

Lawrence Craig Evans

Born: November 1, 1949, in Atlanta, Georgia

Education B.A., Vanderbilt University, 1971
Ph.D., University of California, Los Angeles, 1975
(Advisor: M. G. Crandall)

Employment University of Kentucky, 1975–1980
University of Maryland, 1980–1989
University of California, Berkeley, 1989–present

Publications

BOOKS

- *Weak Convergence Methods for Nonlinear Partial Differential Equations*, CBMS #74, American Mathematical Society, 1990. Third printing, 2002.
Russian edition, T. N. Rozhkovskaya, translator and N. N. Uraltseva, editor of translation, Nauchnaya Kniga, 2005, forthcoming.
- (with R. F. Gariepy), *Measure Theory and Fine Properties of Functions*, CRC Press, 1991. Second printing.
Russian edition, T. N. Rozhkovskaya, translator and N. N. Uraltseva, editor of translation, Nauchnaya Kniga, 2002.
- *Partial Differential Equations* (graduate textbook), American Mathematical Society, 1998. Third printing, 2002.
Polish edition, P. Rybka and P. Strzelecki, translators, Wydawnictwo Naukowe Pwn, 2002. Russian edition, T. N. Rozhkovskaya, translator and N. N. Uraltseva, editor of translation, Nauchnaya Kniga, 2003. Translation into German forthcoming.

LECTURE NOTES

- *Entropy and Partial Differential Equations*, University of California, Berkeley, 1996.
Download: math.berkeley.edu/~evans/entropy.and.PDE.pdf
- *An Introduction to Stochastic Differential Equations*, University of California, Berkeley, 2000. Download: math.berkeley.edu/~evans/SDE.course.pdf
- *An Introduction to Mathematical Optimal Control Theory*, University of California, Berkeley, 2004. Download: math.berkeley.edu/~evans/control.course.pdf

- (with M. Zworski) *Lectures on Semiclassical Analysis*, University of California, Berkeley, 2005. Download: math.berkeley.edu/~evans/semiclassical.pdf

ARTICLES

1. (with M. G. Crandall), On the relation of the operator $\partial/\partial t + \partial/\partial s$ to evolutions governed by accretive operators, *Israel Journal of Mathematics* **21** (1975), 261–278.
2. Nonlinear evolution equations in an arbitrary Banach space, *Israel Journal of Mathematics* **26** (1977), 1–42.
3. (with M. G. Crandall), A singular semilinear equation in L^1 , *Transactions of the American Mathematical Society* **225** (1977), 145–153.
4. Differentiability of a nonlinear semigroup in L^1 , *Journal of Mathematical Analysis and Applications* **60** (1977), 703–715.
5. Regularity properties of the heat equation subject to nonlinear boundary constraints, *Nonlinear Analysis* **1** (1976/77), 593–602.
6. A free boundary problem: the flow of two immiscible fluids in a one-dimensional porous medium I, *Indiana University Mathematics Journal* **26** (1977), 915–932.
7. A free boundary problem: the flow of two immiscible fluids in a one-dimensional porous medium II, *Indiana University Mathematics Journal* **27** (1978), 93–111.
8. (with F. J. Massey III), A remark on the construction of nonlinear evolution operators, *Houston Journal of Mathematics* **4** (1978), 35–40.
9. (with B. F. Knerr), Instantaneous shrinking of the support of nonnegative solutions to certain nonlinear parabolic equations and variational inequalities, *Illinois Journal of Mathematics* **23** (1979), 153–166.
10. (with H. Brezis), A variational inequality approach to the Bellman-Dirichlet equation for two elliptic operators, *Archive for Rational Mechanics and Analysis* **71** (1979), 1–13.
11. (with P.-L. Lions), Deux resultats de regularite pour le probleme de Bellmen-Dirichlet, *Comptes Rendus Acad. Sciences Paris Ser. A-B* **286** (1978), A587–A589.
12. Applications of nonlinear semigroup theory to certain partial differential equations (survey paper), in *Nonlinear Evolution Equations* (edited by M. G. Crandall), Academic Press, 1978.

