Zaher Hani

| CONTACT INFORMATION | University of Michigan,
Department of Mathematics
5834 East Hall
530 Church Street
Ann Arbor, MI 48109-1043, USA | *Tel.:* (734) 764 0325
E-mail: `zhani@umich.edu` |

RESEARCH INTERESTS

Partial differential equations, wave turbulence, infinite dimensional Hamiltonian dynamics, real-variable harmonic analysis.

EMPLOYMENT

- **September 2018-: University of Michigan, Ann Arbor**
  Associate professor

- **August 2014-August 2018: Georgia Institute of Technology**
  Tenure-track assistant professor

- **September 2011-August 2014: Courant Institute of Mathematical Sciences, New York University**
  Simons Postdoctoral Fellow and Courant Instructor

EDUCATION

2007-2011: University of California, Los Angeles, California USA.

- Ph.D. in Mathematics (June 2011)

  Dissertation Topic: *Global and dynamical aspects of nonlinear dispersive equations on compact manifolds.*

  Advisor: Terence Tao.

- M.A. in Mathematics, December 2008.

2004-2007: American University of Beirut, Lebanon.

Bachelor of Science in Mathematics (with high distinction).

GRANTS, HONORS, AND AWARDS

2017-2022	NSF CAREER grant.
2016-2019	NSF Grant DMS-1600561 (standard grant).
2016	Alfred Sloan Research Fellowship.
2013-2016	NSF Grant DMS-1301647 (standard grant).
2011-2014	Simons Postdoctoral Fellowship, *Courant Institute, New York University.*
2011	Heaviside Wealth Management Award for outstanding graduate student research, *UCLA.*
2008-2011	Huang Fellowship, *UCLA.*
2008	Horn-Moez Prize for Excellence in First Year Graduate Studies, *UCLA.*
2007-2008	Pauley Fellowship, *UCLA.*
2007	The Muhanna Mathematics Award of Excellence, The Nicolas Jabr Prize, and The Philip Hitti Prize, *American University of Beirut.*
2004-2007	Full Scholarship from CNRS of Lebanon (*Conseil National de la Recherche Scientifique*).

-*Scattering for the 3D Gross-Pitaevskii equation*, (with Z. Guo and K. Nakanishi). To appear in Communications of Mathematical Physics (CMP).

-*Nonlinear Schrödinger equation on large domains*, (with T. Buckmaster, P. Germain, J. Shatah). To appear in Communications in Pure and Applied Mathematics (CPAM).

-*Analysis of the continuous resonant equation*, (with T. Buckmaster, P. Germain, J. Shatah). To appear in International Mathematics Research Notices (IMRN).

-*Out-of-equilibrium dynamics and statistics of dispersive PDE*. Journées équations aux dérivées partielles (2016), Exp. No. 5, 12 p.

-*Asymptotic behavior of the nonlinear Schrödinger equation with harmonic trapping*, (joint work with Laurent Thomann). Communications in Pure and Applied Mathematics (CPAM) Volume 69, Issue 9, September 2016, Pages 1727–1776.

-*The weakly nonlinear large box limit of the 2D cubic nonlinear Schrödinger equation*, (joint work with Erwan Faou and Pierre Germain). Journal of the AMS (JAMS), 29 (2016), 915-982.

-*Modified scattering for the cubic Schrödinger equation on product spaces and applications*, (joint work with Benoit Pausader, Nikolay Tzvetkov, and Nicola Visciglia). Forum of Mathematics, Pi. Volume 3 / 2015, e4 (63 pages).

-*On the continuous resonant equation for NLS. Part II. Probabilistic analysis*, (joint work with Pierre Germain and Laurent Thomann). Analysis and PDE 8 (2015), no. 7, 1733–1756.

-*On the continuous resonant equation for NLS. Part I. Deterministic analysis*, (joint work with Pierre Germain and Laurent Thomann). Journal de Mathematiques Pures et Appliquees (JMPA). (9) 105 (2016), no. 1, 131–163.

-*Growing Sobolev norms for the cubic defocusing Schrödinger equation*. (With Benoit Pausader, Nikolay Tzvetkov, and Nicola Visciglia). Seminaire Laurent Schwartz - EDP et applications (2013-2014), Exp. No. 16.

-*Nonlinear resonances with a potential: Multilinear estimates and an application to NLS*, (joint work with Pierre Germain and Samuel Walsh). International Mathematics Research Notices IMRN 2015, no. 18, 8484–8544.

-*Long-time instability and unbounded Sobolev orbits for some periodic nonlinear Schrödinger equations*. Archive for Rational Mechanics and Analysis 211 (2014), no. 3, 929–964.

-*Scattering for the Zakharov system in 3 dimensions*, (joint work with Fabio Pusateri and Jalal Shatah). Communications in Mathematical Physics (CMP), September 2013, Volume 322, Issue 3, pp 731–753.

-*On scattering for the quintic defocusing nonlinear Schrödinger equation on $\mathbf{R} \times \mathbf{T}^2$*, (joint work with Benoit Pausader). Communications on Pure and Applied Mathematics (CPAM), Volume 67, Issue 9, pages 1466–1542, September 2014.

