Finite-State Parameter Space Maps for Pruning Partitions in Modularity-Based Community Detection

Ryan A. Gibson and Peter J. Mucha

- We combine prior work from Newman, Pamfil et al., and Weir et al. to develop a method for pruning sets of network partitions to identify small subsets that are significant from the perspective of stochastic block model inference.

- Given a set of input partitions, this provides a procedure for exploring the resolution parameter space in modularity-based community detection.

- We also derive upper bounds on the resolution parameter for which modularity maximization can be equivalent to maximum likelihood methods applied to an assortative, planted partition, degree-corrected SBM.

Departments of Mathematics, Computer Science, and Applied Physical Sciences, University of North Carolina, Chapel Hill