

Report on the Bachelor Thesis

Weak saturation processes in multipartite hypergraphs

by
Adam Rajský

It is my great pleasure to provide a report on the Bachelor thesis of Adam Rajský.

The main result of the thesis is to prove that for every r -partite r -uniform hypergraph the weak saturation number into the complete r -partite r -uniform hypergraph (where each part has n vertices) has a limit when divided by a suitable power of n . The exact technical statement is given by Theorem 1.1 in the thesis.

To put this work into the context, this work is a multipartite analogue (in fact a generalization) of a recent noticeable work of Shapira and Tyomkyn proving a conjecture of Tuza. In general, Adam Rajský proceeds along the way of the proof of Shapira and Tyomkyn but also some new insights are really needed. The main technical difficulty seems to be to modify how to use Rödl's approximate designs theorem in this setting.

Let me stress that although the author follows the aforementioned earlier work, it definitely requires a lot of work to put everything together. The work is also technically very non-trivial. This is much more than we usually require from a Bachelor thesis and I actually believe that this work should be publishable in some journal of reasonable quality. Overall, given that this is a Bachelor thesis, this work is simply amazing. (It could surely be a competitive Master thesis.)

The work is written in very good English. All the notions are well explained and it is in general easy to follow the ideas of the author. There are very few exceptions where I felt that the explanation could be simplified a bit but these are indeed rare.

I surely recommend that this thesis should obtain the **best grade (výborně)**. In fact, if it is still possible, I would like to **nominate this thesis to obtain a special award for an excellent thesis**.

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