

Fabio Pusateri

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Education

- *New York University* - Ph.D. in Mathematics, 2011.
- *University of "Roma Tre"* - M.S./B.S. in Mathematics, 2006/2004.

Appointments

- *University of Toronto* - Assistant Professor.
05/2018 - present.
- *Princeton University* - Assistant Professor.
09/2014 - 06/2018.
- *Princeton University* - Simons Postdoctoral Fellow / Instructor.
09/2011 - 08/2014.

Research Interests

- Analysis of PDEs, Dispersive and Wave Equations
- Fluid Dynamics
- Harmonic Analysis and applications
- Hamiltonian Dynamics

Publications

- *Birkhoff normal form and long time existence for periodic gravity water waves* with M. Berti and R. Feola. arXiv:1810.11549. 71pp. Submitted.
- *Birkhoff normal form for gravity water waves* with M. Berti and R. Feola. 6pp. Submitted.
- *On the global behavior of weak null quasilinear wave equations* with Y. Deng arXiv:1804.05107. 48pp. Submitted.
- *Long-time existence for multi-dimensional periodic water waves* with A. Ionescu. **Geom. Funct. Anal.** 29 (2019), no. 3, pp 811-870.
- *Recent advances on the global regularity for water waves* with A. Ionescu. 28pp. **Philosophical Transactions A.** 20170089, volume 376, issue 2111.
- *The nonlinear Schrödinger equation with a potential* with P. Germain and F. Rousset. **Annales IHP C**, Analyse non linéaire 35 (6), 1477-1530.

- *On the Global Stability of a Beta-Plane Equation*
with K. Widmayer. **Analysis & PDE** Vol. 11 (2018), no. 7, 1587-1624.
- *Global solutions for the 3D gravity-capillary water wave system*
with Y. Deng, A. Ionescu. and B. Pausader. **Acta Mathematica** 219 (2017), 213-402.
 - *Global solutions for the 3D gravity-capillary water wave system, I: Energy Estimates*
weblink. 77pp.
 - *Global solutions for the 3D gravity-capillary water wave system, II: Dispersive Analysis*
weblink. 76pp.
- *Almost global existence for cubic NLS equations in one space dimension*
with J. Murphy. arXiv:1605.03247. **DCDS-A** 37 (2017), 2077-2102.
- *Asymptotic stability of solitons for mKdV*
with P. Germain and F. Rousset. **Advances in Math.** 299 (2016), 272-330.
- *Global regularity for 2d water waves with surface tension*
with A. Ionescu. **Mem. Amer. Math. Soc.** (2018), vol. 256, no. 1227.
- *Global analysis of a model for capillary water waves in 2D*
with A. Ionescu. **Comm. Pure Appl. Math.** 69 (2016), no. 11, 2015-2071.
- *Decay and scattering for the Chern-Simons-Schrödinger System*
with S.-J. Oh. **Int. Math. Res. Notices.** (2015), no. 24, 13122-13147.
- *On Global Solutions of a Zakharov type System*
with T. Beck, P. Sosoe and P. Wong. **Nonlinearity** 28 (2015), no. 9, 3419-3441.
- *Global existence for the gravity water waves system in 2D*
with A. Ionescu. **Inventiones Math.** 199 (2015), no. 3, 653-804.
- *Modified scattering for the Boson Star equation*
Comm. Math. Phys. 332 (2014), no. 3, 1203-1234.
- *Nonlinear fractional Schrödinger equations in one dimension*
with A. Ionescu. **J. Funct. Anal.** 266 (2014), no. 1, 139-176.
- *Scattering for the Zakharov system in three dimension*
with Z. Hani and J. Shatah. **Comm. Math. Phys.** 322 (2013), no. 3, 731-753.
- *Space-Time resonances and the null condition for first order systems of wave equations*
with J. Shatah. **Comm. Pure and Appl. Math.** 66 (2013), no. 10, 1495-1540.
- *A new proof of long range scattering for critical NLS equations*
with J. Kato. **Diff. Int. Equations** 24 (2011), no. 9-10, 923-940.
- *On the limit as the surface tension and density ratio tend to zero for the two-phase Euler equations*
J. Hyperbolic Differ. Equ. 8 (2011), no. 2, 347-373.
- *On the one fluid limit for vortex sheets*
20pp. arXiv:0908.3353.

