



Game theory models and algorithms for trading demands

Mourad BAIYOU   

Directeur de recherche, CNRS. FRANCE

— Abstract —

We introduce a new cooperative game theory model that we call production-distribution game. It models efficient sharing principles for practical collaboration in transportation. The originality of our model lies in the fact that the value/strength of a player does not only depend on the individual cost or benefit of the goods she owns but also on her market shares (customers

demand). We prove that we can compute the nucleolus efficiently, in a nontrivial, interesting special case. We provide two algorithms to compute the nucleolus: a simple separation algorithm and a fast primal-dual one. We also show that our results can be used to tackle more general versions of the problem.

Keywords and phrases Game Theory, cooperative game, fast primal-dual.

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