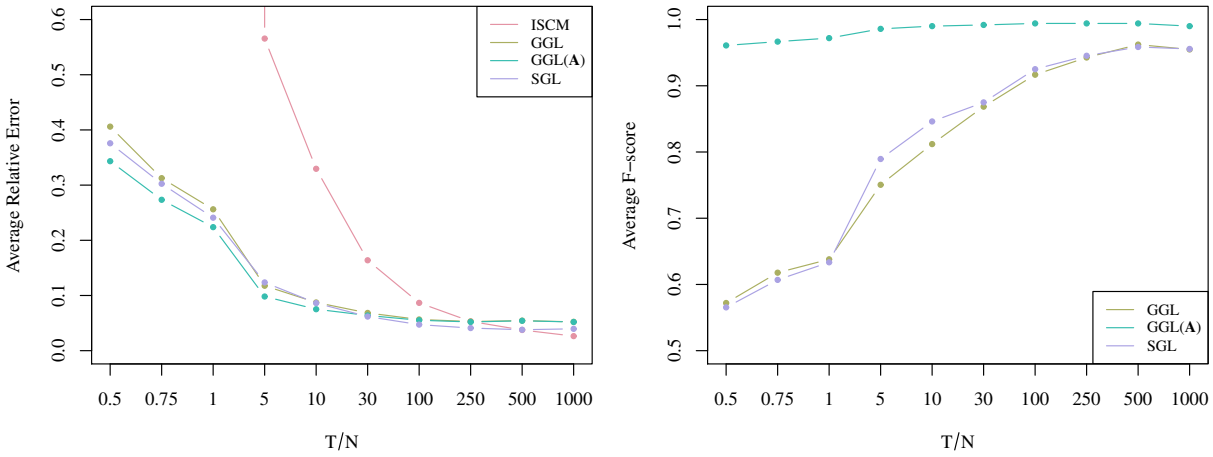
1 Grid graph

A comprehensive performance evaluation of our spectral graph topology algorithm was performed considering a grid graph model with 64 nodes $\mathcal{G}_{\mathsf{grid}}^{(64)}$. 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 $\mathcal{N}(\mathbf{0}, \mathbf{L}_{\mathsf{grid}}^{\dagger})$ 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. It also shows the performance for the GGL algorithms, proposed by Egilmez (2017), with and without knowledge of the connectivity matrix $\mathbf{A}$.



(a) Relative error versus T/N

(b) F-score versus T/N

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