

Opponent's review of the Doctoral Thesis

Candidate Marek Tyburec

Title of the doctoral thesis Modular-topology optimization of structures and mechanisms

Study Programme _____

Tutor Prof. Ing. Jan ZEMAN, PhD

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Topicality of the doctoral thesis theme				
Commentary: Developing efficient methods for topology optimization in structural design and materials engineering in certainly an important research topic with interesting scientific challenges.				
<input type="checkbox"/> excellent	<input checked="" type="checkbox"/> above average	<input type="checkbox"/> average	<input type="checkbox"/> below average	<input type="checkbox"/> poor

Fulfilment of the doctoral thesis objectives				
Commentary: The doctoral thesis addresses three important issues:(i) Module topologies,(ii) encoding the module connectivity and (iii) assembly of the modules. In view of the overall complexity, each issue is addressed separately. The resulting computational challenges associated with each issue is clearly identified and understood, and leads the author to develop appropriate tools with reasonable efficiency adapted to the inherent difficulties.				
<input type="checkbox"/> excellent	<input checked="" type="checkbox"/> above average	<input type="checkbox"/> average	<input type="checkbox"/> below average	<input type="checkbox"/> poor

Research methods and procedures				
Commentary: The initial global problem being intractable, it is decomposed into smaller and more tractable subproblems, e.g. by fixing some parameters. It is done with a clear view and understanding of the resulting scientific challenges to address.				
<input type="checkbox"/> excellent	<input checked="" type="checkbox"/> above average	<input type="checkbox"/> average	<input type="checkbox"/> below average	<input type="checkbox"/> poor

Results of the doctoral thesis – dissertant's concrete achievements				
Commentary: The author has succeeded in addressing several issues towards more general designs of reusable modular structures				
<input type="checkbox"/> excellent	<input checked="" type="checkbox"/> above average	<input type="checkbox"/> average	<input type="checkbox"/> below average	<input type="checkbox"/> poor

Importance for practice and for development within a branch of science				
Commentary: Results described in this thesis are certainly useful for practitioners in optimal design of modular topology of structures.				
<input type="checkbox"/> excellent	<input checked="" type="checkbox"/> above average	<input type="checkbox"/> average	<input type="checkbox"/> below average	<input type="checkbox"/> poor

Formal layout of the doctoral thesis and the level of language used

Commentary: Overall, the main text is quite clear and with a sufficient level of details in each section.

excellent above average average below average poor

Remarks

No specific remark at this stage.

Final assessment of the doctoral thesis

All in all this is doctoral thesis of a very good level

Following a successful defence of the doctoral thesis I recommend the granting of the Ph.D. degree

yes no

Date: November 30th 2021

Opponent's signature:.....