13. A convergence theorem for solutions of nonlinear second order elliptic equations, *Indiana University Mathematics Journal* **27** (1978), 875–887.
14. (with A. Friedman), Regularity and asymptotic behavior of two immiscible fluids in a one-dimensional porous medium, *Journal of Differential Equations* **31** (1979), 366–391.
15. (with A. Friedman), Optimal stochastic switching and the Dirichlet problem for the Bellman equation, *Transactions of the American Mathematical Society* **253** (1979), 365–389.
16. A second order elliptic equation with gradient constraint, *Communications in Partial Differential Equations* **4** (1979), 555–572. Correction: *Communications in Partial Differential Equations* **4** (1979), 1199.
17. (with B. F. Knerr), An elastoplastic plane stress problem, *Applied Mathematics and Optimization* **5** (1979), 331–348.
18. (with C. Baiocchi, L. Frank and A. Friedman), Uniqueness for two immiscible fluids in a one-dimensional porous medium, *Journal of Differential Equations* **36** (1980), 249–256.
19. (with P.-L. Lions), Resolution des equations de Hamilton-Jacobi-Bellman pour des operateurs uniformement elliptiques, *Comptes Rendus Acad. Sciences Paris Ser. A-B* **290** (1980), A1049–A1052.
20. On solving certain nonlinear partial differential equations by accretive operator methods, *Israel Journal of Mathematics* **36** (1980), 225–247.
21. A convergence theorem for a chemical reaction-diffusion system, *Houston Journal of Mathematics* **6** (1980), 259–267.
22. (with L. Caffarelli), Continuity of the temperature for the two-phase Stefan problem, *Archive for Rational Mechanics and Analysis* **81** (1983), 199–220.
23. (with R. Jensen), A boundary gradient estimate for harmonic functions and applications, in *Nonlinear Partial Differential Equations and Their Applications*, vol. I (edited by H. Brezis and J.-L. Lions), Pitman, 1981. Correction in vol. III.
24. (with S. Lenhart), The parabolic Bellman equation, *Nonlinear Analysis and its applications* **5** (1981), 765–773.
25. (with J.-L. Menaldi), Gradient bounds for solutions of degenerate variational inequalities, *Applied Mathematics and Optimization* **7** (1981), 247–252. Correction: *Applied Mathematics and Optimization* **8** (1982), 197.

26. (with R. F. Gariepy), Wiener's criterion for the heat equation, *Archive for Rational Mechanics and Analysis* **78** (1982), 293–314.
27. (with P.-L. Lions), Fully nonlinear second order elliptic equations with large zeroth order coefficient, *Annales de L'Institut Fourier (Grenoble)* **31** (1981), 175–191.
28. (with J. Ball), Weak convergence theorems for nonlinear partial differential equations of first and second order, *Journal of the London Mathematics Society* **25** (1982), 332–346.
29. A new proof of local $C^{1,\alpha}$ regularity of solutions of certain degenerate partial differential equations, *Journal of Differential Equations* **45** (1982), 356–373.
30. Classical solutions of fully nonlinear, convex, second order elliptic equations, *Communications in Pure and Applied Mathematics* **35** (1982), 333–363.
31. Classical solutions of the Hamilton-Jacobi-Bellman equation for uniformly elliptic operators, *Transactions of the American Mathematical Society* **275** (1983), 245–255.
32. A chemical reaction-diffusion free boundary problem, *Journal of Nonlinear Analysis* **6** (1982), 455–466.
33. Nonlinear systems in optimal control theory and related topics, in *Systems of Nonlinear Partial Differential Equations*, edited by J. Ball, Reidel, 1983, 95–113.
34. (with N. Alikakos), Continuity of the gradient for weak solutions of a degenerate parabolic equation, *Journal de Mathématiques Pures et Appliquées* **62** (1983), 253–268.
35. (with M. G. Crandall and P.-L. Lions), Some properties of viscosity solutions of Hamilton-Jacobi equations, *Transactions of the American Mathematical Society* **282** (1984), 487–502.
36. Some min-max methods for the Hamilton-Jacobi equation, *Indiana University Mathematics Journal* **33** (1984), 31–50.
37. (with I. Capuzzo-Dolcetta), Optimal switching for ordinary differential equations, *SIAM Journal of Control and Optimization* **22** (1984), 143–161.
38. (with E. N. Barron and R. Jensen), Viscosity solutions of Isaacs' equations and differential games with Lipschitz controls, *Journal of Differential Equations* **53** (1984), 213–233.
39. (with P. E. Souganidis), Differential games and representation formulas for solutions of Hamilton-Jacobi equations, *Indiana University Mathematics Journal* **33** (1984), 773–797.

