universität wien

Fakultät für Mathematik

EINLADUNG

zum

HABILITATIONSVORTRAG

Dott. Elisa Davoli, PhD
(Fakultät für Mathematik, Universität Wien)

"Homogenization in BV of a model for layered composites in finite crystal plasticity."

"Homogenization in BV of a model for layered composites in finite crystal plasticity."

Abstract: _In this talk, we study the effective behavior of a two-dimensional variational model within finite crystal plasticity for high-contrast bilayered composites. Precisely, we consider materials arranged into periodically alternating thin horizontal strips of an elastically rigid component and a softer one with one active slip system. The energies arising from these modeling assumptions are of integral form, featuring linear growth and non-convex differential constraints. We approach this non-standard homogenization problem via Gamma-convergence. A crucial first step in the asymptotic analysis is the characterization of rigidity properties of limits of admissible deformations in the space BV of functions of bounded variation. In particular, we prove that, under suitable assumptions, the two-dimensional body may split horizontally into finitely many pieces, each of which undergoes shear deformation and global rotation. This allows us to identify a potential candidate for the homogenized limit energy, which we show to be a lower bound on the Gamma-limit. In the framework of non-simple materials, we present a complete Gamma-convergence result, including an explicit homogenization formula, for a regularized model with an anisotropic penalization in the layer direction. This is joint work with R. Ferreira and C. Kreisbeck._

Montag, 04. November 2019,
09:30 Uhr – 10:15 Uhr,

Fakultät für Mathematik,
Ort SR 05, 1 OG.
Oskar-Morgenstern-Platz 1, 1090 Wien

Henk Bruin
Christian Krattenthaler