

Action IC1205 on Computational Social Choice: STSM Report

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During the STSM stay at the Université Paris-Dauphine, hosted by Jérôme Lang, we (Jérôme Lang, Britta Dorn, Janosch Döcker, Sebastian Schneckenburger, and Andreas Darmann) continued previous joint work on a simplified variant of the general group activity selection problem (GASP). In GASP, the task is to assign agents to activities based on the agents' preferences which are preferences over pairs "(activity, group size)".

In our simplified variant, we considered the case in which agents' preferences only depend on the activities (and not on the number of participants in the activity), and some constraints are given exogenously. These constraints are, e.g., restrictions on the number of agents that can be assigned to an activity, or on the number of activities that can be used. The goal in this setting is to assign agents to activities in a reasonable way. In order to do so, we adapted notions of stability and individual rationality from hedonic games and the setting of GASP respectively, and also considered the concept of Pareto optimality.

Several complexity results could be derived. We also distinguished between *actual stability* and the natural notion of *virtual stability*. We were able to derive complexity results both for the question whether a virtually stable assignment exists and for the task of deciding whether it is possible to assign (at least) a given number of agents to a non-void activity in a virtually stable assignment. In that respect, not only individual deviations, but also group deviations (resulting in respective notions of individual stability and core stability) have been considered.

In addition, we gained new insights into Pareto optimality in our setting, and investigated the tension between envy-freeness and Pareto optimality.

Finally, we also considered the research tasks in an approval-scenario where the agents' preferences are trichotomous.