

Feedback on the PhD manuscript “Machine learning enhancement of micro-CT based micromechanics of composite materials” by Radmir Karamov

Member of the examination committee: Frederik Desplentere

The thesis explores the use of deep learning techniques to improve the analysis of composite materials using X-ray computed tomography. It presents algorithms for improving CT image quality, refining material segmentation and generating periodic representations.

The comments related to the manuscript:

pre-p. 4 In case this is based on micro-CT input data

pre-p.4 Fibre breaks is not easy to translate within a RVE with PBC's

p.1 impart: I don't know/use this word

p.11 I wonder if this research will look for modelling of defects..

p. 12 Considering the size limit of 2000-4000 pixels in one dimension, the sample size should be less than 1000-2000 times smaller than the features of interest: Isn't it opposite??

p. 22 Describe as it is shown on the figure.

p.32 This material also was panel was manufactured in the shape of a flat, circular table measuring 30 cm in diameter: sentence

p.32 Due to the circular shape of the plates, the orientation of the specimens was not fixed.

The tests were performed: it would be nice to see an example of those plates

p. 33 I'm in favour of mentioning coefficient of variation (1 stdev / average value)

p. 36 Idea of the production process.

p. 102 Provide insights into determining the appropriate size of the RVE on page 102.

p.145 Reflect on potential implications of the research.

This work contributes to the field of composite materials research and is suitable for PhD defence.