

# Casey L. Richardson - Curriculum Vitae

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## CONTACT INFORMATION

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## EDUCATION

Ph.D., Mathematics, 2003-2008  
Worcester Polytechnic Institute, Worcester, MA  
Dissertation: Some Problems in the Mathematics of Fracture:  
Paths from Front Kinetics and a Level Set Method  
Advisor: Christopher J. Larsen  
B.S., Physics, 2000  
Worcester Polytechnic Institute, Worcester, MA

## APPOINTMENTS & EMPLOYMENT

CAM Assistant Professor, University of California, Los Angeles Hosted by Professor Stanley Osher	2008-Present
Research Assistant, Worcester Polytechnic Institute	2004-2008
Teaching Assistant, Worcester Polytechnic Institute	2003-2004
Software Developer (Contractor)	2000-2003

## EXTERNAL COLLABORATIONS

Visiting Scientist, Lawrence Livermore National Laboratory	2009-Present
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## PAPERS

C.L. RICHARDSON, J. HEGEMANN, E. SIFAKIS, J. HELLRUNG, AND J. TERAN,  
Simulating crack propagation with XFEM and a hybrid mesh, *Int. J. Numer. Meth. Engng.*, Submitted.  
B. BOURDIN, C.J. LARSEN, AND C.L. RICHARDSON, A time-discrete model for dynamic fracture  
based on crack regularization, *International Journal of Fracture*, Submitted.  
C.J. LARSEN, M. ORTIZ AND C.L. RICHARDSON, Fracture Paths from Front Kinetics:  
Relaxation and Rate-Independence, *Arch. Ration. Mech. Anal.* vol 193 (2009) 539-583.  
C.J. LARSEN, M. SARKIS AND C.L. RICHARDSON, A Level Set Method for Mumford-Shah and Fracture,  
*Technical Report Serie A 508* (2008), Instituto de Matematica Pura e Aplicada, and submitted, under revision.

## REVIEWING

Journal of Computational Physics  
Communications in Mathematical Sciences

## TEACHING EXPERIENCE

UCLA Math Department (Professor) – Fall 2008 - Present  
Calculus for Life Sciences Students I & II (enrollment: 130-180)  
Institute for Pure and Applied Mathematics (Academic Mentor) – Summer 2009  
Research in Industrial Projects for Students (RIPS)  
WPI Math Department (Teaching Assistant) – 2003 - 2004  
Calculus I, Calculus II, Calculus III, Calculus IV, Vector & Tensor Calculus  
New Jewish Academy (Volunteer Teacher) – 2006 - 2007  
Weekly Math elective (grades 5 & 6), Math Club (grades 2-4), Chess Club (grades 2-8)  
Private Tutoring – 2003 - 2008  
Calculus I-IV, Introduction to Analysis I & II, Advanced Calculus I & II,  
Matrices & Linear Algebra I, Geometry, Pre-Calculus, Physics  
WPI Math Department (Peer Learning Assistant) – 1997 - 2000  
Ordinary Differential Equations (11 terms)  
WPI Physics Department (Help Leader) – Fall 1997 - Fall 1999  
Physics I - Mechanics, Calc-based Physics I, Physics II - Electricity & Magnetism,  
Calc-based Physics II, Introduction to 20th Century Physics, Oscillations & Waves

## INVITATIONS

University of Oxford, Mathematics of Solids Group – June 4-8, 2007  
Oberwolfach: Analysis and Numerics for Rate-Independent Processes – February 25 - March 3, 2007  
Louisiana State University, Department of Mathematics – 2 weeks in Summer, Fall 2006  
California Institute of Technology, Department of Applied Mechanics – 2 weeks in Spring 2006

## INVITED SPEAKER

Variational Methods in Materials Science, SIAM Conference on Analysis of PDEs  
Miami, FL – December 2009 (planned)  
Minisymposium on Damage and Fracture Evolution  
SIAM Conference on Mathematical Aspects of Material Science  
Philadelphia, PA – May 12, 2008  
Mathematics of Solids Group, University of Oxford  
Oxford, England – June 6, 2007  
AMS Special Session on Free Discontinuity Problems: From Image Processing to Materials Science  
New Orleans, LA – January 6, 2007

## TALKS

UCLA Nonlinear PDE Seminar  
Los Angeles, CA – October 6 & 13, 2009

UCLA Analysis and PDE Seminar  
Los Angeles, CA – February 30, 2009

UCLA SIAM Perspectives in Mathematics Series  
Los Angeles, CA – October 20, 2008

UCLA Level Set Collective  
Los Angeles, CA – October 6, 2008

WPI Mathematics Colloquium  
Worcester, MA – January 15, 2008

16th Conference on Domain Decomposition Methods  
New York, NY – January 12, 2005

AMA Northeastern Section Meeting  
Worcester, MA – November 20, 2004

## CONFERENCES

Python for Scientific Computing Conference  
Pasadena, CA – August 18-23, 2009

SIAM Conference on Mathematics for Industry  
Philadelphia, PA – October 9-11, 2007

4th Summer School in Analysis and Applied Mathematics  
Rome, Italy – June 11-15 2007

Free Discontinuity Problems: From Image Processing to Material Science  
Baton Rouge, LA – January 2007

SIAM Conference on Analysis of Partial Differential Equations  
Boston, MA – July 10-12, 2006

New Trends in Material Design of Complex Systems in Space and Time  
Worcester, MA – November 17-19, 2005

IX Workshop on Partial Differential Equations  
Rio De Janeiro, Brazil – July 18-22, 2005

CMU Center for Nonlinear Analysis - Frontiers of Applied Analysis  
Pittsburgh, PA – September 8-10, 2005

CMU CNA Summer School Advances in Nonlinear Analysis  
Pittsburgh, PA – May 27 - June 5, 2004

## SCIENTIFIC COMPUTING

Languages: C++,C,Python,C#,Java,Fortran

Packages: Numpy & Scipy, Mayavi, PETSc (ANL)

Software: Matlab, Mathematica, Maple

## AWARDS AND GRANTS

Research Assistant – 2005-2008

Supported by NSF Grant No. DMS-0505660

WPI Graduate Research Poster Contest – March 28, 2007

3rd Place out of 54 in Science Category

NSF Oberwolfach Junior Fellowship – February 2007

Travel support to Oberwolfach, Germany

Consortium of the Americas for Interdisciplinary Science Grant – July 2005

Travel Support to IMPA, Rio De Janeiro, Brazil

Sigma Xi – Since April 2007

Associate Member

WPI Stephen Salisbury Prize (Physics) – May 2000

“[A]wards are given to the most meritorious seniors” in each department.

Pi Mu Epsilon – Since May 1999

Honorary National Mathematics Society

COMAP Mathematical Modelling Contest – 1999 and 2000

Awarded Meritorious