GIGLIOLA STAFFILANI

WORK ADDRESS
MIT, room E17-330
77 Massachusetts Avenue
Cambridge, MA 02139
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37 Dana Street
Cambridge, MA 02138
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EDUCATION

University of Chicago
Ph.D in Mathematics, June 1995
University of Chicago
S.M. in Mathematics, August 1991
Universitá di Bologna
Laurea in Matematica, summa cum laude, September 1989

ACADEMIC APPOINTMENTS

Associate Head	MIT	2013-Present
Abby Rockefeller Mauze Professor	MIT	2006-2018
E. S. and R. M. Cashin Fellow	Radcliffe IAS	2009-2010
Professor	MIT	2006-Present
Associate Professor	MIT	2006-Present
Member of the IAS	IAS	2003-2004
Visiting Associate Professor	Harvard University	January-May 2002
Associate Professor	Brown University	2001-2002
Associate Professor on leave	Stanford University	2001-2002
Assistant Professor	Stanford University	1999-2001
Assistant Professor	Princeton University	1998-1999
Szegö Assistant Professor	Stanford University	1996-1998
Member of the IAS	IAS	1995-1996

HONORS AND AWARDS

NSF Grants 1998-Present
AMS Fellow, 2013
Member of the Massachusetts Academy of Sciences, 2013
Ambasciatore d'Abruzzo nel Mondo, 2012
Alfred P. Sloan Research Fellowship 2000-2002
Terman Award, Stanford University, 1998-2001
The Harold M. Bacon Memorial Teaching Award, Stanford University, 1997 The Lawrence and Josephine Graves Memorial Lectureship Award, University of Chicago, 1994 The Physical Sciences Teaching Prize, University of Chicago, 1994.

PROFESSIONAL EXPERIENCES

Co-organizer of a semester at MSRI, on *Deterministic and probabilistic challenges in nonlinear dispersive equations*
Berkeley, Autumn 2015.

Co- organizer of the *Fifteenth International Conference on Hyperbolic Problems*
Rio de Janeiro, Brazil, July 28-August 1.

Co-organizer of the Clay Mathematics Institute 2008 Summer School on *Evolution Equations*
Eidgenössische Technische Hochschule, Zürich, Switzerland, June 23 – July 18, 2008.

Co-organizer of the *MIT Women in Mathematics Conference: A Celebration*
MIT, Cambridge, April 12–13, 2008.

Visiting Professor with MIT–France Program
Université Pierre and Marie Curie I, France, January 29 – February 3, 2007.

Co-organizer of a semester at MSRI, on *Dispersive Equations*
Berkeley, Autumn 2005.

Visiting Researcher
Centro di Ricerca Matematica Ennio De Giorgi, Pisa, Italy, June 9–July 9 2004.

Visiting Professor
Université de Cergy-Pontoise, Cergy-Pontoise, France, May 15–June 30, 2001.

Visiting Researcher
University of Chicago, Chicago, January-March, 2001.

Co-organizer of the Workshop on *Nonlinear Dispersive Equations*
Stanford University, Stanford, February 12–13, 2000.

Member of the Mathematical Sciences Research Institute
Berkeley, September 1–30, 1997.

Visiting Professor
Université de Cergy-Pontoise, Cergy-Pontoise, France, June 1–30, 1997.

INVITED LECTURES

NSF-CBMS Regional Research Conference in the Mathematical Sciences
June 17–21, 2013, Manhattan KS.

Conference on "Probability and PDEs"
May 20-24, 2013, Pisa.

32rd Southeastern-Atlantic Regional Conference on Differential Equations, October 19-20, Wake Forest.

International PDE Conference
September 10–13, 2012, Oxford.

XIV International Conference on Hyperbolic Problems: Theory, Numerics, Applications June 25–29, 2012, Padova.

Current Events Bulletin Lectures
January 6, 2012, Boston.

2010 SIAM Annual Meeting
July 12–16, 2010, Pittsburgh.

British Mathematics Colloquium and British Applied Mathematical Colloquium
April 6–9, 2010, Edinburgh.

Conference on "Ondes Non-linéaire et Dispersion"
June 22–26, 2009, IHP, France.

Conference on "Non-linear Phenomena in Mathematical Physics: A dedication to Cathleen Synge Morawetz on her 85th birthday" September 18–20, 2008, Fields Institute, Toronto, Ontario, Canada.