40. (with M. Bardi), On Hopf's formulas for solutions of Hamilton-Jacobi equations, *Journal of Nonlinear Analysis* **8** (1984), 1373–1381.
41. (with H. Ishii), Differential games and nonlinear first order PDE on bounded domains, *Manuscripta Mathematica* **49** (1984), 109–139.
42. (with H. Ishii), A PDE approach to some asymptotic problems concerning random differential equations with small noise intensities, *Annales de l'Inst. H. Poincaré Anal. Non Linéaire* **2** (1985), 1–20.
43. Some estimates for nondivergence structure second order elliptic partial differential equations, *Transactions of the American Mathematical Society* **287** (1985), 701–712.
44. (with E. Giarrusso), An elementary, direct proof of partial regularity for solutions of certain nonlinear elliptic systems, *Indiana University Mathematics Journal* **34** (1985), 857–864.
45. (with M. Chipot), Linearization at infinity and Lipschitz estimates in the calculus of variations, *Proceedings of the Royal Society of Edinburgh A* **102** (1986), 291–303.
46. Quasiconvexity and partial regularity in the calculus of variations, *Archive for Rational Mechanics and Analysis* **95** (1986), 227–252.
47. (with R. F. Gariepy), Blow-up, compactness and partial regularity in the calculus of variations, *Indiana University Mathematics Journal* **36** (1987), 361–371.
48. (with R. F. Gariepy), Some remarks concerning quasiconvexity and strong convergence, *Proceedings of the Royal Society of Edinburgh A* **106** (1987), 53–61.
49. (with P. E. Souganidis), A PDE approach to geometric optics for certain parabolic equations, *Indiana University Mathematics Journal* **38** (1989), 141–172.
50. (with P. E. Souganidis), A PDE approach to certain large deviation problems for systems of parabolic equations, in *Analyse Non Linéaire* (edited by Attouch, Aubin, Clarke, Ekeland), Gauthier-Villars, Paris, 1989.
51. (with M. James), The Hamilton-Jacobi-Bellman equation for time optimal control, *SIAM Journal of Control and Optimization* **27** (1989), 1477–1489.
52. The perturbed test function method for viscosity solutions of nonlinear PDE, *Proceedings of the Royal Society of Edinburgh A* **111** (1989), 359–375.
53. Periodic homogenization of certain fully nonlinear PDE, *Proceedings of the Royal Society of Edinburgh A* **120** (1992), 245–265.

