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Presentation Title

Implementation of Reduced-Form Allocation Rules for Multiple Indivisible Objects under Constraints
(with Zaifu Yang)

Abstract

We examine the implementation of reduced-form allocation rules that assign many indivisible objects to many agents, with distributional constraints across objects and agents. The presence of distributional constraints leads to an implementation problem non-separable across objects. To obtain the implementability condition, we adopt a lift-and-project approach, which reduces the problem to enumeration of finite generators of a projection cone. We study geometric and combinatorial properties of the projection cone and provide a unimodularity condition that leads to a characterization. Our results have applications in matching markets with regional caps, course allocation and student-project allocation.

Keywords

Implementation, Reduced-form rules, Indivisible goods, Distributional constraints, Total unimodularity

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