



# Gennady Uraltsev

## Curriculum Vitae

### Occupational field Higher education & research - mathematics

Area of Research Harmonic analysis, time-scale-frequency analysis, stochastic PDEs, functional analysis

**Current employment** Whyburn Research Associate and Instructor (Postdoc)

Current affiliation University of Virginia - Mathematics

### Employment history and education

- 2020– **Whyburn Research Associate**, *University of Virginia - Mathematics*, Charlottesville, VA, 22904, USA.
- 2017–2020 **HC Wang Assistant Professor**, *Cornell University - Mathematics Department*, Ithaca, NY, 14853, USA.

### Education

- 2013–2017 **PhD in Mathematics**, *Bonn International Graduate School, University of Bonn*, Bonn, Germany.
- 2011–2013 **Master of Science in Mathematics**, *Department of Pure and Applied Mathematics, University of Pisa*, Pisa, Italy, 110/110 Cum Laude.
- 2011–2013 **Diploma of Mathematics (Class of Science)**, *Scuola Normale Superiore*, Pisa, Italy, 70/70.
- 2008–2011 **Bachelor of Science in Mathematics**, *Department of Pure and Applied Mathematics, University of Pisa*, Pisa, Italy, 110/110 Cum Laude.
- 2008–2011 **First level Diploma of Mathematics (Class of Science)**, *Scuola Normale Superiore*, Pisa, Italy.

### Theses

- PhD thesis **Time-Frequency Analysis of the Variational Carleson Operator using outer-measure  $L^p$  spaces**, supervisor: Prof. Dr. Christoph Thiele, Bonn International Graduate School - University of Bonn.

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Master thesis **Multi-parameter Singular Integrals: Product and Flag Kernels**, supervisor: Prof. Fulvio Ricci, Pisa State University/Scuola Normale Superiore.

Bachelor thesis **Regularity of Minimizers of One-Dimensional Scalar Variational Problems with Lagrangians with Reduced Smoothness Conditions**, supervisor: Prof. Luigi Ambrosio, Pisa State University/Scuola Normale Superiore.

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## Publication list

- Chan, T., and Uraltsev, G. 2022. ‘Carleson embeddings with quadratic modulation invariance: the Walsh case’ *in preparation*
  - Casteras, J.B., Földes, J., and Uraltsev, G., 2022. ‘Higher order expansions for the probabilistic local well-posedness theory for a cubic nonlinear Schrödinger equation’ *in preparation*
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1. Casteras, J.B., Földes, J., and Uraltsev, G., 2022. “Almost sure local well-posedness for cubic nonlinear Schrödinger equation with higher order operators” *preprint arXiv:2203.03500*, submitted.
  2. Uraltsev, G. and Warchalski, M., 2022. “The full range of uniform bounds for the bilinear Hilbert transform” *preprint arXiv:2205.09851*.
  3. Amenta, A. and Uraltsev, G., 2020. “The variational Carleson operator in UMD spaces”. *Journal of the London Mathematical Society* 105.3 (2022): 1363-1417.
  4. Amenta, A. and Uraltsev, G., 2020. “The bilinear Hilbert transform in UMD spaces”. *December 2020 Mathematische Annalen* 378(8):1-93.
  5. Amenta, A. and Uraltsev, G., 2019. “Banach-valued modulation invariant Carleson embeddings and outer- $L^p$  spaces: the Walsh case”. *August 2020 Journal of Fourier Analysis and Applications* 26(4).
  6. Di Plinio, F., Do, Y.Q. and Uraltsev, G.N., 2018. “Positive Sparse Domination of Variational Carleson Operators”. *Annali della Scuola Normale Superiore di Pisa. Classe di scienze*, 18(4), pp.1443-1458.
  7. Uraltsev, G., 2016. “Variational Carleson embeddings into the upper 3-space”. *preprint arXiv:1610.07657*, submitted.
  8. C. Mantegazza, G. Mascellani, and G. Uraltsev, 2014. “On the distributional Hessian of the distance function”. *Pacific Journal of Mathematics* 270.1: pp.151-166.
- 
- PhD thesis. “Time-Frequency Analysis of the Variational Carleson Operator using outer-measure  $L^p$  spaces”, supervisor: Prof. Dr. Christoph Thiele, Bonn International Graduate School - University of Bonn
  - Master thesis. “Multi-parameter Singular Integrals: Product and Flag Kernels” supervisor: Prof. Fulvio Ricci, Pisa State University/Scuola Normale Superiore
  - Bachelor thesis. “Multi-parameter Singular Integrals: Product and Flag Kernels” supervisor: Prof. Luigi Ambrosio, Pisa State University/Scuola Normale Superiore

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## Selected talks

Mar 2023 **Southeastern Analysis Meeting 39 - Clemson University**, TBA, Semi-plenary speaker.

Sep 2022 **UVA Analysis and PDE seminar**, “Local well-posedness of the cubic NLS with randomized initial data”, speaker.