54. (with G. Barles and P. E. Souganidis), Wavefront propagation for reaction-diffusion systems, *Duke Mathematics Journal* **61** (1990), 835–856.
55. (with R. F. Gariepy), Partial regularity for constrained minimizers of convex or quasi-convex functions, *Rendiconti del Seminario Matematico Università e Politecnico Torino*, Fascicolo Speciale (1989), 75–93.
56. (with J. Spruck), Motion of level sets by mean curvature I, *Journal of Differential Geometry* **33** (1991), 635–681. Reprinted in *Evolving Phase Interfaces in Solids*, edited by Ball, Kinderlehrer, Podio–Guidugli, Slemrod, Springer, 1999.
57. (with J. Spruck), Motion of level sets by mean curvature II, *Transactions of the American Mathematical Society* **330** (1992), 321–332.
58. Partial regularity for stationary harmonic maps into spheres, *Archive for Rational Mechanics and Analysis* **116** (1991), 101–113.
59. (with M. Soner and P. E. Souganidis), Phase transitions and generalized motion by mean curvature, *Communications in Pure and Applied Mathematics* **45** (1992), 1097–1123.
60. (with J. Spruck), Motion of level sets by mean curvature III, *Journal of Geometric Analysis* **2** (1992), 121–150.
61. (with J. Spruck), Motion of level sets by mean curvature IV, *Journal of Geometric Analysis* **5** (1995), 77–114.
62. (with S. Müller), Hardy spaces and the two-dimensional Euler equations with nonnegative vorticity, *Journal of the American Mathematical Society* **7** (1994), 199–219.
63. Convergence of a simple algorithm for mean curvature motion, *Indiana University Mathematics Journal* **42** (1993), 533–557.
64. Estimates for smooth absolutely minimizing Lipschitz extensions, *Electronic Journal of Differential Equations* **1** (1993).
65. An unusual minimization principle for parabolic gradient flows, *SIAM Journal of Mathematical Analysis* **27** (1996), 1–4.
66. A geometric interpretation of the heat equation with multivalued initial data, *SIAM Journal of Mathematical Analysis* **27** (1996), 932–958.
67. (with G. Aronsson and Y. Wu), Fast/slow diffusion and growing sandpiles, *Journal of Differential Equations* **131** (1996), 304–335.

68. (with W. Gangbo), Differential equations methods for the Monge-Kantorovich mass transfer problem, *Memoirs of the American Mathematics Society* #654, **137**, (1999).
69. Regularity for fully nonlinear elliptic PDE and mean curvature motion (survey paper), in *Viscosity Solutions and Applications*, edited by I. Capuzzo-Dolcetta and P.-L. Lions, Lecture Notes in Mathematics **1660**, Springer, 1997.
70. (with M. Feldman and R. Gariepy), Fast/slow diffusion and collapsing sandpiles, *Journal of Differential Equations* **137** (1997), 166–209.
71. (with D. Adalsteinsson and H. Ishii), The level set method for etching and for deposition, *Mathematical Models and Methods in Applied Sciences* **7** (1997), 1153–1186.
72. (with D. Chopp and H. Ishii), Waiting time effects for Gauss curvature flows, *Indiana University Mathematics Journal* **48** (1999), 311–334.
73. (with F. Rezakhanlou), A stochastic model for growing sandpiles and its continuum limit, *Communications in Mathematical Physics* **197** (1998), 325–345.
74. Partial differential equations and Monge-Kantorovich mass transfer (survey paper), *Current Developments in Mathematics, 1997*, edited by S. T. Yau, International Press (1999), 26–79. Latest version: [/math.berkeley.edu/~evans/Monge-Kantorovich.survey.pdf](http://math.berkeley.edu/~evans/Monge-Kantorovich.survey.pdf)
75. (with R. F. Gariepy), On the partial regularity of energy minimizing, area preserving mappings, *Calculus of Variations and Partial Differential Equations* **9** (1999), 357–372.
76. Research opportunities in nonlinear partial differential equations, in the NSF publication *Intellectual Opportunities in Mathematical Sciences* (2000).
77. (with M. G. Crandall and R. F. Gariepy), Optimal Lipschitz extensions and the infinity Laplacian, *Calculus of Variations and Partial Differential Equations* **13** (2001), 123–139.
78. (with M. G. Crandall), A remark on infinity harmonic functions, *Electronic Journal of Differential Equations Conf.* **06**, (2001), 123–129.
79. (with D. Gomes), Effective Hamiltonians and averaging for Hamiltonian dynamics I, *Archive for Rational Mechanics and Analysis* **157** (2001), 1–33.
80. (with G. Aronsson), An asymptotic model for compression molding, *Indiana University Mathematics Journal* **50** (2002), 1–36.

