

# **The Moment-SOS hierarchy for computing: I: Mixtures of Gaussians closest (in $W_2$ -Wasserstein distance) to a given measure. II: The total variation distance between two given probability measures**

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We present two recent applications of the Moment-SOS hierarchy.

I. We first consider an optimal transport formulation for computing mixtures of Gaussians that minimize the  $W_2$ -Wasserstein distance to a given measure.

II. We next consider the problem of computing the total variation between two given measures.

For each problem we provide an associated hierarchy of semidefinite relaxations that converges to the desired result. Importantly, in both cases the support of the input measures is not assumed to be compact. Finally, the approach for problem II can also be used to solve problem I with the TV distance rather than the  $W_2$  Wasserstein distance.

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