

## Algorithmic Game Theory

Summer Term 2023

Tutorial Session - Week 4

As last week, please find yourself in groups of up to three students. Start with a quick introduction. Afterwards, you are supposed to discuss the exercises on this sheet and in addition talk about definitions, proof ideas and techniques used in the lecture. Also, feel free to open the lecture notes and have a look if you don't remember a certain definition or theorem by heart.

### Exercise 1:

Let  $p, p'$  be coarse correlated equilibria of a cost-minimization game  $\Gamma$ . Prove that any convex combination of the distributions  $p$  and  $p'$  yields also coarse correlated equilibrium of  $\Gamma$  (i.e., any distribution  $q := \lambda p + (1 - \lambda)p'$  for a  $\lambda \in [0, 1]$ ).

### Exercise 2:

Consider the following symmetric network congestion game with two players. State a *coarse-correlated equilibrium* that is not a pure or mixed Nash equilibrium.

