

VLAD DUMITRU MĂRGĂRINT

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Appointments

2023-
2022-2023
2019-2022

Tenure-Track Assistant Professor at the University of North Carolina at Charlotte.
Visiting Assistant Professor via Burnett Meyer Fellowship at the University of Colorado Boulder
Postdoctoral Fellow NYU Shanghai.

Research visits

2025
2025
2025

Probability seminar and research visit at KTH Stockholm. Sweden
Seed Seminar invitation at IHES, Paris, France
Probability Seminar invitation at Duke University, USA

2024
2024
2024
2023

Invitation for a themed research program in Cambridge, UK
Invited research at Alan Turing Institute in London and the University of Warwick
Invited research visit in Paris
Invitation at the Random Conformal Geometry workshop, South Korea.
Invitation at the 'The 24th Midrasa Mathematicae: Random Schrödinger Operators and Random Matrices', Israel Institute for Advanced Studies

2023
2023

Invitation and talk at the 10th Congress of Romanian Mathematicians.
Invitation at the Seminar on Stochastic Processes Annual Conference of the IMS (March 2023), University of Arizona, USA

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2020
2020

Invited research visit at the University of Utah, USA.
Invited research visit at the IAS Princeton, USA.
Invited 'SLE' workshop talk and research visit at the University of Pennsylvania.
Invited research visit at the University of Chicago, USA.
Invited research visit at the University of Tennessee, USA.
Research visit at Kyoto University, Japan.
Invited research visit at ISI, Delhi, India
Invited research visit at NUS, Singapore.
Invited research visit at the University of Luxembourg.
Invited research visit at Max Planck Institute for Mathematics in the Sciences, Leipzig.

Education

10/2015-08/2019

University of Oxford, Oxford, United Kingdom

DPhil (PhD) in Mathematics under the supervision of Prof. Dmitry Belyaev and Prof. Terry Lyons in *Pathwise and Probabilistic Analysis in the context of Schramm-Loewner Evolutions* under Terry Lyons's Grant: ERC No.291244 Esig, University of Oxford.

2018 09/2013 - 09/2015

ETH Zürich, Zürich, Switzerland

Graduated Master of Science in Mathematics supervised by Prof. Dr. Antti Knowles.

10/2010 - 06/2013

University of Bucharest, Faculty of Mathematics, Bucharest, Romania

Graduated Bachelor's in Mathematics supervised by Prof. Dr. Victor Vuletescu. Thesis: "Differential Geometry and General Relativity".

Work on Brownian motion on the Continuum Random Tree: Aldous' Conjecture

17. "On the cover time of Brownian motion on the Brownian continuum random tree-" with G. Andriopoulos, David A. Crodyon, and Laurent Menard. <https://arxiv.org/pdf/2410.03922> '

Work in Probabilistic Number Theory-as part of the extended research program of developing tools and studying Random Riemann Zeta functions, their properties and zeros

16. "On the analytic extension of Random Riemann Zeta Functions for some probabilistic models of the primes-" with S. Molchanov <https://arxiv.org/pdf/2410.03044>

Work in the mathematical analysis of Statistical Mechanics models-as part of the extensive research program to create tools for studying challenging long-range, general spins models and their scaling limits

15. " Local Central Limit Theorem for unbounded long-range potentials-" with E. Endo, R. Fernandez, T. Xuan, <https://www.arxiv.org/abs/2408.04542>

14.[2025]" Scaling Limits of Disorder Relevant Non-Binary Spin Systems-" with L.Li and R.Sun, appeared in *Stochastics and Partial Differential Equations: Analysis and Computations* <https://arxiv.org/pdf/2410.00579>

13.[2022]"Local Central Limit Theorem for Two-Body Potentials at Sufficiently High Temperatures" with Eric O. Endo-appeared in *Journal of Statistical Physics* <https://link.springer.com/article/10.1007/s10955-022-02994-4>

Work at the interface between Schramm-Loewner Evolutions and Random Matrix Theory as part of the wide research program aimed at studying one field with fundamental techniques from another such as bringing techniques corresponding to the nicer analytical object that is the resolvent, as an alternative to the analysis of the singular SLE drivers, .etc.

