Graph-partitioning problems can be generically defined as a family of problems in which we are asked to partition a graph
into two or more components. We present overview of methods and concepts used to find best graph partitions according to several criteria. We prove duality of multi-commodity flow and sparsest cut problem due to work of Leighton and Rao by describing algorithm using a Linear programming relaxation and a geometric embedding. Then we present the work of Arora, Rao and Vazirani (ARV) and their algorithm based on Semidefinite programming relaxation and a geometric embedding. We also explain the concept of expander flows first introduced in the work of ARV. One section of our work is devoted to the spectral graph theory, introducing the concepts of the spectral gap, random walks, conductance and relations between them. We connect the ideas of expander flows and spectral theory in chapter about so called Cut-Matching game framework. Finally we present the performance results of our implementation of the Leighton-Rao and the Cut-Matching game algorithms.