

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

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**Purpose of the STSM:** To finish a joint work with Peter Biro and Elena Molis. In this work we investigate the relation of different solution concepts for the roommate problem (or one-sided matching markets). The paper is titled: Solutions Concepts for Unsolvable Roommate Problems

**Description of the work carried out:**

In this paper we first survey the most important solution concepts for roommates problems, which may not admit a stable solution. We focus on four core consistent solution concepts, namely, almost stable matchings, maximum internally stable matchings, absorbing sets, and finally we introduce the concept of maximum irreversible matchings. We show that it is not possible to reconcile almost stability with any of the latter three concepts. However, we also show that the intersection of the sets of matchings satisfying the latter three concepts is nonempty, and we can find a matching in this intersection by a linear time algorithm.

**Other comments:**

I have presented a seminar The von Neumann and Morgenstern Stable Set for 2x2 games presentation at Corvinus University, Budapest, on January 10, 2014 I have submitted the paper to be presented to CIREQ Montreal Matching Conference