12.[2025]"Rate of convergence in Multiple SLE using Random Matrix Theory" with A. Campbell, and K. Luh- appeared in *Random Matrix Theory and Applications* <https://www.worldscientific.com/doi/10.1142/S201032632450028X> [We show how one can apply modern tools in Random Matrix Theory in the different field of SLE.](#)

Work on deterministic Loewner Theory, Schramm-Loewner Evolutions (and its connections with Rough Path Theory)-as part of the extensive research program to develop a pathwise approach to SLE theory, and study approximations and stability in parameters of objects in SLE theory described by singular equations as analogies with the classical stochastic dynamics theory

- 11.[2025] **"Splitting algorithm and normed convergence for drawing the random Loewner curves"** with J. Chen, to appear in Proceedings of the Royal Society A-
<https://arxiv.org/pdf/2507.02776>
- 10.[2024] **"On Loewner chains driven by semimartingales and complex Bessel-type SDEs"** with A. Shekhar and Y. Yuan <https://tinyurl.com/3p9tdx37> **appeared in the 'Annals of Applied Probability'**
- 9.[2024] **"Convergence to closed-form distribution for the backward SLE at some random times and the phase transition at $\kappa = 8$."** with Terry Lyons and Sina Nejad
<https://www.sciencedirect.com/science/article/abs/pii/S0167715223001827>
 appeared in 'Statistics and Probability Letters'
- 8.[2023] **"Deterministic Loewner Theory: Drivers, hitting times, and weldings in Loewner's equation"** with T. Mesikepp appeared in *Journal of the London Mathematical Society* <https://londmathsoc.onlinelibrary.wiley.com/doi/abs/10.1112/jlms.12843> **My first joint result in deterministic Loewner theory that uses different methods from the Probability tools that I used so far.**
- 7.[2023] **"A Gaussian free field approach to the natural parametrisation of SLE4-"** with L. Schoug-appeared in *Electronic Communications in Probability* <https://tinyurl.com/3sn4td5a>
- 6.[2023] **"Law of the SLE tip"** with O. Butkovski and Y. Yuan - appeared in *Electronic Journal of Probability*
<https://tinyurl.com/tcv9kudhf>
- 5.[2022] **"Perturbations of Simultaneously Growing Multiple Schramm-Loewner Evolutions"** with J. Chen - appeared in *Stochastic processes and their Applications*
<https://www.sciencedirect.com/science/article/abs/pii/S0304414922001508f>
- 4.[2022] **"An asymptotic radius of convergence for the Loewner equation and simulation of SLE traces via splitting"** with Terry Lyons and James Foster - appeared in *Journal of Statistical Physics*
<https://link.springer.com/article/10.1007/s10955-022-02979-3>
- 3.[2021] **"Continuity of Zero-Hitting Times of Bessel Processes and Welding Homeomorphisms of SLE_κ "** with Atul Shekhar and Dmitry Belyaev - appeared in *ALEA- Latin American Journal of Probability and Mathematical Statistics*
<https://alea.impa.br/articles/v18/18-04.pdf>
- 2.[2021] **"Continuity in κ in SLE theory using a constructive method and Rough Path Theory"** with Terry Lyons and Dmitry Belyaev - appeared in *Annales de l'Institut Henri Poincaré*
<https://encr.pw/Qocxu>

Work on Random Matrix Theory

- 1.[2018] **"Convergence of Quantum Diffusion in a Random Band Matrix Model"** - appeared in the *Journal of Statistical Physics*
<https://link.springer.com/article/10.1007/s10955-018-2065-2>

Research projects with undergraduate students

- 2.[2025] **"Schramm-Loewner Evolutions and Neural Networks"** with Neilesh Shrotri, Columbia University- available upon request, submitted to a journal.
- 1.[2025] **"Fluctuations of the multiple SLE driven by Dyson Brownian Motion"** with Phillip Kim, Georgia Tech, available upon request, submitted to a journal.

Academic Awards and Honours

2024

Recipient of a Travel Award sponsored by the NSF and IMS after a national competition for new Assistant Professors, to attend the New Researchers Conference in Portland Oregon, (NRC 2024) .

