Masterarbeit zu vergeben

Numerical Prediction and Environmental Impact Assessment of Ground Vibrations induced by Rail Vehicles

Numerische Vorhersage und Umweltverträglichkeitsprüfung von Bodenerschütterungen durch Schienenfahrzeuge

Railways provide us with economic and social benefits and partially supplement the shortcomings of other means of transport. But at the same time, there are negative environmental impacts on adjacent residential areas. Among the negative factors, noise and vibration often make people feel annoyed and even cause social issues in terms of railway operation and extension. Thus, the propagation of noise and vibration induced by rail vehicles in service needs to be experimentally or numerically predictable, and the subjective perception of noise and vibration also needs to be quantitatively assessable.

In this work, a FEM-based track-subsoil model should be developed to predict the propagation of ground vibrations between a moving rail vehicle and adjacent areas, where excitation forces on the track induced by a rail vehicle will be obtained from a vehicle-track-subsoil dynamics model in cooperation with another student. Then the impacts on people at each measurement location should be assessed according to the vibration criteria of relevant standards. Finally, the model calibration and validation plan will be discussed.

Von Vorteil sind:
- Vorkenntnisse im Bereich FEM Berechnung mit SIMULIA Abaqus und Altair HyperMesh
- Vorkenntnisse im Bereich Schwingungen und Modalanalyse
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