

On a variational model for epitaxial growth with dislocations

Tuesday, June 25, 2024 9:00 AM (1 hour)

In this talk, we consider a variational model which has been introduced in the literature to model the deposition of a thin crystalline film on a rigid substrate, allowing for the formation of dislocations. The energy functional takes into account the surface energy of the film's free surface, the elastic energy due to the crystallographic misfit between the film and the substrate, and the nucleation energy of dislocations. We discuss in particular the scaling law for the infimal energy. The upper bound constructions suggest that there are parameter regimes in which dislocations are energetically favorable. The lower bound builds on a new variant of a ball construction.

This talk is based on a recent joint work with Lukas Abel and Janusz Ginster (both HU Berlin).

Presenter: ZWICKNAGL, Barbara (Humboldt-Universität zu Berlin)