2024	Recipient of Travel award to attend a research program at the University of Cambridge.
2023	Recipient of Travel Grant to attend the Seminar on Stochastic Processes Annual Conference of the IMS, University of Arizona, USA
2023	Recipient of Travel Grant to attend the 'Random Conformal Geometry' workshop, Jeju Island, South Korea
2022	Recipient of NYU Travel Grant.
2021	Recipient of Chebyshev Grant offered by the International Mathematical Union covering full local expenses and airfare to attend the International Congress of Mathematicians 2022.
08/2020	Invited talk (one of the four) at the Rough Path Section at the "10th World Congress in Probability and Statistics", Seoul, Korea, 2020 (postponed 2021).
2019	St. John's College Oxford Travel Scholarship.
2018	James Fund Travel Scholarship.
2017-2018	Mathematical Institute Department Award, £7000, University of Oxford.
2016	St. John's College Travel Scholarship.
2016	3rd Prize in the Posters Presentations at the UK meeting in Probability, Lancaster.
2015-2018	EPSRC 1657722 Studentship, University of Oxford.
2014-2015	ETH Zürich Master's scholarship for academic achievement.
2013	Finalist (top 5) at Romanian Student of the year 2013 offered by the Romanian Academy.
2012-2013	Young Researcher Performance Scholarship awarded by the University of Bucharest for the highest undergraduate achievement and research potential.
2012	Dean's Summer Student Scholarship offered by the Physics Department of UCL. Supervisors: Prof. Filipe Abdalla, Prof. Jason McEwen(UCL). I developed algorithms in Matlab for implementing Shapelets mathematical formalism and integrated them in the Compressive Sensing solver.
2010	Bronze Medal -International Olympiad of Astronomy and Astrophysics, China.
2009	Silver Medal -International Olympiad of Astronomy and Astrophysics, Iran.
2009-2010	Member of the extended team of Romania for the International Physics Olympiad (IPhO) in 2009 and 2010.

Presentations

07/2025	Invited Talk at a Contributed Session of Stochastic Processes and their Applications in 2025 in Poland.
06/2025	Invited Short Talk at the Workshop on stochastic interacting particle systems and random matrices workshop, Renyi Institute, Budapest
04/2025	Invited Talk at the Stochastic Equations and particle systems workshop, La Sapienza University, Rome
03/2025	Invited Talk at the Probability Seminar at Aalto University, Finland
03/2025	Invited Talk at the Probability Seminar at KTH Stockholm, Sweden
03/2025	Invited Talk at Seed Seminar, IHES, Paris, France.
09/2024	Invited Talk at Duke University Probability Seminar.
03/2023	Invited Talk at the University of Utah Probability Seminar.
11/2022	Invited Talk at the University of Chicago Probability Seminar.
11/2022	Invited Talk at the University of Tennessee Probability Seminar.
06/2022	Invited Talk at the 'Kansai Probability Seminar' Kyoto University.
06/2022	Invited Talk at the ISI Delhi Probability Seminar.
05/2022	Invited Talk at the National University of Singapore Probability Seminar.
05/2022	Invited Mini-course at the University of Colorado Boulder in 'Schramm-Loewner Evolutions'.
03/2022	Invited Talk at the Institute of Mathematics of the Romanian Academy Potential Theory Seminar.
11/2021	Invited Plenary Talk at the 'Young Researchers Workshop', organizer: Romanian Probability Society.
03/2021	Invited talk at the Probability Seminar, East-China Normal University.
12/2020	Invited talk at "Probability: Models and Applications", organized by NUS (Singapore) and ECNU, Shanghai.
08/2020	Online Talk at the One-World Bernoulli-IMS Conference.

