

Diplomová práce: Implementation of a hybrid Trefftz finite element for the analysis of elastodynamic media (Lamé soil) in the frequency domain

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Student Michal Šmejkal absolvoval studium na Fakultě stavební ČVUT v Praze souběžně se studiem na univerzitě **Technische Universität München** v rámci double degree studia na základě smlouvy uzavřené mezi oběma univerzitami.

V souladu s touto smlouvou proběhlo na **Technische Universität München** v rámci double degree studia zpracování diplomové práce zapsané na Fakultě stavební ČVUT a následně dne 11.11.2021 i obhajoba diplomové práce.

Abstrakt diplomové práce:

The thesis develops numerical tools for dynamic analysis of elastic media. Particularly, the hybrid-Trefftz method is applied in order to approximate the solution of the underlying differential equation expressed in the frequency domain. In addition, wave propagation in unbounded media is investigated and the absorbing boundary modelling approach is described in detail. The main purpose of the work was to develop a program enabling such analysis and implement it in Matlab software. To validate the code, the obtained results are compared to the analytical solutions as well as to the results acquired with the wave based method, for which an already existing code has been provided. Moreover, theoretical aspects of both methods are summarized and compared.

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