

PIRE-CNA 2016 Summer School

New Frontiers in Nonlinear Analysis for Materials

Center for Nonlinear Analysis

Carnegie Mellon University, Pittsburgh, PA
June 2–10, 2016



Lecturers and Topics:

Irene Fonseca, Carnegie Mellon University (USA)

- Variational models for epitaxial growth and materials defects

Adriana Garroni, Sapienza University of Rome (Italy)

- Variational methods for crystal defects and plasticity

Robert Kohn, New York University (USA)

- A variational perspective on wrinkling patterns in thin elastic sheets

Roman Kotecký, University of Warwick (UK)

- Gradient Gibbs measures: Statistical mechanics and nonlinear elasticity

Mitchell Luskin, University of Minnesota (USA)

- Multiscale materials simulation at the atomic scale: A numerical analysis perspective

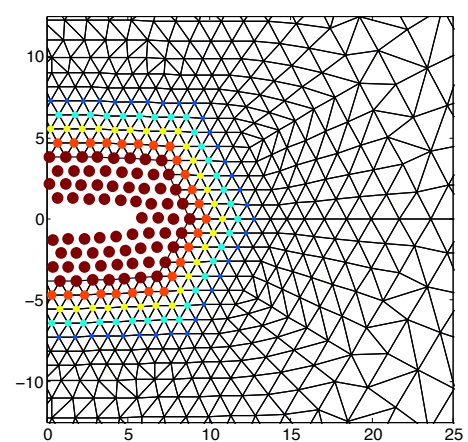
Center for Nonlinear Analysis

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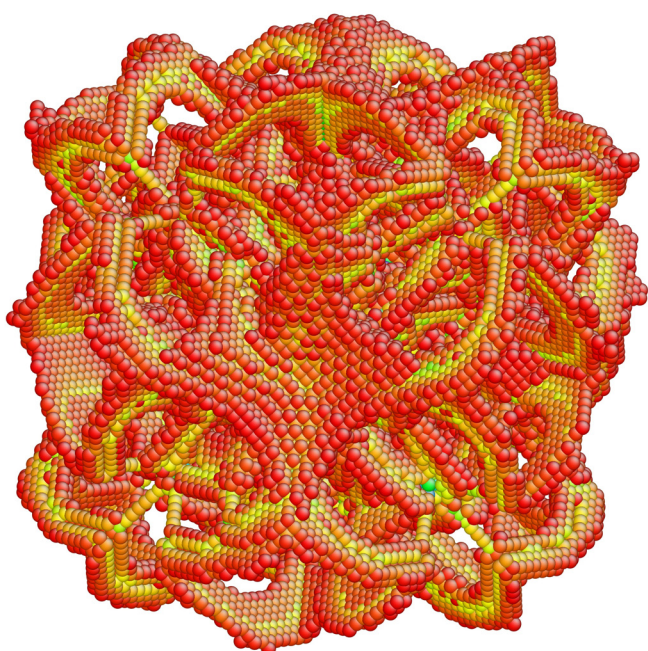
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Deformed configuration in atomic units of a BQCE solution for a microcrack. The color and size of the atom positions indicate the value of the blending function. From: Formulation and optimization of the energy-based blended quasicontinuum method, Mitchell Luskin, Christoph Ortner, and Brian Van Koten.



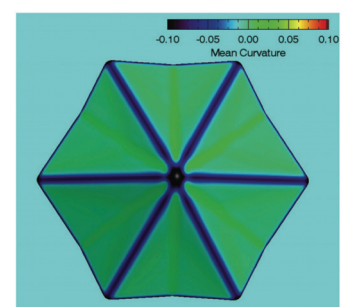
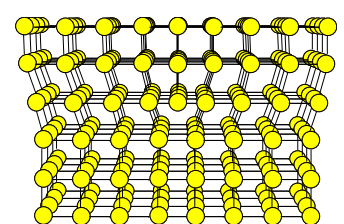
Dislocations emission during the formation of voids. Courtesy of M. Ortiz

The mini-courses will be complemented by one-hour talks by researchers in related fields. The list includes:

- **Peter Bella**, Max-Planck Institute, Leipzig (Germany)
- **Christoph Ortner**, University of Warwick (UK)
- **Celia Reina**, University of Pennsylvania (USA)
- **Katsuyo Thornton**, University of Michigan (USA)

Advanced graduate students and postdocs are invited to submit a title and an abstract for a poster. A cv will also be required. Each poster will be individually introduced with a five minute oral presentation. **The deadline for submission of posters is April 15, 2016.**

Advanced undergraduate students, graduate students, and postdoctoral fellows are encouraged to apply for financial support. **The deadline for applications is April 15, 2016.**



Top: A discrete edge dislocation in a cubic lattice
Bottom: A top view of a hexagonal pyramid simulated with a phase field model of selective area epitaxy; color indicates the mean curvature. Courtesy of Katsuyo Thornton.

Organizers: Irene Fonseca, Carnegie Mellon University (USA), Giovanni Leoni, Carnegie Mellon University (USA), Stefan Müller, University of Bonn (Germany), Christoph Ortner, University of Warwick (UK)

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www.math.cmu.edu/cna/Summer16