

Duality, Multilevel Optimization, and Game Theory: Algorithms and Applications

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Abstract:

This talk addresses applications of and solution methods for certain optimization problems arising in game theory. We focus on the case of Stackleberg games in which one player, designated as the "leader," acts first and must decide on an optimal course of action under the assumption that the second player, designated as the "follower," will react in accordance with a different, possibly competing, objective. Analysis of such models requires an understanding of the notion of duality that arises in the theory of optimization and the corresponding notions of price functions in economics. We discuss applications of this framework and how these problems can be solved in practice.