Conference on "Nonlinear wave"
May 8 –11, 2008, Brown University, Rhode Island.

Fifth IMAC International Conference on Nonlinear Evolution Equations and Wave Phenomena
April 16–19, 2007, Athens Georgia.

Conference in "Nonlinear dispersive equations"
March 14–18, 2007, Baltimore, Maryland.

CMS Meeting
December 9–11, 2006, Toronto, Ontario, Canada.

Satellite Conference on Analysis "Harmonic and Geometrical Analysis with Applications to PDE"
August 14–18, 2006, Seville, Spain.

2 Olga's Workshop
May 18–20 2006, MSRI, Berkeley.

Schrödinger Evolution Equations
April 22–27, 2006, BIRS, Banff, Alberta, Canada.

Colloque du Groupement de Recherche "Analyse des Equations aux Dérivés Partielles"
June 6–10, 2005, Forges-les-Eaux, France

SIAM Applications of Dynamics Systems Meeting
May 22–26, 2005, Snowbird, Utah.

International Conference on Harmonic Analysis and Partial Differential Equations
September 17–19, 2004, University of Chicago, Illinois.

Harmonic Analysis
June 9–July 9, 2004, Centro di Ricerca Matematica Ennio De Giorgi, Pisa, Italy.

The 2nd Symposium on Analysis and PDEs
June 7–10, 2004, Purdue University, West Lafayette, Indiana.

Program for Women in Mathematics
May 15–28, 2004, Institute for Advanced Study and Princeton University, Princeton.

The Third Duke Mathematical Journal Conference
April 23–25, 2004, Duke University, North Carolina.

Park City Mathematics Institute
June 13–July 31, 2003, Park City, Utah.

AMS-UMI meeting, special session on Microlocal Analysis
June 12–16, 2002, Pisa, Italy.

Harmonic Analysis and PDE
May 8–11, 2002, Columbia, Missouri.

Curvature and Dispersion Effects in Nonlinear Partial Differential Equations
April 21–27, 2002, Oberwolfach, Germany.

Arkansas Spring Lecture series
April 11–13, 2002, University of Arkansas, Fayetteville.

AMS meeting, Invited Address
November 10–11, 2001, Irvine, California.

AMS meeting, special session on PDE
October 21–22, 2001, San Francisco, California.

AMS–IMS–SIAM Summer Research Conference in Harmonic Analysis
June 24–July 5, 2001, Mt. Holyoke College, Massachusetts.

Nonlinear Waves
May 20–26, 2001, Oberfolfach, Germany.

Workshop on PDE
April 16–21, 2001, Fields Institute, Toronto, Canada.

Nonlinear Analysis 2000
May 28–June 2, 2000, Courant Institute, NYU.

Riviere–Fabes Symposium on Analysis and PDE
April 28–30, 2000, School of Mathematics, Minneapolis, Minnesota.

Memphis Lectures on Mathematics year 2000
March 15–18, 2000, University of Memphis, Memphis.

Conference on *Oscillatory Integrals and their Applications to Partial Differential Equations*
October 23–24, 1997, Mathematical Science Research Institute, Berkeley, California.

Conference on *Nonlinear Waves*
June 30–July 5, 1997, Oberwolfach, Germany.

EDITORIAL BOARDS

Communications on Pure and Applied Analysis; Selecta Mathematica; AMS Graduate Studies in Mathematics

SEMINARS PRESENTED IN THE LAST FIVE YEARS

UPenn, 2013; UIUC, 2012; Northwestern University, 2012; MIT, 2012; Princeton University, 2011; Radcliffe Institute, 2010; Brown University, 2010; Boston University, 2010; University of Wisconsin, 2009; UNC, 2008; University of Kyoto, 2008; MIT, 2008.

