A cutting plane method for the graph approximation problem

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In this paper we continue our polyhedral research for the graph approximation problem [1]. We present this problem as a linear integer program and apply the cutting plane method based on the so-called k-parashuties inequalities. The separation problem for k-parashuties is NP-hard [2]. Thus, we design fast local search algorithm to discover them for arbitrary vertex of polyhedral. Each iteration of our cutting plane method consists in the following. For the current optimum for the linear programming relaxation, we solve the separation problem to generate some k-parashuties inequalities. If we discover them, these inequalities are included into the set of constraints for the graph approximation problem. Otherwise, Gomory's cutting are used.

Computational experiments for graphs with 100 vertexes are presented. The aims of the experiments is to analyze the performance of the cutting plane method and local search algorithm for the separation problem for the k parachutes.

References

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