PRACTICAL USE OF FIEDLER VECTOR TO GRAPH PARTITIONING

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For parallel computing, large computational graphs are partitioned into subdomains and distributed over individual processors. Finding partitioning with minimum edge cut is, in general, an NP–complete problem. We will present suitable heuristics for graph partitioning based on spectral methods. Spectral methods for graph partitioning have been known to be robust but computationally expensive, however, recent development of hardware and software makes these methods interesting for practical applications. The separator produced by spectral methods is related to the Fiedler value (the second smallest eigenvalue of the discrete Laplacian matrix which is associated with the adjacency structure of graph) and corresponding eigenvector – the Fiedler vector.