



Technische  
Universität  
Braunschweig



GRK 2075

Vortrag im Gästeprogramm des GRK 2075 -  
Modelle für die Beschreibung der Zustandsänderung bei Alterung von Baustoffen

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## Design of super-compressible material by artificial intelligence and additive manufacturing

Dienstag, 16.10.2018, 10.00 Uhr  
Institut für Wissenschaftliches Rechnen  
Mühlenpfordtstrasse 23, 8. OG, Raum 812

A data-driven computational framework [1,2] combining Bayesian machine learning for imperfection sensitive quantities of interest, uncertainty quantification and multi-objective optimization is developed to analyze and design new materials and structures. This talk intends to illustrate the capabilities of coupling the proposed framework with additive manufacturing to design a new material that achieves unprecedented super-compressibility.

[1] Bessa, M. A. et al. (2017). A framework for data-driven analysis of materials under uncertainty: Countering the curse of dimensionality. *Computer Methods in Applied Mechanics and Engineering*, 320, 633-667.

[2] Bessa, M. A., & Pellegrino, S. (2018). Design of ultra-thin shell structures in the stochastic post-buckling range using Bayesian machine learning and optimization. *International Journal of Solids and Structures*, 139, 174-188.

### Kontakt

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