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Dimension reduction for elastic materials with voids

Tuesday, 8 July 2025 10:00 (1 hour)

In this talk I present some recent dimension-reduction results for elastic materials with voids. We consider three-dimensional
models with an elastic bulk and an interfacial energy featuring a Willmore-type curvature penalization. By Gamma-convergence we
rigorously derive lower-dimensional models for rods and plates where the effective limit comprises a classical elastic bending
energy and surface terms reflecting the possibility that voids can persist in the limit and that the material can be folded or
broken apart into several pieces. The main ingredient for the analysis is a novel rigidity estimate in varying domains under
vanishing curvature regularization. Joint work with Leonard Kreutz and Konstantinos Zemas.

Presenter: Prof. FRIEDRICH, Manuel (FAU Erlangen-Nürnberg)