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Curriculum Vitae

Eitan TADMOR

Distinguished University Professor

University of Maryland, College Park

Mail: Department of Mathematics
University of Maryland
College Park, MD 20742-3289 USA



<http://www.math.umd.edu/~tadmor> ✉ tadmor@umd.edu

Personal Data

Born: May 4, 1954, Jerusalem, Israel

Marital Status: Married, 2 children

Academic Education

Ph.D. Department of Mathematical Sciences, Tel-Aviv University	1979
M.Sc. (summa cum laude), Department of Mathematical Sciences, Tel-Aviv University	1975
B.Sc. (cum laude), Department of Mathematical Sciences, Tel-Aviv University	1973

Academic Appointments

Distinguished University Professor, University of Maryland (UMd)	2005–
Professor, Department of Mathematics, UMd	2002–
Center for Scientific Computation and Mathematical Modeling, UMd	
Institute for Physical Science and Technology, UMd	
Professor, Department of Mathematics, UCLA	1995–2004
Professor, Department of Applied Mathematics, Tel-Aviv University	1989–1998
Associate Professor, Department of Applied Mathematics, Tel-Aviv University	1985–1989
Senior Lecturer, Department of Applied Mathematics, Tel-Aviv University	1983–1985
Staff Scientist, ICASE, NASA Langley Research Center, Hampton, Virginia	1982–1983
Bateman Research Instructor, Department of Applied Mathematics, CalTech	1980–1982
Post-Doctoral Fellow, Department of Mathematical Sciences, Tel-Aviv University	1979–1980

Professional Appointments

Director, Center for Scientific Computation and Mathematical Modeling (CSCAMM), UMd	2002–2016
Founding Co-Director, NSF Institute for Pure and Applied Mathematics (IPAM), UCLA	1999–2001
Director, The Sackler Institute of Scientific Computation, Tel-Aviv University	1993–1996
Chair, Department of Applied Mathematics, Tel-Aviv University	1991–1993

Professional Service

Advisory Board, Mainz Institute of Multiscale Modeling, JG University, Mainz,	2019–
Chair, SIAM Activity Group on Analysis of PDEs	1/2017-12/2018
Scientific Advisory Board, ModCompShock, Innovative Training Network (ITN)	2015–
AMS Program Committee for National Meetings	2/2015–1/2018
US National Committee on Theoretical and Applied Mechanics (USNC/TAM)	2012-2016
Director, KI-Net — an NSF Research Network on Mathematical Sciences, UMd	2012–2020
Scientific Advisory Board, Institute of Math. Modeling & Sci. Computing, NCTU, Taiwan	2009–
Advisory Board, NSF Materials Research Science & Eng. Center (MRSEC), CMU, Pittsburgh	2009-2010
Board of Governors, NSF Institute for Mathematics & its Applications (IMA), Minneapolis	2002–2006
Scientific Advisory Board, European Network “ <i>Hyperbolic and Kinetic Equations</i> ” (HYKE)	2002–2005
Science Board, Industrial Mathematics Institute (IMI), University of South Carolina, Columbia	1999–2005
Affiliate Member, California Nano-System Institute (CNSI), UCLA	1999–2004
Board of Trustees, NSF Institute for Pure and Applied Mathematics (IPAM), UCLA	1999–2003
Board of Directors, Foundations of Computational Mathematics (FoCM)	1999–2003

Visiting Appointments

Visiting Professor, Université Paris-Sorbonne (UPMC campus), Paris	Springs 2018-2019
Senior Fellow, Institute for Theoretical Studies (ETH-ITS), ETH-Zurich	2016–2017
The Centre of Advanced Study, Norwegian Academy of Science and Letters, Oslo	May 2009
The Weizmann Institute of Science, Israel	Summers 2005–2007
Courant Institute of Mathematical Sciences, NYU	Feb. 1994
Département de Mathématiques, Université de Nice	Jan. 1994
Division of Applied Mathematics, Brown University	Feb. 1993
Département de Mathématiques, Ecole Normal Supérieure, Paris	Apr. 1992
Laboratoire d'Analyse Numériques, Paris VI	Apr. 1991
Department of Mathematics, University of Michigan, Ann Arbor	Winter 1990
Department of Mathematics, UCLA	Summers 1985–1988, 1990–1994
ICASE, NASA Langley Research Center, Hampton, Virginia	Summers 1984–1991

