COST Action IC1205 on Computational Social Choice: STSM Report

Applicant: Tamás Fleiner
Home institution: SzIT, Budapest University of Technology and Economics
Home country: Hungary
Host: David Manlove
Host institution: School of Computing Science, University of Glasgow.
Host country: Scotland, UK
Dates: 15/05/2015 to 24/05/2015

The main goal of this present STSM was to continue an ongoing research on finding Pareto optimal solutions for many-to-many house allocation problems. In the studied model, agents are students and they have preferences on the items (that can be houses, but here we work with courses). Agents' preferences might not be strict and each course has an upper limit on the number of its students and each student has a maximum number of courses she can register. We focus on Pareto optimal assignments in which no group of students can be better off without harming others. The goal of the research is to understand the structure of Pareto optimal assignments and to construct a mechanism that finds any such assignment. It turns out that in the above setting, serial dictatorship and its variants play a key role. During the visit with Baharak Rastegari and David Manlove, we looked for generalizations of this result. We extended the model by relaxing the notion of an assignment such that instead of plain quotas, matroid constraints determine whether a set of courses is feasible for a student. We could define an envy graph that allows us a neat characterization of Pareto optimal assignments. This gives hope that the serial dictatorship approach can be extended and prove similar results in the more general and flexible model.

During the visit, I gave a talk on the nucleolus of bankruptcy games as a seminar of the Formal Analysis, Theory and Algorithms research group. Further, I also participated in other research meetings, and worked with Iain McBride and David Manlove on approximation algorithms for stable matching related problems.