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- Mar 2022 **UVA Analysis and PDE seminar**, “Uniform bound for the Bilinear Hilbert transform”, speaker.  
**2022 AMS Spring Central Virtual Sectional Meeting**, “Uniform bound for the Bilinear Hilbert transform”, invited speaker.  
**UVA Analysis and PDE seminar**, “Uniform bound for the Bilinear Hilbert transform”, speaker.
- Oct 2021 **UVA Teaching seminar**, “Using computer assisted mathematics systems to teach multivariable calculus”, invited speaker.
- Oct 2021 **UVA Analysis and PDE seminar**, “Embedding maps, outer Lebesgue spaces, and time-scale-frequency analysis”, speaker.
- Feb 2021 - **Seminar in Analysis and Applications UAM-ICMAT**, “Banach-space-valued time-scale-frequency analysis”, invited speaker.  
Jun 2021 **Online Analysis Research Seminar**, “Some results in Banach space-valued time frequency analysis”, invited speaker.
- Sep 2020 - **Seminari a distanza di Analisi Armonica**, “Some results in Banach space-valued time frequency analysis”, invited speaker.  
Dec 2020 **Probability and Analysis Webinar**, “Some results in Banach space-valued time frequency analysis”, invited speaker.  
**UVA Analysis and PDE seminar**, “Some results in Banach space-valued time frequency analysis I & II”, speaker.
- Jul 2020 **Mathematisches Forschungsinstitut Oberwolfach, Germany, Work group seminar**, “Vector valued Calderón-Zygmund and time frequency analysis”, co-organizer.
- Mar 2020 **Cornell University, Oliver Club (colloquium)**, “Uniform bounds in harmonic analysis”, invited speaker.
- Oct 2019 **Washington University, St.Louis, Analysis seminar**, “Uniform bounds for the bilinear Hilbert transform”, invited speaker.
- Oct 2017 - **St. Petersburg Chebychev laboratory seminar**, “Uniform bounds for the bilinear Hilbert transform”, invited speaker.  
Dec 2017 **NEAM 2017: Second Northeastern Analysis Meeting**, “Uniform bounds for the bilinear Hilbert transform”, short talk speaker.
- Jun 2017 **Math Department, Delft University**, “Variational Carleson and beyond using embedding maps and iterated outer measure spaces”, invited speaker.
- Feb 2017 **Math Department, Nantes University**, “Time-frequency analysis of modulation invariant operators using outer measure spaces”, speaker.
- Dec 2016 **St. Petersburg Chebychev laboratory minicourse**, “Time-frequency analysis of modulation invariant operators using outer measure spaces”, lecturer-speaker.
- Nov 2016 - **Math Department, Brown University**, “Variational Carleson and beyond using embedding maps and iterated outer measure spaces”, invited speaker.  
May 2017 **Math Department, Michigan State University**, “Variational Carleson and beyond using embedding maps and iterated outer measure spaces”, invited speaker.

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**Math Department, Cornell University**, “Variational Carleson and beyond using embedding maps and iterated outer measure spaces”, invited speaker.

**Convegno nazionale di analisi armonica**, “Variational Carleson and beyond using embedding maps and iterated outer measure spaces”, invited speaker.

Feb.-Mar. 2016 **Math Department, Yale University**, “Time frequency analysis below local  $L^2$ : Iterated outer measure  $L^p$  spaces”, invited speaker.

**Math Department, Brown University**, “Time frequency analysis below local  $L^2$ : Iterated outer measure  $L^p$  spaces”, invited speaker.

2013-2016 **Math Department, Bonn University**, various topics, speaker at research group seminar.

## Awards and scholarships

- Bonn International Graduate School: Full Scholarship for 3-years
- Scuola Normale Superiore: Full Scholarship Award winner for a 5-year term of studies in the Science Class of Scuola Normale Superiore di Pisa. Total scholarships: 30 per year

## Olympiads

- International Physics Olympiad 2008, Vietnam : member of the Italian team, Honourable Mention
- National Physics Olympiad 2008, Italy: Gold Medal
- National Mathematics Olympiad 2008, Italy: Gold Medal
- National Physics Olympiad 2007, Italy: Gold Medal

## Teaching

### Courses

Aug 2022 - Calculus 3 - Multivariable *Instructor*, University of Virginia  
Dec 2022

Jan 2022 - Basic Real Analysis *Instructor*, University of Virginia  
May 2022

Aug 2021 - Calculus 3 - Multivariable *Instructor*, University of Virginia  
Dec 2021

Jan 2021 - Basic Real Analysis *Instructor*, University of Virginia  
May 2021

Aug 2020 - Introduction to Real Analysis *Instructor*, University of Virginia  
Dec 2020

Aug 2020 - Calculus 3 - Multivariable *Instructor*, University of Virginia  
Dec 2020

Jan 2020 - Honors Analysis I *Instructor*, Cornell University  
May 2020

Sept 2019 - Honors Analysis I *Instructor*, Cornell University  
Dec 2019

Sept 2019 - Graduate PDE I *Instructor*, Cornell University  
Dec 2019

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- Jan 2019 - Topics in Analysis: Rough path theory and paracontrolled distributions for (stochastic) ODEs and PDEs *Instructor*, Cornell University  
 May 2019
- Jan 2019 - Introduction to PDE *Instructor*, Cornell University  
 May 2019
- Aug 2018 - Real Analysis and Measure Theory *Instructor*, Cornell University  
 Dec 2018
- Jan 2018 - Multivariable Calculus *Instructor*, Cornell University  
 May 2018
- Aug 2017 - Calculus I *Instructor*, Cornell University  
 Dec 2017
- Oct 2014 - Introduction to Real and Harmonic Analysis *Teaching Assistant*, Universität Bonn,  
 Feb 2015 Professor: Prof. Dr. Herbert Koch
- March 2016 - Complex Analysis *Course assistant*, Universität Bonn, Professor: Prof. Dr. Christoph  
 Sept 2016 Thiele
- March 2015 - Analysis 2 *Course assistant*, Universität Bonn, Professor: Prof. Dr. Christoph Thiele  
 Sept 2015

#### Reading seminars

- Sep 2022 - **Rough paths and SPDEs**, *Reading seminar*, organizer and presenter, University of Virginia.
- Apr 2020 **Lebesgue Integration crash course**, *undergraduate students minicourse*, lecturer, Cornell University.
- Feb 2018 - **Polynomial methods in harmonic analysis**, *reading seminar*, organizer and pre-  
 Mar 2018 senter, Cornell University.

#### Other/service

- Aug 2022 - **Undergraduate directed reading program**, *Member of organizing committee*,  
 Dec 2022 University of Virginia.
- Jan 2022 - **Undergraduate directed reading program**, *Member of organizing committee*,  
 Mar 2022 University of Virginia.
- Aug 2021 - **Undergraduate directed reading program**, *Member of organizing committee*,  
 Dec 2021 University of Virginia.
- Aug 2021 - Preparation course for Putnam math competition *assistant*, University of Virginia  
 Dec 2021
- Aug 2019 - Preparation course for Putnam math competition *Instructor*, Cornell University  
 Dec 2019
- Aug 2018 - Preparation course for Putnam math competition *Instructor*, Cornell University  
 Dec 2018
- Aug 2017 - Preparation course for Putnam math competition *Instructor*, Cornell University  
 Dec 2017

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## Mentoring and outreach

- Sep 2022 **Undergraduate math club**, “Computer technologies for doing mathematics: from LaTeX to Mathematica and python”, speaker, University of Virginia.
- Sep 2022 **Undergraduate math club**, “Computer technologies for doing mathematics: from LaTeX to Mathematica and python”, speaker, University of Virginia.
- Jan 2022 – **Undergraduate directed reading**, “Introduction to Fourier analysis”, mentor,  
May 2022 mentee: Ningxin Zhang.  
University of Virginia
- Jan 2022 – **Undergraduate directed reading**, “Introduction to fractals and Hausdorff dimension”, mentor, mentee: Ivory Tang.  
May 2022 University of Virginia
- Sep 2021 – **Undergraduate thesis - Tiklung Chan**, “Weak  $L^2$ -boundedness of the Walsh  
Jan 2022 Quadratic Carleson operator”, advisor, Cornell University.
- Sep 2021 – **Undergraduate directed reading**, “Harmonic analysis”, mentor, mentee: Tiklung  
Jan 2022 Chan.  
Cornell University
- Mar 2021 **Undergraduate math club**, “Reality at different scales: randomness, chaos, fractals, and rough behavior”, speaker, University of Virginia.
- Oct 2017 **What is? seminar**, “What is time-scale-frequency analysis”, Cornell University.

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## Computer skills

**Administration of a computer cluster/ network administration** level: advanced.

**Linux** level: advanced.

**Computational mathematics tools (Jupyter/Mathematica):** level: intermediate.

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## Languages

- Russian **C2 - Proficient**– native language
- Italian **C2 - Proficient**
- English **C2 - Proficient**
- French **B2 - Independent user**
- German **A2 - Basic user**

### Certificates

- 2005 Certificate of Advanced English, University of Cambridge ESOL *Grade: A*
- 2012 TOEFL iBT *Reading: 30/30, Listening: 30/30, Speaking: 28/30, Writing: 30/30, Total: 118/120*

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## References

- Name Prof. Dr. Christoph Thiele
- Affiliation Bonn University (Germany)

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Affiliation University of Virginia (USA)  
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Name Prof. Michael Lacey  
Affiliation Georgia Institute of Technology (USA)  
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Name Prof. Francesco Di Plinio  
Affiliation Università di Napoli Federico II (Italy)  
Email francesco.diplinio@unina.it

Name Prof. Camil Muscalu  
Affiliation Cornell University(USA)  
Email camil@math.cornell.edu

Name Prof. Sara Maloni (teaching)  
Position / Organization University of Virginia (USA)  
Email sm4cw@virginia.edu

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