Professional Activities

Scientific Program Committees —

- Abel Symposium “Nonlinear Partial Differential Equations”, Røros, Norway, Abel2020
- Program Committee, International Congress of Mathematicians, Rio-de Janeiro ICM2018
- International Conference “*Hyperbolic Problems. Theory, Numerics, and Applications*”
Malaga (2020); PennState (2018); Aachen (2016); Rio-de Janeiro (2014); Padova (2012) ...
- Abel Symposium “Nonlinear Partial Differential Equations”, Oslo Abel2010
- The European Consortium For Mathematics in Industry (ECMI), London (2008)
- Panel Committee Core Member, “*Numerical Analysis and Scientific Computing*”, Madrid ICM2006
- European Math. Society, “*Applied Mathematics and Applications of Mathematics*”, Nice (2003)
- “*Math. and Numerical Aspects of Wave Propagation*”, Santiago de Compostela (2000); Strasbourg (1991)

Co-Chair —

- International Conferences “*Hyperbolic Problems: Theory, Numerics and Applications*”
University of Maryland, College Park (Hyp2008); CalTech, Pasadena (Hyp2002)
- “*Approximation and Computation*” (honoring R. DeVore), S. Carolina (2001)

External Evaluation Committees —

- Center for Applicable Mathematics (CAM), Tata Institute, Bangalore (2018)
- Committee of Visitors (COV), Division of Mathematical Sciences, NSF (2016)
- University N. Carolina Chapel Hill (2015) • University of Utah (2007)
- University of British Columbia (2006) • Laboratoire Jacques-Louis Lions, Paris VI (2004)
- PSCI, Royal Institute of Technology, Stockholm (2003)
- Gauss Minerva Center, Weizmann Institute, Israel (1999)

Organizing Committees —

- “*The Hydrodynamics of Living Matter*”, Fields Institute (2020)
- “*Quantum and Kinetic Problems*”, Institute of Mathematical Sciences, NUS, Singapore (2019/2020)
- Panel, Numerical Analysis session, International Congress Applications of Math., Santiago, Chile (2006)
- Local Committee, The 17th International Conference “*Parallel CFD*”, College Park (2005)
- “*Numerical Relativity*”, Banff International Research Station (2005)
- FoCM workshop “*Foundations of Numerical PDEs*”, IMA (2002)
- IPAM programs “*Geometrically Based Motions*”, “*Oscillatory Integrals and Dispersive Equations*”, “*Financial Mathematics*”, UCLA (2001)
- ONR Workshop “*Image Processing: Theory, Analysis, and Applications*”, UCLA (2000)
- AMS conference “*Mathematical Challenges of the 21st Century*”, UCLA (2000)
- TAU-NYU workshop “*Applied Math – Research and Education*”, Tel-Aviv University (1992);
- ONR workshop “*Conservation Laws and Shock Capturing*”, Univ. S. Carolina (1991)
- Special session on PDEs, AMS-IMU meeting, Hebrew University (1995)

Selection Committees —

- The PIMS/UBC Math faculty award (2017–2018) • SIAG/APDE Prize (2015)
- SIAM Julian Cole Lectureship (2006) • Lagrange Prize, The 5th ICIAM, Sydney (2003)
- SIAM Membership committee (9/2002–6/2005)

