The mobility of people and goods is a central foundation of our modern society with increasingly global and diversely networked processes. It enables an efficient economy and represents a valuable asset that must be preserved and further developed. Mobility, especially with regard to road mobility and to road traffic, is currently confronted with global challenges, which urgently require fundamental solutions.

In the planned SFB/TRR 339, a spatially as well as temporally multidimensional, model of vehicle, tire and road surface (concrete and asphalt) will be developed and researched, taking into account the road pavements. The model combines all available and relevant information about the "road of the future" system from physical investigations and modeling as well as from informational and traffic-related data (sensor data, data models etc.). The approach enables and requires the interaction between the physical-engineering and the informational-traffic design levels. This interactive model in space and time is referred to as the digital twin of the road, subject to analysis, control and prediction of the physical road by means of common interfaces.


At the Faculty of Civil Engineering, the Institute of Structural Analysis offers in Subproject B04, subject to resources being available, a project position as

**Research Associate (m/f/x)**

(subject to personal qualification employees are remunerated according to salary group E 13 TV-L)

starting **January 1, 2022** initially to be filled by December 31, 2025, with the option of extension The period of employment is governed by § 2 (2) Fixed Term Research Contracts Act (Wissenschaftszeitvertragsgesetz - WissZeitVG).

**Tasks:** Processing of current literature on the topic of numerical long-term forecasting methods; further development of time homogenization methods for multi-physical multi-field problems (temperature, displacement) of the tire-road system taking into account discontinuities (cracks); derivation of simplified 2D models and 1D models (model reduction); conception, training and validation of neural networks; preparation of the synthesis of the data from experiment / sensor technology and the simulation; preparation of the modeling of the data uncertainty (polymorphic uncertainty modeling); cooperation with other subprojects for generalized fuzzy modeling; writing scientific publications; presenting research results at conferences; using partial results of this scientific research activity for one's own qualification.

**Requirements:** very good university degree in civil engineering, mechanical engineering, computational engineering or another comparable engineering science or natural science; knowledge in the field of FEM and continuum mechanics; programming knowledge in Fortran; high amount of self-reliance, involvement and team spirit; very good scientific writing and speaking skills in English. Applications from women are particularly welcome. The same applies to people with disabilities.

Please submit your comprehensive application including the usual documents and the specification of the sub-project number B04 by **December 16, 2021** (stamped arrival date of the university central mail service applies) by mail to: TU Dresden, Fakultät Bauingenieurwesen, Institut für Statik und Dynamik der Tragwerke, Prof. Kaliske -persönlich-, Helmholtzstr. 10, 01069 Dresden, Germany, or via the SecureMail portal of the TU Dresden https://securemail.tu-dresden.de as a PDF document Bewerbung_SFB_339@tu-dresden.de. Please submit copies only, as your application will not be returned to you. Expenses incurred in attending interviews cannot be reimbursed.