Lorenzo Dello Schiavo

Contact Information

Curriculum Vitæ

- delloschiavo()mat.uniroma2.it orcid.org/0000-0002-9881-6870
- Università degli Studi di Roma "Tor Vergata" Via della Ricerca Scientifica 1 00133 Roma, Italy

Academic appointments

- 11/2024– **Assistant Professor (Ricercatore in tenure track)**, *Università degli Studi di Roma "Tor Ver-*present *gata"*, Rome, IT.
- 09/22–11/2024 **FWF ESPRIT Fellowship**[™], *Institute of Science and Technology Austria*, Klosterneuburg, AT.
 - 09/20–06/22 **PostDoc**, Institute of Science and Technology Austria, Klosterneuburg, AT.
 - o Spezialforschungsbereich (Special Research Center) 65: *Taming Complexity in Partial Differential Systems*, Project P3: *Structure preserving variational discretisation via optimal transport* [☑], PI: Prof. Dr. J. Maas
 - 11/15-08/20 **Scientific collaboration**, IAM[©] @ HCM[©], Bonn, DE.
 - 09/16–08/20 o Sonderforschungsbereich (Collaborative Research Center) 1060: *The mathematics of emergent effect*, Project B03: *Optimal transport and random measures* [☑], Pl's: Prof. Dr. K.-T. Sturm, Dr. M. Huesmann.
 - 11/15-09/16 o Hausdorff Center for Mathematics.

Education

- 11/15–11/19 **Ph.D. in Mathematics (Dr. rer. nat.)**, *BIGS* [™] *@ University of Bonn*, Bonn.
 - o Thesis: Diffusions on Wasserstein Spaces (supervisor: K.-T. Sturm)
 - o Defense: viva in English, November 26, 2019, magna cum laude
 - 10/15 **Visiting studentship**, *IAM* [□] *@ HCM* [□], Bonn, <u>m</u> Group of Stochastic Analysis.
- 10/13-09/15 **★ M.Sc. in Mathematics (Laurea Magistrale)**, Sapienza Università di Roma[™], Rome.
 - o **Thesis:** Heat equation on metric measure spaces (in English, supervisor: A. Pisante)
 - o **Defense:** viva in Italian, September 21, 2015, with honors (con lode)
- 10/10–10/13 **★ B.Sc. in Mathematics (Laurea Triennale)**, Sapienza Università di Roma[™], Rome.
 - o Thesis: Misure di probabilità e spazi di Wasserstein (in Italian, supervisor: A. Pisante)
 - o Defense: viva in Italian, October 29, 2013, with honors (con lode)

Teaching experience

Lecturer, Università degli studi di Roma "Tor Vergata", Rome, IT.

03/25-05/25 undergraduate lecture course, Fisica, misura, errore e statistica.

Lecturer, Institute of Science and Technology Austria, Klosterneuburg, AT.

- 04/24-06/24 graduate lecture course, Optimal transport.
- 04/22-06/22 graduate lecture course, Fractional Gaussian Fields, joint with F. Sau.
- 11/20-01/21 lecture course, Maths for quantitative life scientists: Probability and Statistical Inference.

Teaching assistant, University of Bonn, Bonn, DE.

- 04/19-07/19 undergraduate lecture course, Algorithmische Mathematik II, lecturer: Prof. Dr. P. Ferrari.
- 10/18–12/18 graduate lecture course, *Advanced Topics in Stochastic Analysis Functional inequalities and stochastic analysis on manifolds*, lecturer: Prof. Dr. K. Kuwada.
- 04/18-09/18 graduate lecture course, Stochastic Analysis, lecturer: Prof. Dr. K. Kuwada.
- 10/16-03/17 graduate lecture course, Introduction to Stochastic Analysis, lecturer: Dr. M. Erbar.

