Department of Mathematics and Statistics Colloquium

The Relaxation of 1D Crystal Surfaces

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Abstract: In this talk, I will first introduce some discrete and continuum mathematical models for crystal growth and relaxation in the field of materials science. Then I will discuss joint work with Robert V. Kohn and Jonathan Weare on the relaxation of a one-dimensional crystal surface in a limiting regime. Starting with the step-based Burton-Cabrera-Frank model, we introduce step ODEs, and an associated continuum PDE, then we prove asymptotic self-similarity of the solution of the ODEs. PDE arguments drive the analysis.

Finally, I will end with a variety of open problems in this area, which is relatively new and provides a fertile ground for mathematical study.

Monday, January 28 at 3:45 in Roop 103

refreshments at 3:30