

10.3.3 Sample complexity for multireference alignment

Another important question related to this problem is to understand its sample complexity. Since the objective is to recover the underlying signal u , a larger number of observations n should yield a better recovery (considering the model in (??)). Another open question is the consistency of the quasi-MLE estimator, it is known that there is some bias on the power spectrum of the recovered signal (that can be easily fixed) but the estimates for phases of the Fourier transform are conjecture to be consistent [BCSZ14].

Open Problem 10.4 1. *Is the quasi-MLE (or the MLE) consistent for the Multireference alignment problem? (after fixing the power spectrum appropriately).*

2. *For a given value of L and σ , how large does n need to be in order to allow for a reasonably accurate recovery in the multireference alignment problem?*

Reference

- [BCSZ14] A. S. Bandeira, M. Charikar, A. Singer, and A. Zhu. Multireference alignment using semidefinite programming. *5th Innovations in Theoretical Computer Science (ITCS 2014)*, 2014.

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