Editorial Activities

Editorial Boards

Transactions in Mathematics and its Applications, (Senior Editor — 2015–2020)	2015–present
European Journal of Mathematics, Editorial Board	2014–present
European Mathematical Society (EMS) Surveys in Mathematical Sciences, Associate Editor	2013–present
Versita & de Gruyter book Program in Mathematics, Editorial Advisory Board	2010–2012
Acta Numerica, Editorial Board	2009–present
Communications in Applied Mathematics and Computational Science, Editorial Board	2008–present
Communications in Mathematical Sciences, Editorial Board	2007–present
Networks and Heterogeneous Media, Editorial Board	2006–present
Communications in Computational Physics (CiCP), Editorial Board	2005–present
SIAM Journal on Mathematical Analysis (SIMA), Editorial Board	2004–present
Journal of Hyperbolic Differential Equations, Editorial Board	2003–present
Journal of Foundations of Computational Mathematics, Editorial Board	2004–present
_____, Advisory Board	1999–2003
Numerische Mathematik, Editorial Board	1991–present
Computational Methods in Applied Mathematics (CMAM), Editorial Board	2005–2014
AIMS Book Series in Applied Mathematics, Editorial Board	2006–2010
International Journal of Numerical Analysis and Modeling, Editorial Board	2003–2009
Central European Journal of Mathematics, Editorial Board	2002–2013
Mathematical Modeling and Numerical Analysis (M ² AN), Editorial Board	2002–2012
IMA Journal of Numerical Analysis, Associate Editor	2001–2006
AMS Proceedings of Symposia in Applied Mathematics, Chair of Editorial Board	2005–2011
_____, Editorial Board	1996–2004
Advances in Computational Mathematics (AiCM), Editorial Board	1992–2003
SIAM Journal on Numerical Analysis (SINUM), Editorial Board	1990–2013

Special Volumes

Guest Editor, NHM vol. 10(3) “Modeling and Control in Social Dynamics”	2015
Co-Editor, Linear Algebra and Appl., vol. 438(10) dedicated to A. Berman, M. Goldberg & R. Loew	2013
Guest Editor, M ² AN vol. 46(3), dedicated to D. Gottlieb	2012
Dedication, CiCP vol. 9(3), dedicated to D. Gottlieb	2011
Guest Editor, SINUM vol. 35(6), dedicated to A. Harten	1998

Fellowship Awards and Research Grants

NSF Research Grants , University of Maryland, PI	2004–2020
DMS04-07704 (2004-2007), DMS07-07949 (2007-2010), DMS10-08397 (2010-2016)	
DMS16-13911 (2016-2020)	
ONR Research Grants , University of Maryland, PI	2009–2020
N00014-09-10385 (2009-2011), N0014-12-10318 (2012-2014), N0014-15-12094 (2015-2017)	
N00014-18-12465 (2018-2020)	
NSF Research Network in Math. Sciences: Ki-Net , DMS11-07444, Univ. of Maryland, PI	2012–2020
NSF Focus Research Group (FRG) Research Grant DMS07-57227 , University of Maryland, PI	2008–2011
“ <i>Hyperbolic Problems: Theory, Numerics and Applications</i> ”, University of Maryland, PI	2008
NSF Grant DMS07-42260, AFOSR Grant FA955008100, ONR Grant N00014-08-1003	
“ <i>Hyperbolic Problems: Theory, Numerics and Applications</i> ”, CalTech, Co-PI (with T. Hou)	2002
ONR Grant N00014-02-0297, NSF Grant DMS02-25789	
NSF Research Grant DMS01-07917 & DMS01-07428 UCLA, PI	2001–2004
NSF Institute for Pure and Applied Mathematics (IPAM) , DMS98-10282, PI	1999–2005
NSF Research Grant DMS97-06827, UCLA, Co-PI (with B. Engquist & S. Osher)	1997-2001
ONR Research Grant N00014-91-J1076, University of South Carolina	1991–2008
Israel Academy of Sciences, Basic Research Foundation, Tel-Aviv University, PI	1991–1994
U.S.-Israel BSF Research Grant #85-00346, Tel-Aviv University, Co-PI (with S. Osher)	1986–1988

NSF Research Grant, UCLA	1985–1987
ARO Research Grant DAAG-85-K-0190, UCLA	1985–1987
Bat-Sheva Fellowship, Bat-Sheva de Rothschild Foundation, Tel-Aviv University	1985–1986
Alon Fellowship , Israel Council for Higher Education, Tel-Aviv University	1983–1986
Rothschild Fellowship , “Yad Avi Ha-Yishuv”, CalTech	1980/81

