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Global approaches for facility layout and VLSI floorplanning. (English)

Summary: This chapter provides an overview of conic optimization models for facility layout and VLSI floorplanning problems. We focus on two classes of problems to which conic optimization approaches have been successfully applied, namely the single-row facility layout problem, and fixed-outline floorplanning in VLSI circuit design. For the former, a close connection to the cut polytope has been exploited in positive semidefinite and integer programming approaches. In particular, the semidefinite optimization approaches can provide global optimal solutions for instances with up to 40 facilities, and tight global bounds for instances with up to 100 facilities. For the floorplanning problem, a conic optimization model provided the first non-trivial lower bounds in the literature.

For the entire collection see [Zbl 1235.90002].

MSC:

90C22  Semidefinite programming
68W35  Hardware implementations of nonnumerical algorithms (VLSI algorithms, etc.)

Software:
CSDP; LLOLIB

Full Text: DOI Link

References:
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