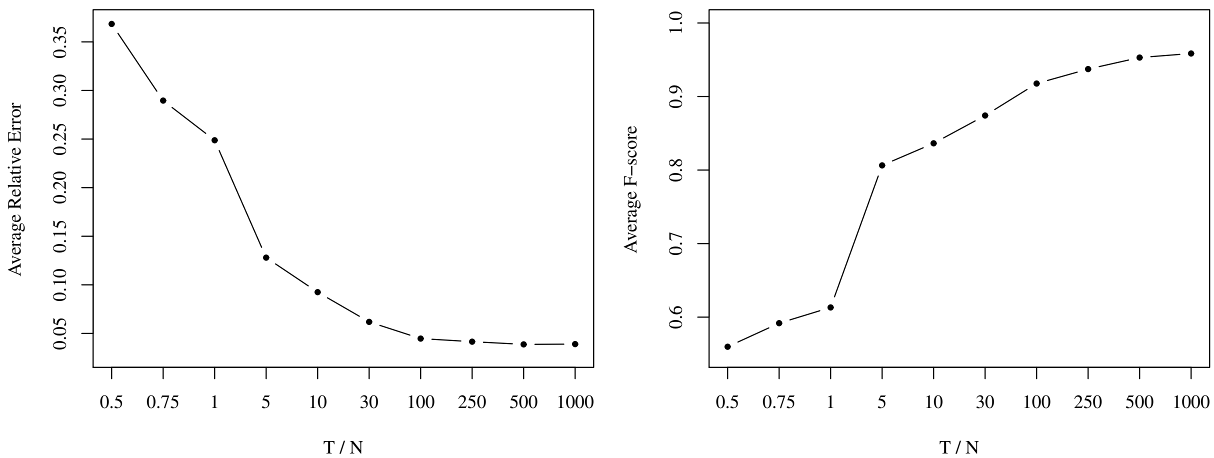
1 Grid graph

A comprehensive performance evaluation of our spectral graph topology algorithm was performed considering a grid graph model with 64 nodes $\mathcal{G}^{(64)}_{\mathsf{grid}}$. The edges of the grid graph are sampled from $\mathsf{Uniform}(0.1, 3)$. Then we estimate the Laplacian matrix based on T samples from $\mathcal{N}(\mathbf{0}, \mathbf{L}^{\dagger}_{\mathsf{grid}})$ and compute the relative error and the F-score. We perform that 100 times for a fixed number T and we average out the relative errors and F-scores.

For the values of T such that $T/N > 1$, we fix $\beta = 4$. Otherwise, we start with $\beta = 10^{-2}$, and we exponentially increase it up to $\beta = 4$.

Figure 1 shows the performance of our algorithm for different sample size regimes. If we compare against Fig. 3 of Egilmez (2017), we can notice that we outperform all the methods that do not use connectivity priors, and we have a comparable performance to those algorithms that do use the node connectivity information. Additionally, it is worth mentioning that the methods designed in Egilmez (2017) require a lot more parameter tuning than ours, which is a big advantage in practical scenarios.



(a) Relative error versus T/N

(b) F-score versus T/N

Figure 1: Average performance results for learning Laplacian matrix of a $\mathcal{G}^{(64)}_{\mathsf{grid}}$.