Graduate Students

Omishwary Bhatoo, University of Technology, Mauritius	Ph.D., UT Mauritius	2020
Siming He, Assistant Research Professor, Duke University	Ph.D., UMd	2018
Mohammad Zakerzadeh, INRIA	Ph.D., RWTH Aachen	2017
Ming Zhong, Post-Doc., Johns Hopkins University	Ph.D., UMd	2016
Changhui Tan, Assistant Professor, University of S. Carolina	Ph.D., UMd	2014
Ulrik Fjordholm, Associate Professor, University of Oslo	Ph.D., ETH	2013
Prashant Athavale, Assistant Professor, Clarkson University	Ph.D., UMd	2009
Weigang Zhong, Software Developer, Oracle Corporation	Ph.D., UMd	2007
Bin Cheng, Senior Lecturer, Surrey University	Ph.D., UMd	2007
Dongming Wei, PNC Bank, Manhattan,	Ph.D., UMd	2007
Jorge Balbas, Associate Professor, Cal. State University Northridge	Ph.D., UCLA	2004
Suzanne Nezzar, Associate Professor, R. Stockton College of New Jersey	Ph.D., UCLA	2003
Jared Tanner, Professor of Mathematics of Information, University of Oxford	Ph.D., UCLA	2002
Chi-Tien Lin, Associate Professor, Providence University, Taiwan	Ph.D., UCLA	1998
Doron Levy, Professor, University of Maryland	Ph.D., TAU	1997
Alexander Kurganov, Professor, Tulane University	Ph.D., TAU	1997
Haim Nessayahu, deceased	Ph.D., TAU	1994
Tamir Tassa, Professor, The Open University, Tel-Aviv	Ph.D., TAU	1993
Raphael Hess, Israel General Manager, P-Cube Inc.	M.Sc., TAU	1991
Kamal Agbariah, Teacher	M.Sc., TAU	1991
Avital Netzer-Stein, Director-General, Israel Council for Higher Education	M.Sc., TAU	1989
Doron Gill, General Manager, Mercado Software Inc., Israel	M.Sc., TAU	1987

Post-Doctoral Collaborators

Ruiwen Shu, Research Associate	UMd	2018-2021
Javier Morales, Research Associate	UMd	2017-2020
Jan Peszek, Research Associate	UMd	2018-2019
Zhenning Cai, Assistant Professor, Nat'l University of Singapore	UMd	2016/1-3
Yongyong Cai, Assistant Professor, Beijing Computational Science Research Center	UMd	2013-2014
Thomas Rey, Assistant Professor, University of Lille	UMd	2012-2014
Sébastien Motsch, Assistant Professor, Arizona State University	UMd	2009-2013
Trygve Karper, Schlumberger Information Solutions, SPTC Kjeller, Norway	UMd	2009-2012
Hantaek Bae, Assistant Professor, Ulsan Nat'l Institute of Sci. & Tech. (UNIST), Korea	UMd	2009-2012
Knut Waagan, Research Associate, University of Washington	UMd	2009-2011
Suleyman Ulusoy, Assistant Professor, American Univ. of Ras Al Khaimah Road, UAE	UMd	2009-2011
Siddhartha Mishra, Professor, ETH, Zürich	UMd	2007
Jing Zou, Fannie Mae, Washington DC	UMd	2005-2007
Marcus Calhoun-Lopez, Accelerated Learning Laboratory, Tucson, Arizona	UMd	2003–2005
Hailiang Liu, Professor, Iowa State University	UCLA	2000–2002
Anne Gelb, Professor, Dartmouth College	CalTech	1996–1998
Guang-Shan Jiang, UBS Bank, Shanghai	UCLA	1995–1996
Shlomo Engelberg, Professor, Jerusalem College of Technology	TAU	1994–1996

Distinguished Lectures (selected)

Invited speaker, Int'l Congress on Industrial and Applied Mathematics (ICIAM) Valencia, Spain	July	2019
Plenary Lecture, “High Performance Computing Modeling, ...”, Hanoi Univ. Sci&Tech, Vietnam	Mar	2018
Mathematics and Social Sciences, Accademia Nazionale dei Lincei, Rome	May	2017
Julian Clancy Frazier Mathematics Colloquium US Naval Academy, Annapolis, MD	Jan.	2017

