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# On the Hessian of the optimal transport potential

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**Abstract.** We study the optimal solution of the Monge-Kantorovich mass transport problem between measures whose density functions are convolution with a gaussian measure and a log-concave perturbation of a different gaussian measure. Under certain conditions we prove bounds for the Hessian of the optimal transport potential. This extends and generalises a result of Caffarelli.
We also show how this result fits into the scheme of Barthe to prove Brascamp-Lieb inequalities and thus prove a new generalised Reverse Brascamp-Lieb inequality.

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