-*Global well-posedness of the $2D-$cubic nonlinear Schrödinger equation on compact manifolds without boundary*, Communications in PDE. Volume 37, Issue 7, 1186–1236 (2012).

-*A bilinear oscillatory integral estimate and bilinear refinements to Strichartz estimates on closed manifolds*, Analysis & PDE 5-2 (2012) 339–363.

- *Global and dynamical aspects of nonlinear dispersive equations on compact manifolds*, UCLA Ph.D. Thesis.

PREPRINTS

Growth of Sobolev norms for the cubic NLS equation near one-dimensional finite gap solutions, (with M. Guardia, E. Haus, A. Maspero, and M. Procesi).

CONFERENCE ORGANIZATION

1. Spring 2018: *School and Conference on Nonlinear Waves*, Georgia Tech.
2. Spring 2017: AIM workshop on *Mathematical wave turbulence.*
3. Spring 2017: Member of the Scientific Committee of the Tenth IMACS International conference on Nonlinear Evolution Equations and Wave Phenomena: Computation and Theory.
4. Fall 2016: Special session in the Fall Sectional Meeting of the AMS (Minneapolis, Minnesota).
5. March 2015: Special session on *Nonlinear dispersive and wave equations with applications to fluids* in the AMS Sectional Meeting at Georgetown University, Washington D.C.
6. April 2015: Special session on *Long Time Dynamics of Nonlinear Dispersive Waves*, at "Ninth IMACS International conference on Nonlinear Evolution Equations and Wave Phenomena: Computation and Theory", Athens, Georgia,

SEMINAR WORK

University of Michigan

1. Co-organizer of the differential equations seminar.

Georgia Institute of Technology

1. Fall 2016: Organized an Interdisciplinary Learning Seminar on "Non-equilibrium Statistical Physics".
2. (Fall 2014 and Spring 2015): Started and organized a new "Working PDE seminar" with the aim of introducing various topics in PDE at a level accessible to graduate students.
3. Frequent organizer of the PDE seminar at Georgia Tech School of Mathematics.

New York University:

1. (Fall 2011 and Spring 2012): co-organized with Pierre Germain and Larry Guth an informal seminar on "Problems related to the restriction problem".
2. (Fall 2012) co-organized a seminar on "Water waves".

TEACHING EXPERIENCE

University of Michigan, Ann Arbor:
Course Instructor

Fall 2018   *Math 558*: Advanced ODE and Dynamical Systems

Georgia Institute of Technology:
Course Instructor

Spring 2018	*Math 4348*: Partial Differential Equations II.
	Math 1552: Integral Calculus.
Fall 2016	*Math 4347*: Partial Differential Equations I.
	Math 1553: Introduction to Linear Algebra,
	Math 8900: Working Seminar on Non-Equilibrium Statistical Mechanics
	Math 4999-HAN: Undergraduate Reading course.
Spring 2016	Math 1552: Integral Calculus.
Spring 2015	Graduate Topics in PDE: Nonlinear dispersive equations.
Fall 2014	Math 1502: Calculus II.

New York University:

Course Instructor

Spring 2014	Math GA 2550: Graduate Functional Analysis.
Fall 2012	Math UA140: Linear Algebra.
Fall 2011	Calc III: Multi-variable Calculus.

University of California, Los Angeles:

Teaching Assistant

Fall 2009	Math 246A Graduate Complex Analysis.
Spring 2009	Math 32B: Second course on Calculus of Several Variables.
Spring 2008	Math 32B: Second course on Calculus of Several Variables.
Winter 2008	Math 32A: First course on Calculus of Several Variables.

OTHER TEACHING ACTIVITIES	*December 2017*	Twenty-hour minicourse at SISSA (International Institute for Advanced Studies) in Trieste, Italy.
	September 2016	Six-hour minicourse in the school and workshop on "Hamiltonian Dynamics, PDEs and Waves on the Amalfi coast" in Maiori, Italy.

SERVICE WORK

• Committee Work:

2015-2017	Served on the "Faculty Advisory Committee" at the Georgia Tech School of Math.
Fall 2017-now	Serving on the "Elections Committee" of the Georgia Tech School of Math.
Spring 2017	Member of the Scientific Committee of the Tenth IMACS International conference on Nonlinear Evolution Equations and Wave Phenomena: Computation and Theory.

• Manuscripts reviewed for:

Communications on Pure and Applied Mathematics (CPAM), Asterisque, Advances in Mathematics, Communications in Math. Physics (CMP), Communications in PDE (CPDE), Analysis and PDE, Trans. of the AMS, International Math. Research Notices (IMRN), Annales Henri Poincare, Journal of Differential Equations (JDE), Siam Journal on Mathematical Analysis (SIMA), Revista Matemtica

Iberoamericana, Math Zentralblatt, Journal of Functional Analysis, Annals of PDE.

- **Proposals reviewed:** NSF Panels in Spring 2017 and Spring 2018.

August 2018,
Ann Arbor, MI.