Zurich Colloquium in Mathematics, ETH-Zurich	Oct. 2016
“Leçons Jacques-Louis Lions 2016” (3 lectures), UPMC, Sorbonne Universités, Paris	June 2016
“Distinguished Colloquium Series in Applied Mathematics” Columbia University, South Carolina	Mar. 2016
“Henrici Prize lecture”, International Congress Industrial Applied Math. (ICIAM) 2015, Beijing	Aug. 2015
“Science Distinguished Lecture Series”, Hong Kong Baptist University	Dec. 2014
Keynote speaker, Mid Atlantic Numerical Analysis Day, Temple University, PA	Nov. 2014
“Structure Preserving Discretizations of PDEs” (in honor of Dough Arnold), IMA, Minneapolis	Oct. 2014
Plenary Lecture, BIOMAT-2014: “Complexity and Emergence in Social ... Systems”, Granada	June 2014
The SIAM Invited Address, Joint Mathematics Meeting AMS-MAA	Jan. 2014
Mini-tutorial: “Kinetic Descriptions of Collective Dynamics”, SIAM Analysis of PDEs, Orlando	Dec. 2013
Plenary Lecture, Equadiff 13, Prague	Aug. 2013
Plenary Lecture, Luis Santanló school “Scientific Challenges in a Sustainable Planet”, Santander	July 2013
Invited Address, AMS meeting, Iowa State University	Apr. 2013
Plenary Lecture, “Nonlinear Partial Differential Equations”, Oxford	Sep. 2012
Plenary Lecture, “Applied PDEs in Physics, Biology and Social Sciences” ESF meeting, Barcelona	Sep. 2012
107th Statistical Mechanics Conference, Rutgers University	May 2012
“New Trends in Approximation Theory” Ein-Gedi, Israel	Jan. 2012
“Scientific Computing” (in honor of Tony Chan), Chinese University of Hong-Kong	Jan. 2012
“Applications of Kinetic Theory and Computation”, ICERM, Brown University	Oct. 2011
“Incompressible Fluids, Turbulence and Mixing” (in honor of Peter Constantin), Carnegie Mellon	Oct. 2011
“Modern Techniques in the Numerical Solution of PDEs” Heraklion, Crete	Sep. 2011
The 2011 Golomb Lecture in Applied Mathematics, Jerusalem College of Technology	June 2011
“Kinetic Description of Multiscale Phenomena” (in honor of D. Levermore), UW-Madison	May 2011
“Paris Foundation of Mathematical Sciences” (in honor of R. DeVore) Paris VI,	May 2011
“New Perspectives in Nonlinear PDEs” (in honor of B. Temple), UM Ann Arbor	May 2011
“Applied Mathematics from Waves to Fluids” (in honor of C. Bardos), Université de Nice	Feb. 2011
“Numerical Methods for Hyperbolic Equations” (in honor of R. Jeltsch), ETH Zurich	Feb. 2011
Plenary Lecture, Taiwan Mathematical Society annual meeting, National Changhua Univ., Taiwan	Dec. 2010
(4 lectures) “North British Differential Eqs Seminar”, Edinburgh, Glasgow, Manchester & Leeds	Nov. 2010
“Nonlinear Partial Differential Equations”, The Abel Symposium 2010, Oslo, Norway	Sep. 2010
“International conference in celebration of Heinz-Otto Kreiss 80th Birthday”, KTH, Stockholm,	Sep. 2010
“Fluid-Kinetic Modelling in Biology, Physics and Engineering”, Newton Inst. Math. Sciences	Sep. 2010
“Recent Advances in Nonlinear Evolutionary Eqs. and Multi-scale Phenomena”, Weizmann Inst.	July 2010
“Computational Methods in Applied Mathematics”, Math. Research Center, Bedlewo, Poland	June 2010
Plenary Lecture, The 13 th international conference on hyperbolic problems, Beijing	June 2010
Research group in Nonlinear PDEs (4 Lectures), Centre for Advanced Study, Oslo	May 2009
Plenary Lecture, The 2008 FoCM conference (Foundations of Computational Math.), Hong-Kong	June 2008
CSC Distinguished Speakers Series, Simon Fraser University	Dec. 2007
Keynote speaker, Clifford Lectures (4 Lectures), Tulane University	Mar. 2007
Plenary Lecture, SIAM Annual Conference on “Analysis of Partial Differential Equations”, Boston	July 2006
The Abel Symposium, “Mathematics and Computation, a Contemporary View”, Ålesund, Norway	May 2006
IAM-PIMS-MITACS Distinguished Colloquium Series, University of British Columbia	Oct. 2005
“Differential Eqs: From Theory to Computational Science”(honoring R. Jeltsch), ETH, Zürich	Oct. 2005
Plenary Lecture, “International Conference on Scientific Computation”, Nanjing, China	June 2005
“Multiscale Modeling and Scientific Computing” (honoring B. Engquist), Peking University	June 2005
“Mathematical Methods in Hydrodynamics”, Univ. des Sciences et Technologies de Lille, France	June 2005
Distinguished Applied Mathematics Lecture Series, JRIAM, Hong Kong Baptist University	June 2005
Public Lecture, “The Mathematics of Scientific Computation”, National University of Singapore	Jan. 2005
“Research Trend for PDE Modeling and Computation” (honorig D. Gottlieb), Brown University	Nov. 2004
Plenary Lecture, The 6 th Int’l conference “Math’l Aspects of Fluid and Plasma Dynamics”, Kyoto	Sep. 2004
Miller Lecture, Iowa State University, Ames	Apr. 2003
Plenary Lectures (4 lectures), Winter School in Computational Math. 2003, Geilo, Norway	Mar. 2003
Plenary Lecture, “Around HYperbolic and Kinetic Equations”, Vienna,	Feb. 2003
Plenary Lecture, The 3 rd Int’l Workshop “Scientific Computing and Applications”, Hong Kong	Jan. 2003
Invited speaker, International Congress of Mathematicians (ICM), Beijing	Aug. 2002

