



May 2, 2022

**Advisor's report on doctoral thesis of Radek Hušek**

Ph.D. thesis of Radek Hušek contains multiple results from graph theory, all studying different aspects of the cycle space of a graph. Several of them were presented at various conferences (including twice at Eurocomb) and published at good quality journals (Journal Graph Th., Electronic J.of Comb.).

While most papers are joint with me, I can attest that to all of them Radek contributed in a significant way. Certainly all computational aspects were dealt with by him. However, he also came up with many innovative approaches - to mention one, the idea of using universal algebra to study numbers of circuit double covers is his invention. I consider the lower bounds for the number of CDCs in planar graphs as a highlight of the thesis - the proof combines linear programming, universal algebra and careful enumeration by a sophisticated algorithm.

It was a pleasure working with Radek. He is (and the presented thesis clearly shows it) an independent researcher

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with broad knowledge of mathematics and computer science (both theoretical and applied). He is capable of carrying out original research and showed good taste in his approach to presenting the results, and indeed, what other results to seek or ignore.

For the above mentioned results I strongly support accepting the presented thesis as a doctoral thesis and awarding Radek the doctoral degree.

Sincerely,

A handwritten signature in black ink, appearing to read 'Robert Šámal', written in a cursive style.

doc. Mgr. Robert Šámal, Ph.D.  
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