07/2020	Online Talk at the 13th Berlin-Oxford Meeting.
07/2020	Invited Talk at the 15th Franco-Romanian Colloquium in Mathematics.
03/2020	Invited Talk at the NYU Shanghai-Kyoto University Probability Workshop (Japan).
01/2020	Invited Talk at the IMAR (Institute of Mathematics of the Romanian Academy).
01/2020	Invited Talk at the Analysis Seminar -Max Planck Institute -Leipzig.
01/2020	Invited Talk at the Probability Seminar -Freie Universitaet Berlin.
12/2019	Invited Talk at the Probability Seminar - Beijing Normal University.
09/2019	Invited Talk at the Probability Seminar - NYU Shanghai.
08/2019	Invited mini-course at TU Berlin from the work of my PhD Thesis.
07/2019	Invited Talk at the "The 20th INFORMS Applied Probability Society Conference"-Brisbane Australia.
06/2019	Invited Talk at the Workshop of Young Romanian Researchers in Mathematics-University of Bucharest.
01/2019	Invited Talk at the Probability Seminar-Bielefeld University.
07/2018	Invited Talk at the Summer School "Geometry and scaling of random structures", Buenos Aires, Argentina.
06/2018	Invited Talk at the 9th Oxford-Berlin meeting.
06/2018	Contributed Talk at "Stochastic Processes and Applications" (SPA), Gothenburg, Sweden.
06/2018	Invited Talk at the conference "Conformal Random Geometry and Related Fields", KIAS, Seoul, South Korea.
04/2018	Invited Talk at the "Pathwise SLE Meeting", TU Berlin.
10/2017	Invited Talk at the 8th Oxford-Berlin Meeting, Oxford, United Kingdom.
10/2017	Invited Talk at the Seminar of Stochastic Analysis, University of Oxford.
04/2017	Invited Talk at the workshop "Afternoon meeting in Rough Paths Theory", University of Reading, United Kingdom.
08/2016	Invited Talk at the 5th Oxford-Berlin Meeting, Berlin, Germany.
07/2016	Contributed Talk at the World Congress of Probability, Toronto, Canada.
06/2016	Contributed Talk at the Research Students Conference, Dublin, Ireland.
06/2016	Poster Presentation at the 3rd BCN Summer School on Stochastic Analysis, Barcelona, Spain.
04/2016	Poster Presentation at the UK Easter Probability Meeting, Lancaster University, UK.

Teaching experience

UNCC	Introduction to Probability and Statistics (Fall 2023 and Fall 2024), and ' Introduction to Probability Theory' Graduate course, part of the Qualification Exams (Spring 2024).
CU Boulder	Lecturer for 'Linear Algebra for Non-Mathematics Majors' (Fall 2022), and 'Introduction to Probability and Statistics' (Fall 2022).
NYU Shanghai	Course Leader/Lecturer for Calculus summer course (2022) Mathematics for Economics II (2021) for NYU Courant. The course was in mixed-mode in the beginning and covered three main topics all with applications in Economics: Multivariable functions, Linear Algebra, and Calculus. The design included weekly quizzes as well as homework and 3 midterm exams (and two make-up exams). Instructor for Calculus (mixed-mode) (Fall 2020) (First year, ~ 300 students), Linear Algebra (online) (Spring 2020) (First year, ~ 30 students), Honors Analysis I (online) (Spring 2020) (Second year, ~ 30 students), Calculus (Fall 2019) (First year, ~ 320 students). Attended the Course Design Studio for online teaching offered by Prof. Jace Hargis (2020). Attended course at the Center for Teaching and Learning offered by Prof. Jace Hargis: An introduction to College Teaching (2019). Nominated for "Making a Difference Award" at NYU.
University of Oxford	Revision classes for Stochastic Differential Equations (Spring 2017), Applied Probability (Spring 2017).

Tutor for: Distribution Theory and Fourier Analysis (Winter 2018) (Master, ~ 20 students) Statistics and Data Analysis (Spring 2017, Spring 2018)(First year, ~ 10 students), Statistical Mechanics (Winter 2017)(Master, ~ 20 students), Continuous Martingales and Stochastic Calculus (Spring 2017)(3rd year, ~ 30 students), Complex Analysis: Conformal maps and Geometry (Winter 2017) (Master, 4 students), Applied Probability (Winter 2017), Stochastic differential equations (Winter 2017) (Master, ~ 20 students), Numerical Analysis (Spring 2016) (First year, 6 students).