“Congrès de Mathématiques Appliquées” (à la memoire de J.-L. Lions), Paris	July 2002
“Differential Equations and Dynamical Systems”, Lhasa, Tibet	July 2001
“Approximation and Computation” (honoring R. DeVore), Charleston, South Carolina	May 2001
“Distinguished Lecture Series”, Arizona State University	Dec. 2000
“IMI Distinguished Lecture”, University of South Carolina	Nov. 2000
“Frontiers in Mathematics” (3 Lectures), Texas A&M	Oct. 2000
“Nonlinear Problems in Applied Sciences” (honoring C. Foias and R. Temam), Bloomington, IN	Sep. 2000
“DiPerna Memorial Lecture”, UC Berkeley	Jan. 2000
Plenary Lecture, “Godunov Methods: Theory & Applications”, (honoring S K Godunov), Oxford	Oct. 1999
Plenary Lecture, The 4 th ICOSAHOM meeting, Herzliya, Israel	June 1998
Plenary Lecture, The 7 th international conference on hyperbolic problems, ETH	Feb. 1998
Plenary Lectures (5 Lectures), C.I.M.E. International Math. Summer Center on “Advanced Numerical Approximation of Nonlinear Hyperbolic Equations”, Cetraro, Italy	June 1997
Int’l Conference “Nonlinear PDEs and Applications”, TATA Institute, Bangalore, India	Aug. 1996
“Recent Advances in PDEs and Applications” (honoring P. Lax and L. Nirenberg), Venice	June 1996
Plenary Lecture, The 1 st European conference “Numerical Math. & Advanced Applications”, Paris	Sep. 1995
Plenary Lectures (3 lectures), Workshop on Conservation Laws, Trondheim, Norway	Aug. 1995
Plenary Lectures (3 lectures), INRIA School on “Méthode Numériques d’Ordre élevé Pour les Ondes en Régime Transitoire”, INRIA, Rocquencourt, France	Jan. 1994
Plenary Lectures (3 lectures), RWTH Seminar on “Hyperbolic Conservation Laws – Theory and Numerical Analysis”, Paderborn, Germany	Oct. 1993
Plenary Lectures (3 lectures), The Nordic Summer school on “Numerical Methods in Fluid Mechanics”, Sydkoster, Sweden	Aug. 1990
Plenary Lecture, The 3 rd international conference on hyperbolic problems, Uppsala	June 1990
Plenary Lecture, The 1 st ICOSAHOM meeting, Como, Italy	June 1989
Plenary Lecture, The 1 st International Conference on Hyperbolic Problems St-Etienne, France	Jan. 1986

