Algorithms for Markets and Fair Allocation

Prof. Dr. Martin Hoefer (Goethe University)

Fisher markets capture a variety of allocation tasks in online and offline markets. Each buyer in such a market has a budget of money and wants to buy goods. Goods are owned by sellers that want to earn money. An equilibrium is a vector of prices and an allocation of goods such that (1) every buyer buys his optimal bundle of goods under the prices and (2) market clears, i.e., supply equals demand. This is a natural condition under which trade can occur.

Algorithms for computing market equilibria can be used to solve diverse allocation problems in online markets. In this talk, I will survey our recent work on structure and algorithms for novel classes of Fisher markets with utility and earning limits. I will also discuss how equilibria in these markets can be used to obtain approximately fair allocations of indivisible goods. The talk concludes with some open problems.