PUBLICATIONS AND WORK IN PROGRESS

Randomization and the Gross-Pitaevskii hierarchy. Submitted, *arXiv:1308.3714*, (2013). (With V. Sohinger)

Almost sure well-posedness for the periodic 3D quintic nonlinear Schrödinger equation below the energy space. Submitted, *arXiv:1308.1169*, (2013). (With A. Nahmod)

On the continuum limit for discrete NLS with long-range lattice interactions. Comm. Math. Phys. 317 (2013), no. 3, 563591. (With K. Kirkpatrick and E. Lenzmann)

On the uniqueness of solutions to the periodic 3D Gross-Pitaevskii hierarchy. Submitted, *arXiv:1212.2987*, (2012). (With P. Gressman and V. Sohinger)

Almost sure existence of global weak solutions for super-critical Navier-Stokes equations. To appear in SIMA, (2013). (With A. Nahmod and N. Pavlović)

Absolute continuity of Brownian bridges under certain gauge transformations. Math. Res. Lett. 18 (2011), no. 5, 875887. (With A. Nahmod, L. Rey-Bellet, Luc and S. Sheffield)

On the global well-posedness of energy-critical Schrdinger equations in curved spaces. Anal. PDE 5 (2012), no. 4, 705746. (With A. Ionescu and B. Pausader)

Invariant weighted Wiener measures and almost sure global well-posedness for the periodic derivative NLS. J. Eur. Math. Soc. (JEMS), 14, no. 4, 1275-1330, (2012). (With A. Nahmod, T Oh and L. Rey-Bellet)

Derivation of the two-dimensional nonlinear Schrödinger equation from many body quantum dynamics. Amer. J. Math.133, no. 1, 91-130, (2011). (With K. Kirkpatrick and B. Schlein)

Transfer of energy to high frequencies in the cubic defocusing nonlinear Schrdinger equation. Invent. Math. **18**, no. 1, 39-11, (2010). (With J. Colliander, M. Keel, H. Takaoka and T. Tao)

The Cauchy problem for Schrdinger flows into Kähler manifolds. Discrete Contin. Dyn. Syst. 27 (2010), no. 2, 389439. (With C. Kenig, Carlos, T. Lamm, D. Pollack, and T. Toro)

Strichartz estimates for the water-wave problem with surface tension. Comm. Partial Differential Equations 35 (2010), no. 12, 2195–2252. (With H. Christianson and V. Hur).

Local smoothing effects for the water-wave problem with surface tension. C. R. Math. Acad. Sci. Paris 347 (2009), no. 3-4, 159162. (With H. Christianson and V. Hur)

Semilinear Schrödinger Flows on Hyperbolic Spaces: Scattering in H^1. Math. Ann. 345, no. 1, 133–158, (2009). (With A. Ionescu)

Global well-posedness and polynomial bounds for the defocusing L^2-critical nonlinear Schrödinger equation in $\mathbb{R}$. Comm. Partial Differential Equations 33 (2008), no. 7-9, 13951429. (With D. de Silva, N. Pavlovi? and N. Tzirakis)

On the global well-posedness of the one-dimensional Schrödinger map flow. Anal. PDE 2, no. 2, 187–209, (2009). (With I. Rodnianski and Y.A. Rubinstein).

Scattering theory for radial nonlinear Schrödinger equations on hyperbolic space. Geom. Funct. Anal. 18 (2008), no. 2, 367–399, (2008). (With V. Banica and R. Carles).

Global well-posedness and scattering in the energy space for the critical nonlinear Schrödinger equation in $\mathbb{R}^3$. Ann. of Math. (2) 167, no. 3, 767–865, (2008). (With J. Colliander, M. Keel, H. Takaoka and T. Tao).

Resonant decompositions and the I-method for cubic nonlinear Schrodinger on $\mathbb{R}^2$. DCDS-A, 21 (2008), no. 3, 665–686. (With J. Colliander, M. Keel, H. Takaoka and T. Tao).

Weighted low-regularity solutions of the KP-I initial-value problem. Discrete Contin. Dyn. Syst. 20 (2008), no. 2, 219–258. (With J. Colliander, A. Ionescu, and C. Kenig).

Regularity of solutions to the Navier-Stokes equations evolving from small data in BMO^{-1}. Int. Math. Res. Not. IMRN 2007, no. 21, Art. ID rnm087, 35 pp. 76D03. (With P. Germain and N. Pavlović).

The energy-critical nonlinear Schrödinger equation in $\mathbb{R}^3$. Recent developments in nonlinear partial differential equations, 69–80, Contemp. Math., 439, Amer. Math. Soc., Providence, RI, 2007. (With J. Colliander, M. Keel, H. Takaoka and T. Tao).

Errata to: Low regularity solutions for the Kadomtsev-Petviashvili I equation. [Geom. Funct. Anal. 13 (2003), no. 4, 737–794;]. Geom. Funct. Anal. 17 (2007), no. 3, 999–1000. (With J. Colliander and C. Kenig).

