

# 1 Grid graph

A comprehensive performance evaluation of our spectral graph topology algorithm was performed considering a grid graph model with 64 nodes  $\mathcal{G}_{\text{grid}}^{(64)}$ . The edges of the grid graph are sampled from  $\text{Uniform}(0.1, 3)$ . Then we estimate the Laplacian matrix based on  $T$  samples from  $\mathcal{N}(\mathbf{0}, \mathbf{L}_{\text{grid}}^\dagger)$  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 algorithm proposed by Egilmez (2017).

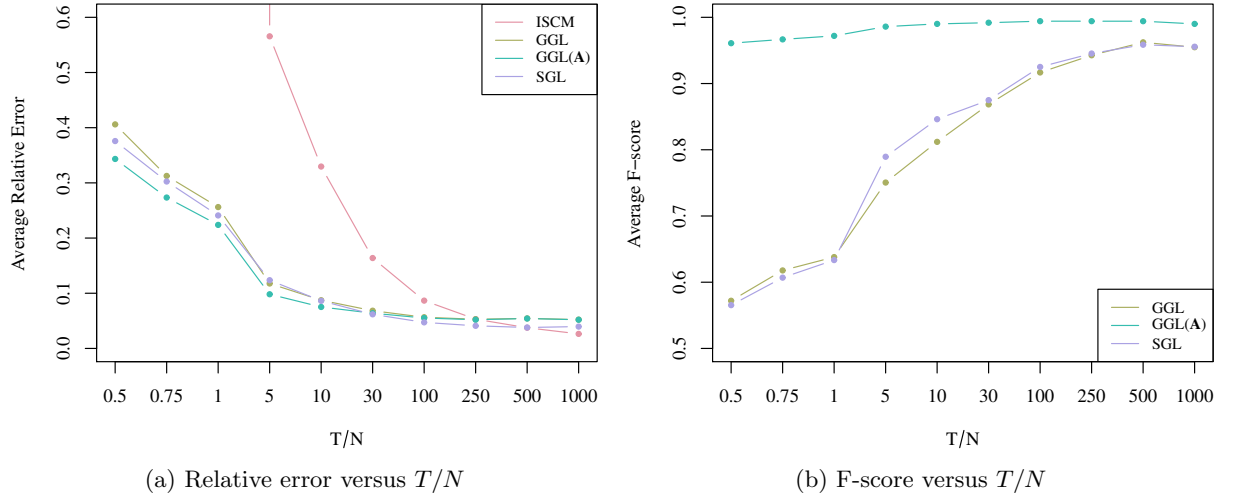


Figure 1: Average performance results for learning Laplacian matrix of a  $\mathcal{G}_{\text{grid}}^{(64)}$ .