

## **COST Action IC1205 on Computational Social Choice: STSM Report**

**Applicant:** Marina Núñez

**Home institution:** Department of Mathematical Economics, University of Barcelona

**Home country:** Spain

**Host:** Péter Biró

**Host institution:** Institute of Economics, Hungarian Academy of Sciences

**Host country:** Hungary

**Dates:** 03/12/2013 to 14/12/2013

**Purpose of the STSM:** One purpose was to conclude a joint research project on lexicographic allocations for two-sided assignment markets with Dr. Tamas Solymosi, from Corvinus University of Budapest. The second objective was to initiate a new research project on multiple partner matching games (one-sided or two-sided) with Dr. Péter Biró, from the Institute of Economics of the Hungarian Academy of Sciences.

**Description of the work carried out:** Our paper *Lexicographic allocations and extreme core payoffs: the case of the assignment game* has progressed a lot. We had some previous results relating different lexicographic allocations (payoff vectors that are defined sequentially, for any given order, following some selected criteria: maximization or minimization inside either the set of rational payoffs, or the core, or the set of dual rational payoffs). During this STSM we have been able to prove that, in the case of assignment games, one of these procedures (the lexicographic maximization inside the set of dual rational payoffs) provides all the extreme points of the core. This procedure is an easy-to-compute way of obtaining all core extreme points, and hence their average, which is a stable solution that occupies a central position inside the core polytope and as a consequence is an interesting cooperative solution.

Regarding the second objective of the STSM, Péter Biró and myself have discussed the model of matching games with capacities. Péter Biró and his student Péter Wojuteczky have already characterized when such a problem has an outcome (a matching together with a payoff vector) that is stable, by using linear programming techniques. Now, new questions arise. Is it possible to say something for this model about the structure of the core or the behavior of some cooperative solution like the nucleolus?

**Future collaborations and foreseen publications:** The aforementioned paper will be prepared for publication shortly. On the other side, the applicant and host will keep in contact with respect to matching games with capacities.

**Confirmation of successful execution of the STSM:** On behalf of the host institution, Péter Biró confirms that the STSM was successfully executed. For further queries please contact him [biro.peter@krtk.mta.hu](mailto:biro.peter@krtk.mta.hu)

**Other comments:** I gave a seminar presentation at Corvinus University, Budapest, on December 9, 2013. See <http://gametheory.uni-corvinus.hu/GTSemeng.html>