

Curriculum Vitae

Bruce E. Shaw

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Education: A.B. Physics, Magna Cum Laude, University of California Berkeley 1984
Ph.D. Physics, University of Chicago, supervised by Leo Kadanoff 1989

Employment: Lamont Research Professor, Lamont Doherty Earth Observatory,
Columbia University 2012-
Visiting Professor, University of Tokyo, Japan, 2012
Lamont Associate Research Professor, Lamont Doherty Earth Observatory,
Columbia University 2010-12
Doherty Research Scientist, Lamont Doherty Earth Observatory,
Columbia University 2002-10
Visiting Scholar, University of Queensland, Australia, 2000
Associate Research Scientist, Lamont Doherty Earth Observatory,
Columbia University 1995-2001
Postdoctoral Scientist, Lamont Doherty Earth Observatory,
Columbia University 1993-95
Postdoctoral Fellow, Institute for Theoretical Physics,
University of California, Santa Barbara,
supervised by Jim Langer 1989-92
Research Assistant, University of Chicago 1986-89
Teaching Assistant, University of Chicago 1984-85

Honors: National Earthquake Prediction Evaluation Council, USGS, member 2006-2014
New Zealand National Seismic Hazard Map Expert Panel, member, 2011
National Academy of Sciences, Frontiers of Science, Invited Speaker, 2002
Storke-Doherty Lectureship, Columbia University 1995-99
Postdoctoral Fellow, Institute for Theoretical Physics, UCSB 1989-92
Phi Beta Kappa, University of California Berkeley 1984
Summer Research Fellowship in Geology and Geophysics
at Yale University 1983
University of California Berkeley Alumni Scholar 1980-84

Teaching and Mentoring Experience:

As Storke-Doherty Lecturer, designed and taught
“Nonlinear Dynamics in the Earth Sciences”, graduate level course,
Department of Earth and Environmental Sciences, Columbia University,
Spring Semesters 1997 and 1999.

Lectured at DEFORM2015 winter school. Graduate student level classes
on Faulting, Deformation, and Earthquakes. Barcelonnette, France, 2015.

Taught weeklong course in dynamics and modeling, undergraduate level,
Biosphere, Columbia University, Spring Semester 1998.

Ph.D. research supervisor for Chrysanthe Spyropoulos. She was awarded a Ph.D. in
Applied Physics and Applied Mathematics from Columbia University in 1999.

Postdoctoral research advisor for Agnes Helmstetter, 2005. After being ranked
at the top of the CNRS applicants, she is now at CNRS Grenoble, France.

Ph.D. research advisor for Ethan Coon. He received his Ph.D. in
Applied Physics and Applied Mathematics from Columbia University in 2011.

Postdoctoral research collaboration with Nicholar van der Elst, LDEO, 2012-

Institutional Collaboration and Service:

Southern California Earthquake Center, member Board of Directors 2000-
SCEC is a national multiinstitutional multidisciplinary collaboration to address
hazard and physics of earthquakes. Core institutions: USC, UCR, UCSD, UCLA,
UCSB, UCSC, SDSU, UNR, Caltech, Stanford, MIT, Harvard, Columbia.

Chapman Conference on Radiated Energy and the Physics of Earthquake Faulting,
member Program Committee, 2005.

Working Group on California Earthquake Probabilities, member, 2010-
This working group is developing, from the ground up, new methodologies
for estimating seismic hazard.

National Earthquake Prediction Evaluation Council, member, 2006-2014
Federal Advisory Committee to the USGS.

Selected Recent Invited Talks:

University of Cambridge, UK, March 2000
California Institute of Technology, March 2000
International School of Geophysics, Erice, Italy, June 2000
Harvard University, October 2000
Yale University, April 2001
University of California Davis, April 2002
International School of Geophysics, Erice, Italy, August 2002
National Academy of Sciences, Frontiers of Science, December 2002
University College London, UK, July 2003
APEC Cooperation for Earthquake Simulation, Beijing China, July 2004
Institute for Theoretical Physics, UC Santa Barbara, August 2005
Working Group on California Earthquake Probabilities, Pasadena CA, March 2006
APEC Cooperation for Earthquake Simulation, Cairns Australia, June 2008
Committee on Mathematical Geophysics, Svalbard Norway, June 2008
International Workshop on Resonance Oscillations and Stability of Nonsmooth Systems,
London UK, June 2009
Working Group on California Earthquake Probabilities, Pomona CA, December 2009
Earthquake Source Dynamics, Smolnice Slovakia, June 2010
Princeton University, October 2010
Collaboratory for the Study of Earthquake Predictability, Zurich Switzerland, October 2011
Courant Institute of Mathematical Sciences, NYU, October 2011
University of Tokyo, Tokyo Japan, March 2012

Grants Funded (sole Principal Investigator on all, unless noted):