Research papers

- (1) L. Dello Schiavo and K. Suzuki. Persistence of Rademacher and Sobolev-to-Lipschitz Properties. *Adv. Math. (in press, see arXiv:2309.10733)*, 2023. 40 pp. doi:10.48550/arXiv.2309.10733
- (2) L. Dello Schiavo, M. Magnabosco, and C. Rigoni. Gradient flows of (K, N)-convex functions with negative N. Calc. Var. Part. Diff. Eq. (to appear, see arXiv:2412.04574), 2024. doi:10.48550/arXiv.2412.04574
- (3) L. Dello Schiavo and V. Konarovskyi. Ill-posedness of the pure-noise Dean–Kawasaki equation. *Electron. Commun. Probab.*, 30:1–9, 2025. doi:10.1214/25-ECP702
- (4) L. Dello Schiavo, R. Herry, E. Kopfer, and K.-T. Sturm. Polyharmonic Fields and Liouville Quantum Gravity Measures on Tori of Arbitrary Dimension: from Discrete to Continuous. *Math. Nachr.*, 298(1):244–281, 2024. doi:10.1002/mana.202400169
- (5) L. Dello Schiavo, R. Herry, E. Kopfer, and K. Sturm. Conformally invariant random fields, Liouville quantum gravity measures, and random Paneitz operators on Riemannian manifolds of even dimension. *J. London Math. Soc.*, 110(5), October 2024. 80 pp. URL: http://dx.doi.org/10.1112/jlms.70003, doi:10.1112/jlms.70003
- (6) L. Dello Schiavo, R. Herry, and K. Suzuki. Wasserstein geometry and Ricci curvature bounds for Poisson spaces. *J. École Poly.*, 11:957–1010, 2024. 55 pp. doi:https://doi.org/10.5802/jep. 270
- (7) L. Dello Schiavo, J. Maas, and F. Pedrotti. Local Conditions for Global Convergence of Gradient Flows and Proximal Point Sequences in Metric Spaces. *Trans. Amer. Math. Soc.*, 377(6):3779–3804, 2024. 25 pp. doi:10.1090/tran/9156
- (8) L. Dello Schiavo. A Characterization of Maps of Bounded Compression. *Math. Commun.*, 29:137–142, 2024. doi:10.48550/arXiv.2304.11348
- (9) L. Dello Schiavo, E. Kopfer, and K.-T. Sturm. A Discovery Tour in Random Riemannian Geometry. *Potential Anal.*, 61:501–553, 2024. doi:10.1007/s11118-023-10118-0
- (10) L. Dello Schiavo, L. Portinale, and F. Sau. Scaling Limits of Random Walks, Harmonic Profiles, and Stationary Non-Equilibrium States in Lipschitz Domains. *Ann. Appl. Probab.*, 34(2):1789–1845, 2024. doi:10.1214/23-AAP2007

- (11) L. Dello Schiavo and E. W. Lytvynov. A Mecke-type Characterization of the Dirichlet–Ferguson Measure. *Electron. Commun. Probab.*, 28:1–12, 2023. doi:10.1214/23-ECP528
- (12) L. Dello Schiavo and M. Wirth. Ergodic Decompositions of Dirichlet Forms under Order Isomorphisms. *J. Evol. Equ.*, 23(9), 2023. 22 pp. doi:10.1007/s00028-022-00859-7
- (13) T. Cremaschi and L. Dello Schiavo. Effective Contraction of Skinning Maps. *Proc. Amer. Math. Soc. B*, 9:445–459, 2022. doi:10.1090/bproc/134
- (14) L. Dello Schiavo. The Dirichlet–Ferguson Diffusion on the Space of Probability Measures over a Closed Riemannian Manifold. *Ann. Probab.*, 50(2):591–648, 2022. 58 pp. doi:10.1214/21-A0P1541
- (15) L. Dello Schiavo and K. Suzuki. Sobolev-to-Lipschitz Property on QCD-spaces and Applications. *Math. Ann.*, 384:1815–1832, 2022. 18 pp. doi:10.1007/s00208-021-02331-2
- (16) L. Dello Schiavo and K. Suzuki. Rademacher-type theorems and Sobolev-to-Lipschitz properties for strongly local Dirichlet spaces. *J. Funct. Anal.*, 281(11):109234, dec 2021. 63 pp. doi: 10.1016/j.jfa.2021.109234
- (17) L. Dello Schiavo. Ergodic Decomposition of Dirichlet Forms via Direct Integrals and Applications. *Potential Anal.*, 58:573–615, 2023. 43 pp. doi:10.1007/s11118-021-09951-y
- (18) L. Dello Schiavo. A Rademacher-type theorem on L^2 -Wasserstein spaces over closed Riemannian manifolds. J. Funct. Anal., 278(6):108397, 2020. 51 pp. doi:10.1016/j.jfa.2019.108397
- (19) L. Dello Schiavo. Characteristic functionals of Dirichlet measures. *Electron. J. Probab.*, 24(115):1–38, 2019. doi:10.1214/19-EJP371
- (20) E. Agliari, A. Barra, L. Dello Schiavo, and A. Moro. Complete integrability of information processing by biochemical reactions. *Sci. Rep.*, 6:36314, 2016. doi:10.1038/srep36314
- (21) L. Dello Schiavo. Marcinkiewicz continuity estimates for infinite energy solutions of some second order elliptic Dirichlet problems. *B. Unione Mat. Ital.*, 8:97–112, September 2015. 16 pp. doi: 10.1007/s40574-015-0028-y
- (22) E. Agliari, M. Altavilla, A. Barra, L. Dello Schiavo, and E. Katz. Notes on stochastic (bio)-logic gates: computing with allosteric cooperativity. *Sci. Rep.*, 5:9415, 2015. doi:10.1038/srep09415