81. Effective Hamiltonians and quantum states, *Seminaire Equations aux Dérivées Partielles* 2000–2001, Ecole Polytechnique.
82. (with D. Gomes), Effective Hamiltonians and averaging for Hamiltonian dynamics II, *Archive for Rational Mechanics and Analysis* **161** (2002), 271–305.
83. (with D. Gomes), Linear programming interpretations of Mather’s variational principle, in *A Tribute to Jacques–Louis Lions*, Tome 2, *Control, Optimisation and Calculus of Variations* **8**, (2002).
84. Some new PDE methods for weak KAM theory, *Calculus of Variations and Partial Differential Equations* **17** (2003), 159–177.
85. (with P. Benilan and R. F. Gariepy), On some singular limits of homogeneous semi-groups, *Journal of Evolution Equations* **3** (2003), 203–214. Reprinted in *Nonlinear Evolution Equations and Related Topics: Dedicated to Philippe Benilan*, edited by W. Arendt, H. Brezis and M. Pierre, Birkhäuser, 2004.
86. Three singular variational problems, in *Viscosity Solutions of Differential Equations and Related Topics*, Research Institute for the Mathematical Sciences, RIMS Kokyuroku 1323, 2003.
87. (with L. De Pascale and A. Pratelli), Integral estimates for transport densities, *Bulletin of the London Mathematical Society* **36** (2004), 383–395.
88. Towards a quantum analog of weak KAM theory, *Communications in Mathematical Physics* **244** (2004), 311–334.
89. A survey of partial differential equations methods in weak KAM theory, *Communications in Pure and Applied Mathematics* **57** (2004), 445–480.
90. A survey of entropy methods for partial differential equations, *Bulletin of the American Math Society* **41** (2004), 409–438.
91. (with M. Portilheiro), Irreversibility and hysteresis for a forward–backwards diffusion equation, *Mathematical Models and Methods in Applied Sciences* **14** (2004), 1599–1620.
92. (with W. Gangbo and O. Savin) Diffeomorphisms and nonlinear heat flows, to appear in *SIAM Journal on Mathematical Analysis*.
93. (with Y. Yu) Various properties of solutions of the infinity–Laplacian equation, to appear in *Communications in Partial Differential Equations*.

94. (with E.N.Barron and R. Jensen) The infinity Laplacian, Aronsson's equation and their generalizations, submitted.
95. The 1-Laplacian, the ∞ -Laplacian and differential games, to appear in volume in honor of H. Brezis.
96. (with T. N. Narasimhan) Variational principles for diffusion-type problems, in preparation

Ph.D. Students

1. S. Lenhart (University of Kentucky, 1980),
"Partial Differential Equations from Dynamic Programming Equations".
2. M. James (University of Maryland, 1989, coadvisor with J. Baras),
"Asymptotic Nonlinear Filtering and Large Deviations, with Applications to Observer Design".
3. C.-W. Woo (University of Maryland, 1990),
"Nonlinear Partial Differential Equations and Optimal Control with Integral Constraints".
4. C. Fletcher (University of Maryland, 1990),
"Multiscale Periodic Homogenization of Certain Elliptic Equations using Viscosity Solution Methods".
5. Y. Zheng (University of California, Berkeley, 1990, coadvisor with R. DiPerna),
"Concentration-Cancellation Phenomena for Weak Solutions of Certain Nonlinear Partial Differential Equations".
6. H. Lopes (University of California, Berkeley, 1991, coadvisor with R. DiPerna),
"An Estimate on the Hausdorff Dimension of a Concentration Set for the Incompressible Euler Equations".
7. T. Ilmanen (University of California, Berkeley, 1991),
"Motion of Level Sets and Varifolds by Mean Curvature".
8. M. Feldman (University of California, Berkeley, 1994),
"Partial Regularity of Heat Flows for Harmonic Maps into Spheres".
9. I. Israel (University of California, Berkeley, 1994),
"Computing Motion by Modified Mean Curvature".