1992 Southern California Earthquake Center, \$20,000 ,
“Simple dynamical models compared with seismological observations”

1993 United States Geological Survey, \$50,000 ,
“Simple models of the earthquake cycle compared with seismological observations”

1993 Southern California Earthquake Center, \$14,000 ,
“Aftershocks and foreshocks in the earthquake cycle”

1994 National Science Foundation, \$61,000 ,
“Simple models of the earthquake cycle compared with seismological observations”

1994 Southern California Earthquake Center, \$20,000 ,
“Dynamic models of earthquake faults ”

- 1995 National Science Foundation, \$76,842 ,
“Simple models of the earthquake cycle compared with seismological observations”
- 1995 United States Geological Survey, \$44,000 ,
“Slip complexity in dynamical models of the earthquake cycle ”
- 1996-97 United States Geological Survey, \$75,000 ,
“Dynamic models of earthquakes, fault systems, and earthquakes on fault systems”
- 1999 National Science Foundation, \$96,421 ,
“The physics of the earthquake source and radiated waves: frequency dependence, spatial distribution, and directivity in elastodynamic models of repeated fault ruptures ”
- 2000 National Science Foundation, \$98,653 ,
“Spontaneous rupture sequences on non-planar elastodynamic faults: The interaction of geometrical heterogeneities and stress heterogeneities and the observable consequences ”
- 2001 Southern California Earthquake Center, \$20,000 ,
“Rupture cycles on elastodynamic segmented faults: Studies of cascade hypotheses”
- 2001 National Science Foundation, \$109,801 ,
“Renewal: The physics of the earthquake source and radiated waves: frequency dependence, spatial distribution, and directivity in elastodynamic models of repeated fault ruptures ”
- 2002 Southern California Earthquake Center, \$30,000 ,
“Sequences of cascading elastodynamic ruptures on geometrically complex faults”
- 2002 National Science Foundation, \$113,687 ,
“Renewal: Spontaneous rupture sequences on non-planar elastodynamic faults: The interaction of geometrical heterogeneities and stress heterogeneities and the observable consequences ”
- 2003 Southern California Earthquake Center, \$30,000 ,
“Sequences of cascading elastodynamic ruptures on geometrically complex faults: The Effects of Normal Stress Variations” ”
- 2003-6 National Science Foundation, \$469,513 ,
“Elastodynamic event sequences on rough faults”

- 2004 Southern California Earthquake Center, \$25,000 ,
“Sequences of cascading elastodynamic ruptures on geometrically complex faults:
Segmentation Effects on the Variation of Large Events ”
- 2005 Southern California Earthquake Center, \$25,000 ,
“Sequences of cascading elastodynamic ruptures on geometrically complex faults:
Rupture Initiation, Propagation, Termination, and Variation ”
- 2006 Southern California Earthquake Center, \$33,000 ,
“Towards Forecasting Directivity on Southern California Faults: Testing Model Seismicity
and Directivity Correlations with Southern California Data”
- 2007 Southern California Earthquake Center, \$30,000 ,
“Probabilities for Jumping Fault Segment Steppers”
- 2008 Southern California Earthquake Center, \$30,000 ,
“Magnitude-Area Scaling Relations: Theory, Simulations, and Data”
- 2009 Southern California Earthquake Center, \$35,000 ,
“Impacts of Deep Slip on Seismic Hazard Estimates”
- 2009 National Science Foundation, \$164,576 ,
“How Deep Do Ruptures Penetrate in Large Earthquakes?”
- 2009 National Science Foundation, \$317,000 , (Co-PI)
“CMG Research: Analysis and Application of XFEM to dynamic rupture
processes in Earthquake physics”
- 2010 Southern California Earthquake Center, \$30,000 ,
“Slip Gradients of Large Earthquakes”
- 2010 California Earthquake Authority, \$50,000 ,
“Developing Consistent Size-Length Scaling, Slip Budget, and Ground Motion Relationships”
- 2010 National Science Foundation, \$144,000 ,
“The Role of Fault Strands and Roughness in Fault and Earthquake Mechanics”
- 2011 Southern California Earthquake Center, \$20,000 ,
“The Depth Dependence of Slip: Applying 3D Elastodynamic Models to Seismic Hazard Question

2011-16 National Science Foundation, \$375,000 , (collaboration)
“FESD Type I: Earthquake Fault System Dynamics”

2012 Southern California Earthquake Center, \$30,000 ,
“Fault Zone Widths as a Parameter in Seismic Hazard Estimates”

2014 Southern California Earthquake Center, \$25,000 ,
“Developing earthquake simulators for use in seismic hazard estimates”

2014-16 National Science Foundation, \$200,000 ,
“Unearthing Aftershocks: Physical Simulations, Statistical Models, and New Observations ”