Preprints

- [23] L. Dello Schiavo and G. E. Sodini. The Hellinger–Kantorovich metric measure geometry on spaces of measures. arXiv:2503.07802, 2025. 96 pp. doi:10.48550/arXiv.2503.07802
- [24] L. Dello Schiavo. Massive Particle Systems, Wasserstein Brownian Motions, and the Dean–Kawasaki Equation. arXiv:2411.14936, 2024. 103 pp. doi:10.48550/arXiv.2411.14936
- [25] L. Dello Schiavo and F. Quattrocchi. Multivariate Dirichlet Moments and a Polychromatic Ewens Sampling Formula. arXiv:2309.11292, 2023. doi:10.48550/ARXIV.2309.11292
- [26] L. Dello Schiavo and K. Suzuki. Configuration Spaces over Singular Spaces II Curvature. arXiv: 2205.01379, 2022
- [27] L. Dello Schiavo and K. Suzuki. Configuration Spaces over Singular Spaces I Dirichlet-Form and Metric Measure Geometry. *arXiv:2109.03192*, 2021. 85 pp.

Proceedings

{28} L. Dello Schiavo. A Discovery Tour in Random Riemannian Geometry. In J. Kerner, M. Täufer, and P. Yatsyna, editors, *Mini-Workshop: A Geometric Fairytale full of Spectral Gaps and Random Fruit*, volume 19 of *Oberwolfach Rep.*, pages 3051–3092. EMS Press, 2023. doi:10.4171/0WR/2022/53

- {29} L. Dello Schiavo. Conformally Invariant Random Fields, Quantum Liouville Measures, and Random Paneitz Operators on Riemannian Manifolds of Even Dimension. In M. Gordina, T. Kumagai, L. Saloff-Coste, and K.-T. Sturm, editors, Heat Kernels, Stochastic Processes and Functional Inequalities, volume 19 of Oberwolfach Rep., pages 2811–2893. EMS Press, 2023. doi: 10.4171/0WR/2022/49
- {30} L. Dello Schiavo. The Dirichlet–Ferguson Diffusion on the Space of Probability Measures over a Closed Riemannian Manifold. In M. Gordina, T. Kumagai, L. Saloff-Coste, and K.-T. Sturm, editors, Heat Kernels, Stochastic Processes and Functional Inequalities, volume 16 of Oberwolfach Rep., pages 3348–3350. EMS Press, 2020. doi:10.4171/0WR/2019/54

Popularization of Science

- {31} L. Dello Schiavo and A. E. Baccaglini-Frank. La quantità del nulla. Ithaca, X, 2017. In Italian
- {32} G. Cecchetti and L. Dello Schiavo. Nature of language vs. language of nature The limits of human languages in describing nature. In A. Altamore and G. Antonini, editors, Galileo and the Renaissance Scientific Discourse, proceedings of the First Roma Workshop on Past and Present Perceptions of Science, Rome, May 6, 2009. Ed. Nuova Cultura, 2010

