1135-68-2591 **L. Nate Veldt***, lveldt@purdue.edu, and **David Gleich** and **Anthony Wirth**. *Finding sparse cuts and dense clusters with correlation clustering.* Preliminary report.

We present LambdaCC: a novel framework for graph clustering based on a specially-weighted version of correlation clustering. Our framework unifies and generalizes a number of other well-studied partitioning objectives, including modularity, sparsest cut, and cluster deletion, all of which can be recovered by fixing a key clustering resolution parameter lambda in our objective function. By varying lambda, our framework effectively interpolates between two separate strategies in graph clustering: identifying sparse cuts and finding dense subgraphs in a network. Based on our theory we develop the first constant factor approximation algorithm for the cluster deletion objective. We also present several other algorithms for approximating the LambdaCC objective that are useful in a number of different application domains. (Received September 26, 2017)