Solving an Extension of the Robust Optimization Problem with Cutting Planes

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Robust optimization is a technique to solve the optimization problem under data uncertainty. In this framework, random variables are modeled as uncertain parameters belonging to an uncertainty set and one protects the solution against the worst case within that set. For this to be attractive, the uncertainty set has to be designed so that the robust problem is computationally tractable and one can control the conservativeness of the solution. We define a new type of uncertainty set which is more flexible in modeling than the existing ones and suitable to control the conservativeness effectively. A cutting plane approach is proposed to solve the robust problem and computational results are presented.