

S8 Figure. Spectral clustering accuracy in large autogregressive systems. In the main body of the paper, we showed that our spectral clustering-based approach well approximates the MIB of large-cut networks (Fig. 3). To further show that our approach generalizes across a variety of network dynamics, we also used the same large, cut networks used in Fig. 3 to generate a set of autoregressive time-series data, following the same procedure as in Fig. S7. We found that our spectral clustering approach performed almost perfectly in large autoregressive systems: the difference between  $\Phi^{\rm G}$ across the spectral partitions and  $\Phi^{\rm G}$  across the ground-truth cuts was 0 for 191/240 networks tested, with the difference less than  $10^{-6}$  bits (normalized) for all network sizes. The spectral partitions were perfect matches to the ground-truth cuts for those same 191/240 networks, with a mean Rand index greater than 0.98 for all network sizes.