

Product-Mix Auction and Tropical Geometry

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Abstract:

In a recent paper Baldwin and Klemperer give a sufficient condition for the existence of equilibrium in product-mix auctions. This unearths an interesting connection between tropical geometry and economics, specifically auction theory and more generally equilibria for indivisible goods. We introduce auction theory for a mathematical audience and give a proof of the Baldwin--Klemperer result. We propose an approach using convex duality to solve the computational problem of determining whether an equilibrium exists. This is based on joint work with Ngoc Mai Tran.