Teaching Assistant for Master courses: Complex Analysis: Conformal maps and Geometry (Spring 2017)(Master, ~ 20 students), Stochastic Analysis and PDE's (Spring 2016)(Master, ~ 20 students), Approximations of functions(Winter 2015)(Master, ~ 20 students).

Nominated for the University prize "Student-Led Teaching Award", University of Oxford.

Teaching Assistant for Methods of Mathematical Physics II (Spring 2015)(Third-year, ~ 10 students), Analysis I (Fall 2014)(First year, ~ 10 students), Analysis II (Spring 2014)(First year, ~ 20 students).

Mentoring Experience

2 REU summer projects students in 2024: One from Georgia Tech and one from Columbia University.

6 REU summer projects students in 2023, all from CU Boulder.

Andrew Campbell (now at ISTA Austria).

Jionji Guo (now at the University of Geneva)

Yiyang Shao (Senior Thesis supervision at NYU Shanghai)

Jiaming Chen (NYU student that couldn't return to the USA, now accepted at ETH Zurich).

Professional Memberships

Member of the Bernoulli Society, Institute of Mathematical Statistics, and the American Mathematical Society.

Editorial Service

Invited referee for **Journal of Statistical Physics**, **Annales de l'Institut Henri Poincaré**, **Mathematical Reviews/MathSciNet** by the **American Mathematical Society**. Referee for **Probability Theory and Related Fields (PTRF)**, **Electronic Communications in Probability (ECP)**, **Annales de L'Institut Henri Poincaré (AIHP (B))**, **Foundations of Data Science**, **Stochastic Analysis and Applications**, and **American Mathematical Society** (book).

Service and Organization

2024

Member of the Colloquium Organization Committee at the University of North Carolina at Charlotte.

2023-2024

Member of the Qualification Exam for Probability Theory I 8120 and of the Number theory Qualification Exam in 2024 at the University of North Carolina at Charlotte Chair of the committee in Spring 2024.

2022

Member of the Diversity Committee at CU Boulder, USA (volunteer at organizing 'Math for All in Boulder' conference - invited talk at this conference as well- , Co-organizer of the 'Unconscious bias in the classroom workshop'; worked with graders and assistants from under-represented groups such as LGBTQ+ community members, etc. As I am myself coming from one of the poorest areas in Europe, it is my mission also to help others in similar situations.)

2021

Panel member invitation to Oxford Mathematrix.

2020

Member of a jury for an international technology competition organized by OMV and Vodafone.

2020

Organizer of the Course-Design Studio for Online Teaching, Romania.

2019, 2020

One of the organizers of the NYU Shanghai Probability Seminar.

2019

Attended Committee meetings at NYU Shanghai.

2016-2018

Academic Assistant for Prof. Jan Obłój at St. John's College:

12/2017	<p>Organization committee for the one-week Conference Robust Techniques in Quantitative Finance, Oxford, September 2018; organizing a database in “Papers”, marking collections in Probability and Statistics, giving tutorials in Statistics, writing various codes for simulations.</p> <p>Member of the organizing committee of the 8th Oxford-Berlin meeting</p> <p>The workshop took place in Oxford and gathered researchers working on Rough Paths Theory and Regularity Structures.</p>
11/2017	<p>Member of the selection committee for undergraduate admissions at St. John’s College, Oxford.</p>
04/2017	<p>Member of the committee for a Master’s Thesis.</p> <p>Examiner of Patrick Kidger’s Master Thesis “Polynomial Approximations of Holomorphic Functions” at the University of Oxford.</p>
12/2016	<p>Member of the organizing committee of the 6th Oxford-Berlin meeting.</p>
03/2016	<p>Preparation for the International Olympiad of Astronomy and Astrophysics.</p> <p>Training the team for the theoretical exam of the International Olympiad of Astronomy and Astrophysics 2016 by solving various Physics and Celestial Mechanics problems.</p>

