider the problem of optimal quantization of a probability measure with density. When minimization is only done with respect to the position of the Dirac masses, one is left with minimizing a non-convex functional over a high dimensional space. It is a well-known fact that, following the gradient flow of this functional leads to discrete measure which are close to the underlying density, provided one started from Dirac masses spread far away from each other. I will give arguments in that direction. I will also prove some regularity results on the limits of general critical measures, which concur with the smooth patterns observed on numerical simulations in the more degenerate cases.

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