Global well-posedness for the L^2 *critical nonlinear Schrödinger equation in higher dimensions*. Commun. Pure Appl. Anal. 6 (2007), no. 4, 1023–1041. (With D. De Silva, N. Pavlović and N. Tzirakis).

Global well-posedness for a periodic nonlinear Schrödinger equation in 1D and 2. Discrete Contin. Dyn. Syst. 19 (2007), no. 1, 37–65. (With D. De Silva, N. Pavlović and N. Tzirakis).

Symplectic nonsqueezing of the Korteweg-de Vries flow. Acta Math. 195 (2005), 197–252. (With J. Colliander, M. Keel, Markus and H. Takaoka).

Errata: "On solutions for the Kadomtsev–Petviashvili I equation" [Mosc. Math. J. 1 (2001), no. 4, 491–520, 644; MR1901072]. Mosc. Math. J. 4 (2004), no. 2, 529–530. (With J. Colliander and C.E. Kenig).

Multilinear estimates for periodic KdV equations, and applications. J. Funct. Anal. 211 (2004), no. 1, 173–218. (With J. Colliander, M. Keel, H. Takaoka, H. and T. Tao).

Global existence and scattering for rough solutions of a nonlinear Schrödinger equation on $\mathbb{R}^3$. Comm. Pure Appl. Math. 57 (2004), no. 8, 987–1014. (With J. Colliander, M. Keel, H. Takaoka and T. Tao).

Local well-posedness for dispersion-generalized Benjamin–Ono equations. Differential Integral Equations 16 (2003), no. 12, 1441–1472. (With J. Colliander and C. Kenig).

Low regularity solutions for the Kadomtsev–Petviashvili I equation. Geom. Funct. Anal. 13 (2003), no. 4, 737–794. (With J. Colliander and C. Kenig).

Low regularity stability of solitons for the KdV equation. Commun. Pure Appl. Anal. 2 (2003), no. 3, 277–296. (With S. Raynor).

Sharp global well-posedness for KdV and modified KdV on $\mathbb{R}$ *and* $\mathbb{T}$. J. Amer. Math. Soc. 16 (2003), no. 3, 705–749 (electronic). (With J. Colliander, M. Keel, H. Takaoka and T. Tao).

Polynomial upper bounds for the instability of the nonlinear Schrödinger equation below the energy norm. Commun. Pure Appl. Anal. 2 (2003), no. 1, 33–50. (With J. Colliander, M. Keel, M., H. Takaoka and T. Tao).

Polynomial upper bounds for the orbital instability of the 1D cubic NLS below the energy norm. Discrete Contin. Dyn. Syst. 9 (2003), no. 1, 31–54. (With J.Colliander, M. Keel, H. Takaoka and T. Tao).

Existence globale et diffusion pour l'équation de Schrödinger nonlinéaire répulsive cubique sur $\mathbb{R}^3$ *en dessous l'espace d'énergie. [Global existence and scattering for the cubic repulsive nonlinear Schrödinger equation in* $\mathbb{R}^3$ *below the energy space.]* Journées "Équations aux Dérivées Partielles" (Forges-les-Eaux, 2002), Exp. No. X, 14 pp., Univ. Nantes, Nantes, 2002. (With J. Colliander, M. Keel, H. Takaoka and T. Tao).

A refined global well-posedness result for Schrödinger equations with derivative. SIAM J. Math. Anal. 34 (2002), no. 1, 64–86 (electronic). (With J. Colliander, M. Keel, H. Takaoka and T.Tao).

Almost conservation laws and global rough solutions to a nonlinear Schrödinger equation. Math. Res. Lett. 9 (2002), no. 5-6, 659–682. (With J. Colliander, M. Keel, H. Takaoka and T. Tao).

Regularity bounds on Zakharov system evolutions. Electron. J. Differential Equations 2002, No. 75, 11 pp. (electronic). (With J. Colliander).

Strichartz estimates for a Schrödinger operator with nonsmooth coefficients. Comm. Partial Differential Equations 27 (2002), no. 7-8, 1337–1372. (With D. Tataru).

A new approach to study the Vlasov–Maxwell system. Commun. Pure Appl. Anal. 1 (2002), no. 1, 103–125. (With S. Klainerman).

