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On the quadratic programming approach for hub location problems. (English) Zbl 1172.90340
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Summary: Hub networks play an important role in many real-life network systems such as transportation and telecommunication networks. Hub location problem is concerned with identifying appropriate hub locations in a network and connecting an efficient hub-and-spoke network that minimizes the flow-weighted costs across the network. This chapter is focused on the uncapacitated single allocation p-hub median problem (USApHMP), which arises in many real-world hub networks of logistics operations. There have been many approaches used to solve this problem. We herein focus on a quadratic programming approach, which has been proven very effective and efficient. This approach incorporates the use of the linearization for 0-1 quadratic program. In this chapter, we give a brief review of the linearization techniques for 0-1 quadratic programs and compare the performance of several existing linearization techniques for USApHMP. Toward the end, we discuss some properties, comments and possible developments of these linearization techniques in the real-life USApHMP.

For the entire collection see [Zbl 1173.90002].

MSC:

90B10 Deterministic network models in operations research
90C20 Quadratic programming
90B85 Continuous location
90C35 Programming involving graphs or networks

Full Text: DOI

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