Disjunctive conic cuts for mixed integer second order cone optimization

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Abstract:

This talk provides an overview about disjunctive conic cuts (DCC) for mixed integer second order cone optimization (MISOCO). A MISOCO problem minimizes an affine function over the intersection of a system of linear equations with the Cartesian product of second order cones. Additionally, a MISOCO problem constrains a subset of the decision variables to take integer values. The approach proposed here extends the concepts of disjunctive programming, which has been very effective in the derivation of linear cuts for mixed integer linear optimization. Applying this extension to MISOCO problems results in the derivation of some novel conic cuts. In this talk we also presents some preliminary numerical results for the asset allocation problem with round-lot constraints. This results show that these cuts used in a branch-and-cut framework can effectively improve the solution process.