Notables

★ Invited speaker, International Congress of Industrial and Applied Math. (ICIAM2019), Valencia	July 2019
★ Program Committee, International Congress of Mathematicians (ICM2018), Rio-de Janeiro Aug. 2018
★ “Leçons Jacques-Louis Lions 2016” (3 lectures), UPMC, Sorbonne Universités, Paris June 2016
★ Dedication: Communications in Computational Physics 19(5) (2016) i-iii	2016
★ The 2015 SIAM-ETH Peter Henrici Prize in Applied Analysis and Numerical Analysis 2015
★ The SIAM Invited Address, Joint Mathematics Meeting AMS-MAA	Jan. 2014
★ Invited Address, AMS meeting, Iowa State University	Apr. 2013
★ AMS Fellow, inaugural class of Fellows of the American Mathematical Society	Jan. 2013
★ NSF Research Network in Mathematical Sciences: PI — Kinetic network, KI-Net	2012-2018
★ <i>The 2009 Mathematics and Computer Science Award</i> , Washington Academy of Science	May 2009
★ NSF Focus Research Group: PI — <i>Kinetic Description of Multiscale Phenomena</i>	2008-2012
★ Distinguished University Professor, University of Maryland	2005
★ <i>The Mathematics of Scientific Computation</i> , IMS Public Lecture, Nat’l University of Singapore	Jan. 2005
★ <i>Eitan Tadmor – 50</i> , A dedication, Computational Methods in Applied Math. v. 4, pp. 265-270	2004
★ Cited, ISIHighlyCited.com list of 250 most cited researchers in Mathematics	2004
★ Invited speaker, International Congress of Mathematicians (ICM2002), Beijing July 2002
★ Founding Co-Director, NSF Institute for Pure and Applied Mathematics (IPAM), UCLA	1999
★ Rothschild Fellowship	1980-1981

Research Profile

Contributions to the theory and computation of Partial Differential Equations (PDEs) with diverse applications to *shock waves*, *kinetic transport*, *incompressible flows*, image processing, and self-organized collective dynamics. In particular, development of high-resolution methods for nonlinear conservation laws, including those associated with the notions of • *central schemes* • *entropy conservative schemes* • *spectral viscosity methods* • *constraint transport* and • *edge detection*. Rigorous derivation of transport models and their relation to kinetic theories, and of *critical thresholds* phenomena in such models. Development of multi-scale *hierarchical decompositions* of images and solutions to PDEs with critical regularity.

Modeling and analysis of collective dynamics with applications to *flocking* and *opinion dynamics*.

LIST OF PUBLICATIONS (by subject classification)

Hyperbolic problems, convection-diffusion, incompressible Euler and related PDEs

- 1 *Hyperbolic systems with different time scales*
Communications on Pure and Applied Mathematics 35(6) (1982), 839-866.
- 2 *The well-posedness of the Kuramoto-Sivashinsky equation*
SIAM Journal on Mathematical Analysis 17(4) (1986), 884-893.
- 3 (with T. Tassa) *On the homogenization of oscillatory solutions to scalar convection-diffusion equations*,
Advances in Mathematical Sciences and Applications 7(1) (1997), 93-117.
- 4 (with H. J. Nussenzveig Lopes & M. C. Lopes Filho) *Approximate solutions of the incompressible Euler equations with no concentrations*
Annales de l'Institut Henri Poincaré (c) Non Linear Analysis 17(3) (2000) 371-412.
- 5 *On a new scale of regularity spaces with applications to Euler's equations*
Nonlinearity 14(3) (2001) 513-532.
- 6 T. Hou & E. Tadmor (Editors), *Hyperbolic Problems: Theory, Numerics, Applications* Proceedings of the Ninth International Conference on Hyperbolic Problems, CalTech, Pasadena, March 25-29, 2002, Springer-Verlag, ISBN: 3-540-44333-9, 2003.
- 7 *Burgers' equation with vanishing hyper-viscosity*
Communications in Math. Sciences, 2(2) (2004) 317-324.
- 8 E. Tadmor, J.-G. Liu & A. Tzavaras (Editors), *Hyperbolic Problems: Theory, Numerics, Applications* Proceedings of the Twelfth International Conference on Hyperbolic Problems held in University of Maryland, College Park, June 8-13, 2008, AMS Proceedings of Symposia in Applied Mathematics 67, Part1 ISBN: 978-0-8218-4729-9 and Part2 ISBN: 978-0-8218-4730-5, 2009.
- 9 (with H. Bae & A. Biswas) *Analyticity and decay estimates of the Navier Stokes equations in critical Besov spaces*, *Archive for Rational Mechanics and Analysis* 205 (2012) 963-991.
- 10 (with A. Biswas) *Dissipation vs. quadratic nonlinearity: from a priori energy bound to higher-order regularizing effect*, *Nonlinearity* 27 (2014) 545-562.

