

1116-49-2128 **Ekaterina Merkurjev*** (kmerkurjev@gmail.com). *Modified Cheeger and Ratio Cut Methods Using the Ginzburg-Landau Functional for Classification of High-Dimensional Data.*

Recent advances in clustering have included continuous relaxations of the Cheeger cut problem and those which address its linear approximation using the graph Laplacian. In this talk, we show how to use the graph Laplacian to solve the fully nonlinear Cheeger cut problem, as well as the ratio cut optimization task. For the derivation, the Ginzburg-Landau functional is used. The resulting algorithms are efficient ways to cluster the data into two classes, and they can be easily extended to case of multiple classes, or used on a multi-class set via recursive bipartitioning. In addition to showing results on benchmark data sets, we also show an application of the algorithm to hyperspectral video data. (Received September 21, 2015)