Research stays

- 06/25 CIRM (Trento), 1 week, FBK Research in Pairs programme with A. Pinamonti
- 02/25 Technische Universität München, 3 days, invitation by J. Zimmer
- 01/25 Technische Universität Berlin, 3 days, invitation by B. Gess and N. Perkowski
- 12/24 Università Statale di Milano, 2 days, invitation by S. Stuvard and F. Cavalletti
- 11/24 Università di Trieste, 1 week, invitation by F. Sau
- 07-08/24 IAM Bonn, 1 week, invitation by L. Portinale and M. Gordina
 - 07/24 IAM Bonn, 3 days, invitation by L. Portinale
 - 06/24 Universität Hamburg, 4 days, invitation by V.V. Konarovskyi
 - 02/24 Università di Roma 'Tor Vergata', 5 days, invitation by D. Marinucci
 - 11/23 Università di Trento, 3 days, invitation by A. Pinamonti
 - 11/23 Universität Münster, 4 days, invitation by M. Huesmann
 - 11/23 Keiō University, 4 days, invitation by H. Kawabi
 - 10/23 Bielefeld University, 4 days, invitation by M. Röckner
 - 05/23 **Swansea University**, 5 days, invitation by E. W. Lytvynov
 - 03/23 IAM Bonn, 1 week, invitation by L. Portinale
 - 02/23 GSSI, 1 day, invitation by S. Cenatiempo and A. Nota
 - 01/23 Sapienza Università di Roma, 3 days, invitation by A. Faggionato
 - 07/22 Swansea University, 5 days, invitation by E. W. Lytvynov
 - 04/22 **IAM Bonn**, 1 week, invitation by K.-T. Sturm
- 11-12/21 MFO, 4 weeks, MFO Research in Pairs programme with K. Suzuki
 - 11/21 **IAM Bonn**, 1 week, invitation by K.-T. Sturm
 - 10/19 Institute of Science and Technology Austria, 2 weeks, invitation by J. Maas
 - 05/19 Sapienza Università di Roma, 5 days, invitation by L. Bertini & A. Faggionato
 - 02/18 Università degli Studi di Pavia, 3 days, invitation by F. Bassetti
 - 11/17 Sapienza Università di Roma, 5 days, invitation by A. Faggionato
 - 12/16 **Swansea University**, 5 days, invitation by E. W. Lytvynov

Invited talks

- 06/25 Conference PRIN Geometry of RAndom Flelds and Applications (GRAFIA)[□], Cortona
- 10/04/25 Seminario di probabilità, Sapienza Università di Roma (part II)