Critical threshold phenomena in Eulerian dynamics

- 11 (with S. Engelberg & H. Liu) *Critical thresholds in Euler-Poisson equations*
Indiana Univ. Math. Journal 50(1) (2001) 109-157.
- 12 (with H. Liu) *Critical thresholds in a convolution model for nonlinear conservation laws*
SIAM Journal on Mathematical Analysis 33(4) (2001), 930-945.
- 13 (with H. Liu) *Spectral dynamics of the velocity gradient field in restricted flows*
Communications in Mathematical Physics 228(3) (2002) 435-466.
- 14 (with H. Liu) *Semi-classical limit of the nonlinear Schrödinger-Poisson equation with sub-critical initial data*, *Methods and Applications in Analysis* 9(4), (2002) 517-532.
- 15 (with H. Liu) *Critical thresholds and conditional stability for Euler equations and related models*, in "Hyperbolic Problems: Theory, Numerics, Applications", Proceedings of the 9th International Conference held in Pasadena, Mar. 2002 (T. Hou & E. Tadmor, eds.), Springer, 2003, pp. 227-240.
- 16 (with H. Liu) *Critical thresholds in 2D restricted Euler-Poisson equations*
SIAM Journal of Applied Mathematics 63(6) (2003) 1889-1910.
- 17 (with H. Liu) *Rotation prevents finite-time breakdown*, *Physica D* 188(3-4) (2004) 262-276.
- 18 (with B. Cheng) *Long time existence of smooth solutions for the rapidly rotating shallow-water and Euler equations*, *SIAM Journal on Mathematical Analysis* 39(5) (2008), 1668-1685.

- 19 (with D.-M. Wei) *On the global regularity of sub-critical Euler-Poisson equations with pressure* [Journal of the European Mathematical Society](#) 10 (2008) 757-769.
- 20 (with D. Chae) *On the finite time blow-up of the Euler-Poisson equations in \mathbb{R}^n* [Communications in Mathematical Sciences](#) 6(3) (2008) 785-789.
- 21 (with B. Cheng) *An improved local blow-up condition for Euler-Poisson equations with attractive forcing*, [Physica D](#) 238(20) (2009) 2062-2066.
- 22 (with H. Liu & D.-M. Wei) *Global regularity of the 4D restricted Euler equations* [Physica D](#) 239(14) (2010) 1225-1231.
- 23 (with B. Cheng) *Approximate periodic solutions for the rapidly rotating shallow-water and related equations*, “Water Waves. Theory and Experiment”, Proceedings of the Conference held in Howard University, May 2008 (M. F. Mahmood, D. Henderson & H. Segur, eds), World Scientific (2010), pp. 69-78.
- 24 (with D. Wei & H. Bae) *Critical thresholds in multi-dimensional Euler-Poisson equations with radial symmetry*, [Communications in Mathematical Sciences](#) 10(1) (2012) 75-86.

Nonlinear conservation laws — entropy functions and regularity

- 25 *Skew selfadjoint form for systems of conservation laws* [Journal of Mathematical Analysis and Applications](#) 103 (1984), 428-442.
- 26 *A minimum entropy principle in the gas dynamics equations* [Applied Numerical Mathematics](#) 2(3-5) (1986), 211-219.
- 27 *Entropy functions for symmetric systems of conservation laws* [Journal of Mathematical Analysis and Applications](#) 122(2) (1987), 355-359.
- 28 (with T. Tassa) *On the piecewise regularity of entropy solutions to scalar conservation laws* [Communications on Partial Differential Equations](#) 18(9-10) (1993), 1631-1652.
- 29 (with M. Rascle & P. Bagnerini) *Compensated compactness for 2D conservation laws* [Journal of Hyperbolic Differential Equations](#) 2(3) (2005) 697-712.
- 30 (with K. Karlsen & M. Rascle) *On the existence and compactness for a two-dimensional resonant system of conservation laws*, [Communications in Mathematical Sciences](#) 5(2) (2007), 253-265.

Kinetic formulations and velocity averaging

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