BRNO UNIVERSITY OF TECHNOLOGY
FACULTY OF CIVIL ENGINEERING

UNIVERSITY OF PARDUBICE,
FACULTY OF TRANSPORT ENGINEERING

Opponent's review of Dissertation

Candidate: **Ing. Özgür Yurdakul**
Title of dissertation: **Probabilistic Nonlinear Computer Simulations for Realistic Prediction of Structural Response**
Branch of study: **3706V005 – Transport Means and Infrastructure**

Supervisor: **Ing. Ladislav Řoutil, Ph.D.**

Opponent: **prof. Ing. Zbyněk Keršner, CSc.**
Brno University of Technology, Faculty of Civil Engineering, Institute of Structural Mechanics, Veveří 331/95, 602 00 Brno, Czech Republic;
e-mail: kersner.z@fce.vutbr.cz

Appointment of a dissertation reviewer / Date of request for review: **16. 10. 2019**

Topicality of the doctoral thesis theme

The topicality of thesis theme is very high and relevant in the context of advanced nonlinear simulation of selected reinforced concrete structures (structural members) response/failure with respect to uncertainties of input parameters.

Evaluation:

☒ excellent	☐ above average	☐ average	☐ below average	☐ poor

Fulfilment of the doctoral thesis objectives

Objectives of the thesis are described in details and all there are evidently fulfilled on very high level.

Evaluation:

☐ excellent	☒ above average	☐ average	☐ below average	☐ poor

Research methods and procedures

Appropriate methods and procedures for dealing with the numerical modelling, material constitutive laws, approaches for statistical, sensitivity and reliability analyses etc. are described, including very extensive experimental work. Number of references to the relevant literature is also adequate.

Evaluation:

☐ excellent	☒ above average	☐ average	☐ below average	☐ poor

Importance for practice and for development within a branch of science

PhD student has apparently contributed for practice and scientific research obtaining interesting and valuable results from advanced failure response analyses of carefully selected experiments.

Evaluation:

☐ excellent	☒ above average	☐ average	☐ below average	☐ poor

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

Dissertation is written in English. The overall concept of the thesis, editing and text arrangement indicate high level of work; typos and minor errors are infrequent.

Evaluation:

☐ excellent	☒ above average	☐ average	☐ below average	☐ poor

Results of the doctoral thesis – dissertant's concrete achievements

The results of the work are very valuable, selected parts were published in several impacted journal papers.

Evaluation:

☒ excellent	☐ above average	☐ average	☐ below average	☐ poor

Remarks, comments

I appreciate the extreme amount of work behind the produced numerical simulations and testing program, as well as very high level of workplaces background. Obviously, the extensive work raises a number of partial comments and questions whose explanation and answer can be expected during the oral defense of the doctoral study, also to encourage discussion by the committee.

Selected questions / problems:

1) How have been obtained displacements during the four-point bending test on the beam RILEM bond specimens (CASE III: BOND TEST): a) in real experiments, b) in numerical simulations?

2) How the joint was modelled in case of simulation of response in these tests?

3) Detailed explanation of the response in Fig. 6.44, page 172.

Final assessment of the doctoral thesis

Ing. Özgür Yurdakul presented coherently structured and carefully prepared interesting and very high topicality dissertation, contributed to the development of the studied discipline, and published results of his work on international scientific platform. The above-mentioned circumstances clearly proved the ability of the doctoral student to scientific work. To conclude, dissertation evidently fulfils all obligatory requirements.

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

☒ yes	☐ no

Date: Opponent's signature: .....