Working Seminars presentations

05/2018	<p>Talk at the Reading Group on “Random Planar Waves”: Local statistics of lattice points on the sphere by Jean Bourgain, Peter Sarnak and Zeév Rudnick.</p>
03/2018	<p>Talk at the Reading Group “Theory of Regularity Structures”: Wick products and renormalization in Regularity Structures.</p>
11/2017	<p>Talk at the Reading Group “Theory of Regularity Structures”: Schauder estimates in PDEs and Regularity Structures.</p>
04/2017	<p>Talk at the Oxford Junior Probability Seminar: SLE with Rough Paths Theory.</p>
06/2017	<p>Talk at the Oxford Junior Probability Seminar: Quantum Diffusion and Random Matrix Theory.</p>
04/2016	<p>Talk at the Reading Group “Machine Learning and Rough Paths”: Kernel methods in Machine Learning.</p>

Outreach and Public Engagement

2020	<p>Talk at the Romanian Science Festival: “Applied Mathematics in problems of dynamics: motion of planets and spread of viruses”.</p>
2017	<p>Talk at the The Oxford Invariants : “An evening flight over two modern Mathematical Theories: Random Fractal Planar Curves and Rough Path Theory.”</p>
2017	<p>Talk at the Oxford Research Forum (organized by the Oxford Romanian Society): Probabilistic and deterministic modelling of “reality” (Markov Chains, Brownian motion and the study of the Brownian Motion Paths in Rough Paths Theory).</p>
2017	<p>Mentor for Romanian Students studying Mathematics on United Kingdom Universities via LSRS mentoring scheme.</p>
2018	<p>Mini-Course at the one-week Oxford for Romania Summer School in “Fractals”.</p>
2017	<p>Mini-Course at the one-week Oxford for Romania Summer School in “Examples and Counterexamples in Analysis”, based on the book of Bernard R. Gelbaum, John M. H. Olmsted “Counterexamples in Analysis”.</p>
2016	<p>Mini-Course at the one-week Oxford for Romania Summer School in “Basic ideas in Differential Geometry”.</p>
2015	<p>Talk at the Oxford Research Forum (organized by the Oxford Romanian Society): Mathematical Theorems on Randomness (Survey talk: open questions in Random Matrix Theory).</p>
2014	<p>National TV-Series: “Road to Success” interviewed in Season 1, Episode 1.</p>
2012	<p>Second prize and public favorite in the Romanian National Finals-Famelab 2012- presenting “The Universe between Mathematics and Magic- the Gauss Egregium Theorem”.</p>

Skills and Interests

Languages: *Romanian:* mother tongue.

English: fluent (TOEFL iBT Score 102/120).
French: intermediate knowledge.
Spanish: Basic knowledge.
Chinese: Basic Knowledge (Attending Beginners Classes offered by NYU Shanghai).
Operating Systems: Linux, Windows.
Programming: Matlab (advanced level), Python, R (medium level).
Others: \LaTeX , Wolfram Mathematica, Papers, Inkscape, Microsoft Office.
 Arts, Football, Tennis. Research oriented discussions and debate events.

IT and Data Skills:

Other Interests:

References

Research:

1. **Prof. Terry Lyons, University of Oxford**: terry.lyons@maths.ox.ac.uk;
2. **Prof. Peter Friz, TU Berlin**: friz@math.tu-berlin.de;
3. **Prof. Rongfeng Sun, NUS Singapore**: matsr@nus.edu.sg
4. **Prof. David Croydon, RIMS, Kyoto, Japan**: croydon@kurims.kyoto-u.ac.jp
5. **Prof. Roberto Fernandez, NYU Shanghai**: rf87@nyu.edu;
6. **Prof. Dmitry Belyaev, University of Oxford**: belyaev@maths.ox.ac.uk;
7. **Prof. Laurent Ménard, NYU Shanghai/Paris-Nanterre**: lm1346@nyu.edu;
8. **Prof. Antti Knowles, University of Geneva**: Antti.knowles@unige.ch;
9. **Prof. Filipe Abdalla, University College London**: fba@star.ucl.ac.uk;
10. **Prof. Jan Obłój, University of Oxford**: obloj@maths.ox.ac.uk.
11. **Prof. Jace Hargis, Kean University**: jace.hargis@gmail.com
12. **Prof. Jason Miller**: jpmiller@statslab.cam.ac.uk

Service and teaching:

Teaching:

If any extra information needed: