# Ricardo Grande

Curriculum Vitae

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*r-grande.github.io*

## Research Interests

Turbulence, Dispersive Equations, Nonlinear PDEs
Probability, Stochastic Processes, Fluctuations

## Academic Appointments

2023 - Currently **Assistant Professor** (RTD-A), *SISSA, Trieste*

2021 - 2023 **Postdoctoral Researcher**, *École Normale Supérieure, Paris*
- *Mentors:* Isabelle Gallagher (ENS) and Laure Saint-Raymond (IHES)
- Postdoctoral associate of the Simons Collaboration in Wave Turbulence

2020 - 2021 **Postdoctoral Assistant Professor**, *University of Michigan, Ann Arbor*
- *Mentor:* Zaher Hani
- Postdoctoral associate of the Simons Collaboration in Wave Turbulence

## Education

2015 - 2020 **PhD in Mathematics**, *Massachusetts Institute of Technology*
- *Advisor:* Gigliola Staffilani
- *Thesis title:* The role of smoothing effect in some dispersive equations
- *Committee:* Gigliola Staffilani, MIT
  David Jerison, MIT
  Andrew Lawrie, MIT

2014 - 2015 **Master of Advanced Study in Mathematics**, *University of Cambridge*
- *Essay:* Averaging Lemmas and the X-ray transform
- *Directed by:* Clément Mouhot

2010-2014 **Licenciatura en Matemáticas**, *Universidad del País Vasco (UPV-EHU)*

## Scientific Work

THESIS

[0] R. Grande, *The role of smoothing effect in some dispersive equations*. PhD Thesis, Massachusetts Institute of Technology (2020). Available at `https://dspace.mit.edu/handle/1721.1/126921`.

PUBLICATIONS

[1] G. B. Apolinário, G. Beck, L. Chevillard, I. Gallagher, R. Grande, *A linear stochastic model of turbulent cascades and fractional fields* (2023). To appear on Annali della Scuola Normale Superiore di Pisa, Classe di Scienze *(arxiv:2301.00780)*

[2] M. A. Garrido, R. Grande, K. M. Kurianski, G. Staffilani, *Large deviations principle for the cubic NLS equation*. To appear on Comm. on Pure and Applied Mathematics (2022). *(arxiv:2110.15748)*

[3] R. Grande, K. M. Kurianski, G. Staffilani, *On the nonlinear Dysthe equation*, Nonlinear Analysis 207, 112292 (2021). *(arxiv:2006.13392)*

[4] R. Grande, *Space-time fractional Nonlinear Schrödinger equation*, SIAM J. Math. Anal (2019), 51(5), 4172-4212. *(arxiv:1810.07327)*

[5] R. Grande, I. Kovács, K. Kutnar, A. Malnič, L. Martínez, D. Marušič, *Equisizable partial sum families*, Journal of Algebraic Combinatorics 51, 273-296 (2020).

[6] M. Conder, R. Grande, *On embeddings of circulant graphs*, Electronic Journal of Combinatorics 22 (2015), # P2.28.

## Teaching Experience

BACHELOR LEVEL

| | | |
|---|---|---|
| Winter 2021 | **Math 316 - Differential Equations**, University of Michigan, | **42h** |
| Fall 2020 | **Math 116 - Calculus II**, University of Michigan, | **63h** |
| Spring 2020 | **Grader** for 18.615 - Introduction to Stochastic Processes, MIT | |
| Fall 2019 | **Grader** for 18.085 - Computational Science and Engineering I, MIT | |
| Spring 2019 | **Grader** for 18.615 - Introduction to Stochastic Processes, MIT | |
| Spring 2018 | **Recitation Instructor** for 18.03 - Differential Equations, MIT, | **28h** |
| Fall 2017 | **Recitation Instructor** for 18.02 - Multivariable Calculus, MIT, | **28h** |
| Fall 2016 | **Grader** for 18.085 - Computational Science and Engineering I, MIT | |

PhD LEVEL

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|---|---|---|
| June 2022 | **Large Deviations and PDEs**, SISSA, Trieste | **4h** |

## Student Supervision

Summer 2021 **Research Experience for Undergraduates co-mentor**
(with Z. Hani), University of Michigan
- *Students:* Yubing Cui and Joshua Messing
- *Project:* Wave Kinetic Equation and Kolmogorov-Zakharov Cascade Spectra
- *Download at:* `https://lsa.umich.edu/content/dam/math-assets/math-document1/reu-documents/Y.Cui%20_%20J.Messing_REU21.pdf`

Summer 2018 **Research supervisor for the *Undergraduate Research Opportunities Program***, MIT
- *Student:* Zixuan Xu
- *Project:* Almost Conservation Laws for KdV and Cubic NLS
- *Download at:* `https://math.mit.edu/research/undergraduate/urop-plus/documents/2018/Xu.pdf`

Summer 2016 **Research supervisor for the *Undergraduate Research Opportunities Program***, MIT
- *Student:* Eli Sadovnik
- *Project:* A Central Limit Theorem for Fluctuations of Internal Diffusion-Limited Aggregation with Multiple Sources
- *Download at:* `https://math.mit.edu/research/undergraduate/urop-plus/documents/2016/Sadovnik.pdf`

## Talks at Conferences and Workshops

March 2024 **Journées Jeunes EDPistes en France 2024**, Institut de Mathématiques de Toulouse
Nov 2023 **Simons Collaboration in Wave Turbulence Annual Meeting**, Courant Institute
Aug 2023 **School/Workshop on Wave Dynamics: Turbulent vs Integrable Effects**, ICTP Trieste
May 2023 **Nonlinear waves and turbulence workshop**, IHP
Sept 2022 **Trials in wave turbulence: from random waves to kinetic equations**, GSSI
May 2022 **Oberwolfach Workshop**, Deterministic Dynamics and Randomness in PDE, Junior talk
March 2022 **SIAM PD22**, Decay, Stability and Growth in Fluids and Wave Systems minisymposium
Dec 2021 **Simons Collaboration in Wave Turbulence Annual Meeting**, Courant Institute
May 2020 **Mathematics of Planet Earth: Analysis and Modelling**, Webinar
Jan 2020 **Winter School: Turbulence in fluids and PDEs**, Lausanne

## Talks at University Seminars

Jan 2024 **Séminaire EDP et Physique mathématique**, LAGA, Université Paris 13
Nov 2023 **Séminaire ÉDP, Modélisation et Calcul Scientifique** de Lyon-Saint Etienne
March 2023 **Séminaire Cristollien d'Analyse Multifractale**, Université Paris Est Créteil - Val de Marne
March 2023 **Séminaire GT Modélisation Stochastique**, LPSM, Université Paris Cité
Feb 2023 **Séminaire du Groupe de Travail EDP**, LAMA, Université Paris Est Créteil
Nov 2022 **Séminaire de Physique Non-Linéaire**, Dép. de Physique, ENS
May 2022 **Ghent Methusalem Junior Seminar**, Ghent University
March 2022 **Analysis and PDE seminar**, BCAM
Nov 2020 **Differential Equations Seminar**, University of Michigan
Jan 2020 **Seminar**, GSSI L'Aquila
Jan 2020 **BCAM Scientific Seminar**, BCAM
Nov 2019 **Brown-BU-UMass Amherst seminar in PDE and Dynamics**, Brown University

## Languages

**Basque**, Mother tongue — *Euskararen Gaitasun Agiria [C1], 2009*
**Spanish**, Mother tongue
**Italian**, Fluent
**English**, Fluent — *Certificate of Proficiency in English [C2], 2013*
**French**, Advanced
**Portuguese**, Good working knowledge — *Portuguese I-IV at MIT, 2017-18*