- *Analytic Lagrangian Tori for the Planetary Many-Body Problem* with L. Chierchia. **Ergodic Th. Dynam. Sys.** 29 (2009), no. 3, 849-873.

Awards and Fellowships

- June 2019 – June 2021: *Connaught New Researcher Award*
- July 2018 – June 2019: *NSERC Grant supplement.*
- July 2018 – June 2023: *NSERC Grant RGPIN-2018-06487.*
- September 2013 – July 2017: *NSF Grant DMS 1265875.*
- September 2011 – August 2014: *Simons Fellowship.*
- September 2010 – May 2011: *Dean's Dissertation Fellowship.*
- September 2006 – May 2010: *MacCracken Fellowship.*

Teaching

- **University of Toronto:**
Honors Real Analysis (Spring 2019);
Topics in Harmonic Analysis and applications (Fall 2019);
Graduate PDE I (Fall 2018);
- **Princeton University:**
Multivariable Calculus - MAT201 (Spring 2018);
Multivariable Calculus - MAT201 (Fall 2017 - 2 sections);
Differential equations - MAT320 (Spring 2017);
Multivariable Calculus - MAT201 (Fall 2016 - 2 sections, Course Head);
Multivariable Calculus - MAT201 (Spring 2016 - 2 sections, Course Head);
Pseudo Differential Operators and the Nash-Moser Theorem - MAT984 (Junior Seminar Fall 2015);
Differential equations - MAT322 (Spring 2015);
Multivariable Calculus - MAT201 (Fall 2014 - 2 sections, Course Head);
Real Analysis - MAT320 (Fall 2013);
Multivariable Calculus - MAT201 (Fall 2012 - 2 sections).
- **New York University:**
Calculus 1 (Fall 2009);
ODE (Spring 2009);
Calculus for social sciences (Fall 2008);
Analysis 1 (Spring 2008);
Math patterns in Nature (Fall 2007, Spring 2010, Spring 2011);
Intro to Math Analysis (Spring 2006).

- **University of “Roma Tre”:**

Teaching assistant for the following courses:

Analysis II (Fall 2005); Introduction to Galois Theory (Spring 2005);

Calculus of several variables (Spring 2004, Fall 2006); Theory of Integration (Spring 2004);

Analysis I (Fall 2003, Fall 2005); Introduction to Computer Science (Fall 2003).

**Mentoring
and advising**

- Senior Thesis - Stan Palasek '17 (currently PhD candidate at UCLA);
- Junior Thesis (Spring 2016) - Allen Fang '17 (currently PhD candidate at Oxford);
- Reading course on Singular Integrals and Applications - MAT91 (Spring 2016).

**Academic
services**

- Co-organizer of the Program “Mathematical hydrodynamics: Analysis of fluid motion and its applications” at the Fields Institute (July-December 2020)
- Lead organizer of the Fields Colloquium in Applied Math at the Fields institute (2019-)
- Co-organizer of the Departmental Colloquium at University of Toronto (2018-)
- Hiring Committee member (University of Toronto 2018-2019)
- Co-organizer of the Analysis Seminar at Princeton University (2012-2017)
- Co-organizer of the Seminar on the Analysis of Fluids and related topics at Princeton University (2013-2016)
- Course Head coordinator for multi-session courses MAT201 in Fall 2014, Spring 2016, Fall 2016.