10. R. Jerrard (University of California, Berkeley, 1994),
“Fully Nonlinear Phase Field Equations and Generalized Motion via Mean Curvature”.
11. C. Hildebrand (University of California, Berkeley, 1994),
“Anisotropic Motion of Surfaces and Huygens’ Principle”.
12. M. Concordel (University of California, Berkeley, 1995),
“Periodic Homogenization of Hamilton-Jacobi Equations”.
13. Y. Wu (University of California, Berkeley, 1995),
“Absolute Minimizers in Finsler Metrics”
14. B. Tvedt (University of California, Berkeley, 1997),
“Global Existence of Solutions and Propagation of Regularity for Quasilinear Viscoelastic Systems of Differential Type”.
15. D. Gomes (University of California, Berkeley, 2000),
“Hamilton–Jacobi Equations, Viscosity Solutions and Asymptotics of Hamiltonian Systems”.
16. M. Portilheiro (University of California, Berkeley, 2001),
“Weak Solutions for Contractive Nonlinear Equations and Parabolic Relaxation Limits”.
17. J. Bang (University of California, Berkeley, 2002),
“Sandpile Problems on a Steep Landscape”.
18. Y. Yu (University of California, Berkeley, 2005),
“ L^∞ Variational Problems, Aronsson Equations and Weak KAM Theory”.

Masters and Other Students

1. K. Applegate (University of California, Berkeley, 1996),
“Applications of Stochastic Calculus to Options Pricing”.
2. F. Bach (Ecole Polytechnique, 1997),
“Some Mathematical Models for Sandpile Evolution”.
3. I. Brahimy (Ecole Normale Supérieure de Cachan, 2001),
“An Introduction to Stochastic Optimal Control and some Applications to Economics and Finance”
4. C. Zambrana Rojas (University of California, Berkeley, 2005).
“A Review of Dynamic Programming and Viscosity Solutions for Stochastic Target Problems arising in Financial Mathematics” , forthcoming

Current Ph.D. Students

Jonathan Dorfman, Scott Armstrong, Ryan Hynd, Maxim Trokhimtchouk

Postdocs

1. M. Bardi (University of Maryland, 1983-1984)
2. W. Gangbo (MSRI, Berkeley, 1994-1995)
3. O. Savin (University of California, Berkeley, 2003-)

Recent Lectures

2002: AMS Colloquium Lectures (3 lectures, San Diego), Midwest PDE meeting in honor of Gariepy, Lewis, Adams, and Hayden–Howard Lecture (Lexington), NYU Courant Lectures (2 lectures), Conference in honor of D. Gilbarg (Stanford), Joint AMS-UMI meeting (Pisa), J–L Lions memorial meeting (Paris), Michigan State University Phillips Lectures (3 lectures), Rutgers, Colloquium at Princeton, Conference on quasiconvexity (Princeton)

2003: Lecture course at Indian Institute of Science (15 hours of lectures), Indian Statistical Institute, University of Hyderabad (2 lectures), Coxeter lectures at Fields Institute (3 lectures)

2004: Ordway visitor to University of Minnesota (2 lectures), Minicourse on kinetic PDE at Purdue University (4 lectures), INdAM lecture in Rome, Meeting in Paris in honor of H. Brezis, Conference in Padova on entropy methods, PDE meeting in Istanbul (2 lectures), meeting in Linköping, Sweden in honor of G. Aronsson, SIAM conference on PDE in Houston,

2005: NZMRI meeting in Napier, New Zealand (3 lectures), colloquium at Vanderbilt University, lecture at Los Alamos, CIME summer course in Italy (5 lectures), MSRI Workshop for Women in Mathematics: An Introduction to Elliptic Partial Differential Equations (3 lectures)

Recent Service

2003: L&S faculty advisory board (UC Berkeley), advisory committee for mathematics hirings at UC Merced, organizer of meeting on weak KAM theory at AIM (July, 2003), organizer of meeting on mass transport at PIMS (August, 2003), Banff Research Station scientific advisory board, organizing committee for SIAM Special Interest Group in PDE

