

Master Thesis

Numerical analyses of tunnels in anisotropic rock masses

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Background: The presence of foliation or schistosity planes in rock masses can induce particular loading conditions on a tunnel which is excavated in it. To take



into account the rock mass behavior and its interaction with the lining, an appropriate modeling of the system has to be performed. In this thesis, the focus is posed on the possibility to reproduce the anisotropic behavior of the rock mass and its influence on a tunnel in a finite element software.

Tasks:

- Understanding the theory behind constitutive models used for anisotropic rock and ground conditions and their implementation in an object oriented finite element software, literature review on the topic.
- Implementation of a constitutive model for anisotropic rock masses in the software Kratos Multiphysics and validation of the model.
- Application of the model to tunnel analyses.

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