Special Colloquium

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The relaxation of a general family of broken bond crystal surface models

Abstract:
With Jon Weare (Chicago), we study the continuum limit of a family of kinetic Monte Carlo models of crystal surface relaxation that includes both the solid-on-solid and discrete Gaussian models. With computational experiments and theoretical arguments we are able to derive several partial differential equation limits identified (or nearly identified) in previous studies and to clarify the correct choice of surface tension appearing in the PDE and the correct scaling regime giving rise to each PDE. We also provide preliminary computational and analytic investigations of a number of interesting qualitative features of the large scale behavior of the models. The PDE models involved are fully non-linear Fourth order diffusion type equations with many interesting geometric features. We will also discuss recent progress analyzing existence and regularity properties of solutions to such PDE.

Hosts: Ioan Bejenaru and Michael Holst

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