Seminar Concept: Resource Buying Games

Christoph Welzel

November 16, 2016

Introduction

Preliminaries

- Pure Nash equilibria

- Basic matroid theory

Matroid Games

- Game definition

- Matroid game

Algorithm: PNE in Unweighted Matroid Games

- Example (two interleaving spanning trees for two parties)

- Demonstrate algorithm on example

- Intuitive correctness

PNE in Weighted Matroid Games

- Existence (maybe with proof?)

- Computation NP-hard

Non-Matroid Strategy Spaces

- Construction of games without PNE (maybe graphically?)

Non-Decreasing Marginal Cost Functions

The Price of Anarchy