Overview

► Polyhedral Theory;

► Farkas' Theorem.

Definitions

► Polyhedral Theory(PT): is a sub-field within combinatorics and discrete geometry, that studies the problems of counting and describing the faces of convex polyhedra and higher-dimensional convex polytopes.

► Farkas' Theorem (FT): is a solvability theorem for a finite system of linear inequalities and frequently used a key result underpinning the linear programming duality and has played a central role in the development of mathematical optimization (alternatively, mathematical programming)
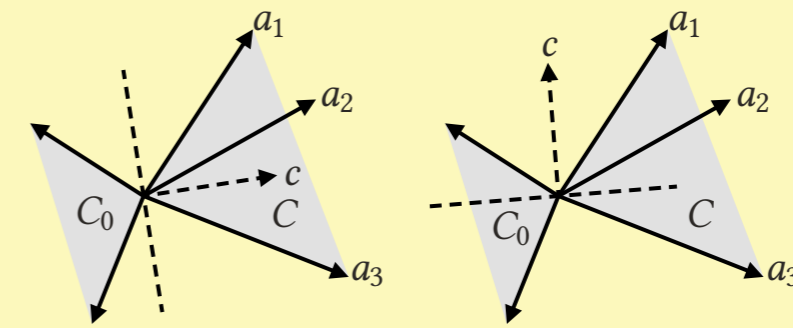

Figure: Geometrical illustration of the Farkas' theorem. On the left, system (2) has a solution, while on the right, system (1) has a solution

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Combinatorial Optimization