

Nonlinear cuts for chance-constrained problems with right-hand side uncertainty

lundi 28 juillet 2025 17:00 (30 minutes)

In this talk, we address joint chance-constrained optimization problems where the only uncertain parameter is the right-hand side coefficients in an inequality system. By leveraging one-dimensional marginals, we construct nonlinear cuts that accurately approximate the probability function, which need not be differentiable or satisfy generalized concavity properties. These cuts are integrated into a proximal-like algorithm, defining iterates as stationary points of a nonlinear master program that can be solved using standard nonlinear programming solvers. Numerical experiments demonstrate the potential of our approach compared to traditional techniques that employ (sub)gradient linearizations.

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Classification de Session: Chance-constrained programming

Classification de thématique: Chance-constrained programming