**Selected
Talks and
Conferences**

- CAIMS Annual Meeting 2019 (Whistler, BC, June 2019)
- Workshop on Nonlinear Dispersive PDEs and Inverse Scattering (Fields Institute, Toronto, May 2019)
- IMACS conference on Nonlinear Evolution Equations and Wave Phenomena (Athens, GA, Apr 2019)
- Princeton University Analysis seminar (Apr 2019)
- Workshop on recent developments in nonlinear waves at UIC (Nov 2018)
- University of Kentucky Analysis and PDE seminar (Oct 2018)
- FRG workshop at University of Chicago (Oct 2018)
- A Conference on PDEs: Celebrating the Contributions of Fanghua Lin and Jalal Shatah (NYU Abu Dhabi, UAE, Jan 2018)
- Analysis and Dynamics in celebration of L. Chierchia (Lecce, Italy, October 12-15 2017)
- AMS sectional meeting (Buffalo, September 16-17 2017)
- Nonlinear Waves and Dispersive Equations (Oberwolfach, Germany, June 11-17 2017)
- Water Waves and Related Models Conference, Invited Speaker (Bodega Marine Lab, CA, June 5-9 2017)
- ICERM semester program workshop on “Water Waves ” (Apr 24-28 2017)
- IMACS conference on Nonlinear Evolution Equations and Wave Phenomena (Athens, GA, Mar 2017)
- Rice University Colloquium Seminar (Feb 2017)

- University of Toronto Colloquium Seminar (Jan 2017)
- University of Wisconsin Colloquium Seminar (Jan 2017)
- UCSB Colloquium Seminar (Jan 2017)
- UPenn Analysis Seminar (Nov 2016)
- Johns Hopkins University Analysis Seminar (Sept 2016)
- FRG workshop at MIT (Sept 2016)
- SIAM Conference on Nonlinear Waves and Coherent Structures (Philadelphia, Aug 2016)
- AIMS conference on “Dynamical Systems, Differential Equations and Applications” (Orlando, July 2016)
- Invited speaker at “Nonlinear Waves” Conference at IHES (Paris, France, June 2016)
- Nonlinear Evolution Problems (Oberwolfach, Germany, May 2016)
- Courant Institute/NYU Analysis Seminar (Mar 2016)
- Rutgers University Nonlinear Analysis Seminar (Mar 2016)
- Mathematical Analysis, Modeling, and Applications, SISSA (Trieste, Italy, Jan 2015)
- CUNY Analysis and PDE seminar (New York, Dec 2015)
- 2015 Clay Research Conference: Workshop on Water Waves and Related Fluid Models (Oxford, UK, Sept 2015)
- AMS sectional meeting (Georgetown, DC, Mar 2015)
- Brown University RTG Workshop on PDEs for Fluids (Feb 2015)
- UCLA-Caltech Analysis and PDE seminar (Nov 2014)
- AMS Sectional Meeting (San Francisco State University, San Francisco, CA, Oct 2014)
- UCLA Analysis and PDE Seminar (May 2014)
- University of Chicago, Calderón-Zygmund Seminar (May 2014)
- Dynamics in Geometric Dispersive Equations and the Effects of Trapping, Scattering and Weak Turbulence (BIRS, Canada, May 4-9, 2014)
- UPenn Analysis Seminar (April 2014)
- University of Minnesota PDE Seminar (January 2014)
- Princeton University Analysis Seminar (December 2013)
- Georgia Tech Colloquium Seminar (December 2013)
- University of Michigan Differential Equations seminar (October 2013)
- Brown University PDE Seminar (September 2013)
- Nonlinear Waves and Dispersive Equations (Oberwolfach, Germany, August 12-17, 2013)
- UCLA Analysis Seminar (May 2013)
- Courant Institute/NYU Analysis Seminar (May 2013)
- SIAM SEAS 2013 Annual Meeting (Knoxville, Tennessee, March 22-24, 2013)
- Invited speaker at New perspectives in nonlinear PDEs (Rome, Italy, September 24-28, 2012)
- Princeton University Analysis Seminar (September 2012)
- Invited speaker at Nonlinear Hamiltonian PDEs (Ascona, Switzerland, July 1-6, 2012)
- UPenn Analysis Seminar (December 2011)
- Invited speaker at XIX UMI Congress (Bologna, Italy, September 2011)
- Invited speaker Harrington Symposium on Dispersive PDEs (Austin, Tx, 29-30 April 2011)

- Princeton University Analysis Seminar (April 2011)
- Brown University PDE Seminar (October 2010)
- University of Roma Tre Analysis Seminar (June 2010)