Classification of Diploma Thesis – supervisor

Author of classification: Ing. Alexandros Markopoulos, Ph.D.
Supervisor: Ing. Alexandros Markopoulos, Ph.D.
Opponents: doc. Ing. Leo Václavek, CSc.
Title: Solution of Torsion of Beams with Non-Circular Cross-Sections in Python
Thesis version: 1
Student: Bc. Tea Tutiashvili

1. Achieved results
Master thesis deals with a torsion of non-circular cross-sections. Originally three-dimensional problem is simplified to two-dimensional case which is sufficiently described in the theory part. Next to the thesis itself, also own software was created. It contains meshgenerator (2d) for basic cross-sections (square, rectangle, triangle, circle) with variable number of elements. Variable mesh makes the application very useful for fast analysis of problems with such cross-sections widely used in engineering practise.

2. Problematics of thesis
The thesis sufficiently introduces the problem of torsion of non-circular cross-sections. It also provides manual for solving partial differential equations by Finite Element Method. All these knowledges were used during the implementation into own software written in Python. I appreciate the choice of Python because it is open source (compared to, e.g., Matlab etc.) and the product can be used without licence obstacles.

3. Student’s proceed to work at thesis
Student had to study a difficult part of the linear elasticity. According to that a numerous consultations were carried out.

4. Formal essentials of thesis
The work is on an acceptable level of quality. Visualization part is very good. But the work also contains numerous grammatical errors. Several parts, in my opinion, should be commented in more details, e.g., equations etc.

5. Questions to student
The mesh of the beam solved by ANSYS looks, it is quite coarse. Wouldn’t be better to use finer mesh?

6. General revaluation of thesis
I recommend the thesis for a defence.

Overall classification: very good

Ostrava, 20.05.2016

Ing. Alexandros Markopoulos, Ph.D.