

# Algorithmic Game Theory

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Algorithms & Complexity (Informatik 1)

# Motivation

(Computer) systems or markets with agents, interaction, (resource) allocation



# Algorithms and Game Theory?

We are interested in **models**, **algorithms** and **rigorous analysis** for scenarios with decentralized decision making.

- **Game Theory** as toolbox: ideas, models, concepts, math. tools, . . .
- **Algorithm Design** and **Computational Complexity**
- Are there **equilibrium states** in a system? Can we compute them?
- (Fast) **convergence** of agent interaction?
- **Designing** algorithms to incentivize agent behavior
- **Fair division** for rational agents

Proving precise statements using lemmas and theorems

- Prerequisites:  
Algorithms, Complexity Theory, Probability, Linear Programming
- Course Webpage:  
Algorithms & Complexity → Summer 26 → AGT
- Instructor: Martin Hofer
- Lectures on Mon 14:30h, Wed 12:30h in 5056
- Tutorials Fri 10:30h in 5054, first on **Wed 30 April, 12:30h**