On solutions for the Kadomtsev–Petviashvili I equation. Dedicated to the memory of I.G. Petrovskii on the occasion of his 100th anniversary. Mosc. Math. J. 1 (2001), no. 4, 491–520, 644. (With J. Colliander and C. Kenig).

Global well-posedness for Schrödinger equations with derivative. SIAM J. Math. Anal. 33 (2001), no. 3, 649–669 (electronic). (With J. Colliander, M. Keel, H. Takaoka and T. Tao)

Bilinear estimates and applications to 2D NLS. Trans. Amer. Math. Soc. 353 (2001), no. 8, 3307–3325 (electronic). (With J.E. Colliander, J.-M. Delort and C.E. Kenig)

Global well-posedness for KdV in Sobolev spaces of negative index. Electron. J. Differential Equations 2001, No. 26, 7 pp. (electronic). (With J. Colliander, M. Keel, H. Takaoka and T.Tao)

Global wellposedness for KdV below L^2. Math. Res. Lett. 6 (1999), no. 5-6, 755–778. (With J. Colliander and H. Takaoka)

On the generalized Korteweg-de Vries-type equations. Differential Integral Equations 10 (1997), no. 4, 777–796.

On solutions for periodic generalized KdV equations. Internat. Math. Res. Notices 1997, no. 18, 899–917.

Local well-posedness for higher order nonlinear dispersive systems. J. Fourier Anal. Appl. 3 (1997), no. 4, 417–433. (With C.E. Kenig)

On the growth of high Sobolev norms of solutions for KdV and Schrödinger equations. Duke Math. J. 86 (1997), no. 1, 109–142.

Quadratic forms for a 2-D semilinear Schrödinger equation. Duke Math. J. 86 (1997), no. 1, 79–107.

EXPOSITORY PAPERS

Dispersive equations and their role beyond PDE. Current Events Bulletin, AMS annual meeting, Boston, (2012).

Periodic Schrödinger equations in Hamiltonian form. HCDTE Lecture Notes. Part II., AIMS, (2013).

Evolution Equations. Clay Mathematics Proceedings 17, (2013). (With Ellwood D. (editor), Rodnianski I. (author and editor) and Wunsch J. (author and editor).)

Notes on symplectic non-squeezing of the KdV flow. Journés "Èquations aux Dèrivès Partielles", Exp. No. XIV, 15 pp., Ècole Polytech., Palaiseau, (2005). (With J. Colliander, M. Keel, H. Takaoka and T. Tao)

KdV and almost conservation laws. In *Harmonic Analysis at Mount Holyoke*, William Beckner, Alexander Nagel, Andreas Seeger, and Hart F. Smith, Editors, American Mathematical Society, 2003, *Contemporary Mathematics*, vol. 320.

Review of the book "Global solutions of nonlinear Schrödinger equations" by J. Bourgain. Bull. Amer. Math. Soc. 40 (2003), pp. 99-107.

Well-posedness for dispersive equations and almost conservation laws. IAS/Park City Mathematics Series, 2003.

ADVISING AND MENTORING ACTIVITY

Graduate Advisor: Chenji Fan (PhD candidate M.I.T), Federico Fraternale (Master, Politecnico di Torino), Dana Mendelson (PhD candidate M.I.T.), Ilaria Mondello (Master, Universitá di Milano-Bicocca) and Vedran Sohinger (PhD, Simons Postdoc at UPenn).

Postdoctoral Sponsor: H. Christianson, University of North Carolina, NC; K. Kirkpatrick, University of Illinois Urbana-Champaign, IL; V. Hur, University of Illinois Urbana-Champaign, IL; P. Isset, M.I.T.; E. Lenzmann, University of Basel, Switzerland; Jonathan Luk, M.I.T.; R. Shen, McMaster University, Canada.

SERVICE

Associate Head, 2013-present

Co-chair of MSRI Scientific Advisory Committee (SAC), 2013-2016.

Member of MSRI Scientific Advisory Committee (SAC), 2010-2013.

Co-chair of Graduate Studies, 2007-2013.

Member of Gender Equity Committee at MIT, 2008-2010.

Member of the Faculty Search Oversight Committee at MIT, 2007-present.

Member of the Search Committee for Dean of School of Science, Fall 2007.

Member of the Pure Math Committee at MIT, 2004-2012 and 2013-present