

3 January 2022, Prague

Subject: **Evaluation by Marek Tyburec's thesis advisor**

### **A brief history**

I first met Marek already in the second year of his bachelor studies, when he attended a special seminar on structural mechanics offered to motivated students. During this seminar, Marek chose to work on a truss topology optimization, in which he was tasked with implementing and comparing different formulations of this problem. To my great surprise, Marek handed in the complete solution of this problem in two weeks, with absolutely no input from my side. It thus became evident that Marek is an exceptionally promising and gifted student with whom we should keep collaborating.

The first phase of this collaboration involved designing linear programming solvers for proton therapy – a problem proposed by our former colleague working for the IBA software company. Marek again successfully solved the problem, implemented the prototypes of the algorithms in MATLAB, and defended an excellent bachelor thesis on this topic. Then, because of a lack of interest from the industrial partner, Marek kindly accepted my offer to perform an initial study on modular-topology optimization of truss structures, which provided the starting point for the results he will be presenting today.

### **My opinion**

In brief, it has been an absolute pleasure to collaborate with Marek. He has always been a hard-working, reliable, creative, and independent colleague with a true passion for research. What I particularly appreciate is his versatility as a researcher. During his studies, he acquired proficiency in theoretical and practical aspects of continuous and discrete optimization, computational structural mechanics, additive manufacturing and successfully handled collaborations with the industry.

Last but not least, he essentially contributed preparation of two project proposals funded by the Czech Science Foundation: One 2 million EUR project that supported most of his Ph.D. studies and a follow-up project, with a budget of half a million EUR, that will hopefully support his post-doctoral career stage and his transition to complete research independence.



Jan Zeman