

Exact relaxations of non-convex trust region sub-problems with an additional quadratic constraint

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In this work we study non convex trust region problems with an additional quadratic constraint. For this class of problems we propose a family of relaxations, and study some key properties regarding convexity, exactness of the relaxation, sufficient condition for exactness, etc. For the case that the additional quadratic constraint is not convex, we generalize sufficient conditions for exactness of the relaxation proposed originally for trust region problems with an additional conic and discuss some examples for which trivial extensions of the sufficient conditions do not apply.