

Convex Hull Results for Quadratic Programs with Non-Intersecting Constraints

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Abstract: Let \mathcal{F} be a set defined by quadratic constraints. Understanding the structure of the lifted closed convex hull $\bar{\mathcal{C}}(\mathcal{F})$ is crucial to solve quadratically constrained quadratic programs related to \mathcal{F} . In this talk, we discuss the relationship between $\bar{\mathcal{C}}(\mathcal{F})$ and $\bar{\mathcal{C}}(\mathcal{G})$, where \mathcal{G} results by adding non-intersecting quadratic constraints to \mathcal{F} . We prove that $\bar{\mathcal{C}}(\mathcal{G})$ can be represented as the intersection of $\bar{\mathcal{C}}(\mathcal{F})$ and some half spaces defined by the added constraints. The proof relies on a complete description of the asymptotic cones of sets defined by a single quadratic equality and a partial characterization of the recession cone of $\bar{\mathcal{C}}(\mathcal{F})$. Our proof generalizes an existing result for bounded \mathcal{F} with non-intersecting quadratic hollows.

Talk will take place on June 30, 2021 from 1:00PM - 2:00PM through Zoom.