Burer, Samuel; **Anstreicher, Kurt M.**

Second-order-cone constraints for extended trust-region subproblems. (English)

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The classical trust-region subproblem (TRS) minimizes a nonconvex quadratic objective over the unit ball. In this paper, the authors consider extensions of TRS having extra constraints. When two parallel cuts are added to TRS, they show that the resulting nonconvex problem has an exact representation as a semidefinite program with additional linear and second-order-cone (SOC) constraints. For the case where an additional ellipsoidal constraint is added to TRS, resulting in the "two trust-region subproblem" (TTRS), they provide a new relaxation including SOC constraints that strengthens the usual semidefinite programming (SDP) relaxation.

Reviewer: Paulo Mbunga (Kiel)

MSC:

90C20 Quadratic programming
90C22 Semidefinite programming
90C26 Nonconvex programming, global optimization
90C30 Nonlinear programming

Keywords:

trust-region subproblem; second-order-cone programming; semidefinite programming; nonconvex quadratic programming

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