2004: Chair of Noyce Prize for Excellence in Teaching award committee, evaluation committee for Mathematics Department, University of Texas, external assessor for Australian National University, Director of Center for Pure and Applied Mathematics at UC Berkeley (2004–), Board on Mathematical Sciences and their Applications (2004–6)

2005: Organizer of semester program on “Nonlinear Elliptic Equations and Applications” at the Math Sciences Research Institute (Berkeley), Scientific Committee for semester program at De Giorgi Center (Pisa),

Grants

NSF summer grants, 1977–2010

NSF Focused Research Group grant on mass transport problems (with L. Caffarelli, M. Cullen, M. Feldman, W. Gangbo and R. McCann), 2000–2004; renewed for 2004–

Alfred P. Sloan Fellow, 1979–80

Invited hour lecture, Annual meeting of American Math Society, Anaheim, 1985

Invited address, International Congress of Mathematicians, Berkeley, 1986.

CBMS Lecture Series, *Weak Convergence Methods for Nonlinear Partial Differential Equations*, Loyola University of Chicago, 1988

Barrett Lectures, University of Tennessee, 1991

Dean Jacqueline B. Lewis Memorial Lectures, Rutgers University, 1992.

Yamabe Lecture, Northwestern University, 1992

Invited hour lecture, Joint meeting of American Math Society and London Math Society, Cambridge, 1992

Salomon Bochner Lectures in Mathematics, Rice University, 1994

Invited lecture on Current Developments in Mathematics, Harvard-MIT, 1997

Board of Electors in Mathematics, University of Oxford, 1997-98

Invited lecture, Annual general meeting of the London Math Society, 1998

A. Douglis Lecture, University of Maryland, 2000

W. Wasow Memorial Lecture, University of Wisconsin, 2000

E. Fabes–N. Riviere Memorial Lecture, University of Minnesota, 2000

Noyce Prize for undergraduate teaching, UC Berkeley, 2000.

London Math Society Spitalfields Day lecture, London, 2001.

Research Professor, Miller Institute for Basic Research in Science, UC Berkeley, 2001–2002.

Colloquium Lectures, Annual meeting of American Math Society, San Diego, 2002

Hayden–Howard Lecture, University of Kentucky, 2002

Courant Lectures, New York University, 2002

Invited hour lecture, Joint meeting of American Math Society and Unione Matematica Italiana, Pisa, 2002

Richard E. Phillips Lecture Series, Michigan State University, 2002

American Academy of Arts & Sciences, 2003

National Board of Higher Mathematics Distinguished Visiting Professor (India), 2003

Coxeter Lecturer, Fields Institute, 2003

Steele Prize for Seminal Contribution to Research (awarded jointly with N. V. Krylov), American Math Society, 2004

Distinguished Ordway Visitor, University of Minnesota, 2004

Editorial Boards

1. *Advanced Nonlinear Studies*
2. *Annali della Scuola Normale Superiore di Pisa*
3. *Annali di Matematica Pura ed Applicata*
4. *Annals of Mathematical Economics*
5. *Applied Mathematics Research Express*
6. *Archive for Rational Mechanics and Analysis*
7. *Boundary Value Problems*
8. *Calculus of Variations and Partial Differential Equations*
9. *Continuum Mechanics and Thermodynamics*
10. *Discrete and Continuous Dynamical Systems*
11. *Electronic Journal of Differential Equations*
12. *ESAIM: Control, Optimization and Calculus of Variations*
13. *Journal of the American Mathematical Society*, full editor 2003–2004
14. *Methods and Applications of Analysis*
15. *Nonlinear Differential Equations and Applications*
16. *Partial Differential Equations and Applications*, World Scientific Publishing series
17. *Progress in Nonlinear Differential Equations and Their Applications*, Birkhäuser series
18. *SIAM Journal of Mathematical Analysis*
19. *Studies in Advanced Mathematics*, CRC Press series