- 02/04/25 Seminario di probabilità, Sapienza Università di Roma (part I) 26/03/25 Seminar series Random geometry and quantum gravity^[2], Institut Henri Poincaré (IHP), virtual 12/2/25 Stochastics Seminar, TU Munich, Munich 30/1/25 Stochastics Seminar, TU Berlin, Berlin 17/12/2024 Seminario di Analisi Matematica , Università Statale di Milano, Milano 22/11/24 Workshop Probability Event: Point Processes, Exchange & Research, Münster 25/06/24 **Probability Kolloquium**, Hamburg 08/02/24 RoMaDS Seminar[™], Università 'Tor Vergata', Roma 20/12/23 Conference Mean field interactions with singular kernels and their approximations[™], IHP, Paris 28/11/23 **Seminario di Analisi**[□]. Trento 22/11/23 Oberseminar Mathematische Stochastik[™], Münster 9/11/23 Conference Stochastic Analysis[™], RIMS, Kyōto 30/10/23 Tōkyō Probability Seminar[©], Tōkyō 12/10/23 Bielefeld Stochastic Afternoon[™], Bielefeld 22/09/23 Bielefeld University 8/09/23 XXII Congress of the Unione Matematica Italiana, Pisa 25/05/23 **Probability Seminar**[™], Swansea University 21/03/23 **Stochastic Analysis & Geometry Seminar**, IAM Bonn 20/02/23 SMAQ - Seminario di Matematica L'Aquila, GSSI 10/01/23 Seminario di probabilità, Sapienza – Università di Roma 1/12/22 MFO mini-workshop A Geometric Fairytale full of Spectral Gaps and Random Fruit, MFO 4/11/22 MFO workshop Heat Kernels, Stochastic Processes and Functional Inequalities, MFO 24/10/22 Optimal Transportation and Applications, Centro di Ricerca Matematica E. De Giorgi, Pisa 02/08/22 Three research days on "random geometries and interacting processes", HIM Bonn 28/07/22 **Probability Seminar**[™], Swansea University 16/06/22 Third Italian Meeting on Probability and Mathematical Statistics, Università di Bologna 21/04/22 **Stochastic Analysis & Geometry Seminar**, IAM Bonn 17/03/22 **SPDE Seminar**, TU Berlin, virtual 19/01/22 **PDE Afternoon**, University of Vienna, virtual
 - 10/12/21 MFO mini-workshop Variable Curvature Bounds, Analysis and Topology on Dirichlet Spaces
 - 21/09/21 Seminario di probabilità, Sapienza Università di Roma
 - 9/02/21 Pisa Online Seminar, virtual
 - 12/01/21 Vienna Probability Seminar, virtual
 - 21/11/19 MFO workshop Heat Kernels, Stochastic Processes and Functional Inequalities, MFO
 - 31/10/19 Institute of Science and Technology Austria
 - 05/09/19 JAP-GER Conference on Stochastic Analysis 2019, Fukuoka University
 - 06/05/19 **Seminario di probabilità** ☑, Sapienza Università di Roma
 - 11/03/19 Collaborative Research Center 1060 Retreat 2019, Project B03
 - 28/02/18 Università degli Studi di Pavia
 - 28/11/17 **Seminario di probabilità**[™], Sapienza Università di Roma
 - 01/12/16 **Probability Seminar** \Box , Swansea University

Service

Organizer.

7-9/4/25 Workshop Stochastic equations and particle systems $^{\c C}$, INdAM, Roma, IT

- 21–24/5/24 Workshop Synthetic Curvature Bounds for Non-Smooth Spaces: Beyond Finite Dimension S. ESI,
- 17-21/7/23 SPP2265 Summer School Probability and Geometry on Configuration Spaces, Harnack-Haus, Berlin, DE

Grants and funding information

- 07/22-10/24 **FWF ESPRIT** Fellow, Institute of Science and Technology Austria, Klosterneuburg, AT.
 - o Project: Configuration Spaces over Non-Smooth Spaces
 - o Funding: € 294.015,98
 - 07/22 APART-MINT Fellow of the Austrian Academy of Sciences (declined).
 - o Project: Multi-dimensional Wasserstein Diffusions
 - o Funding: € 70.000,00

Memberships, honors, and awards

- 2023-present Member of the Unione Matematica Italiana (UMI)
- 2020-present Member of the Schwerpunktprogramm (Priority Programme) 2265 Random Geometric Systems of the Deutsche Forschungsgemeinschaft (German Research Foundation)
 - 2018–2019 participation in Bonn Graduate Center's Doctorate Plus Training Program™ Access to a series of soft skills training workshops.
 - 2016-2018 Member of the Italian National Research Group in Mathematical Physics of the National Institute of Advanced Mathematics (GNFM – INdAM)
 - 2014–2015 M.Sc. Honor classes (Percorso d'Eccellenza), Sapienza Università di Roma. Access to one PhD course, reserved to the most proficient students (about 5% of the total), with a final supervised dissertation.

Dissertation: Takesaki's proof of a Tannaka-Stinespring-Tatsuuma-type Pre-duality for Commutative Measured Involutive Hopf-von Neumann Algebras (in English, supervisor: C. Pinzari)

2011–2013 B.Sc. Honor classes (Percorso d'Eccellenza), Sapienza – Università di Roma. Access to supplementary courses on advanced topics reserved to the most proficient students (about 10% of the total), each with a final test to pass.

Other Projects

- - Zonotope Construction via Shephard's Theorem[™]
 - Homogeneous Splines[□]
 - o Asymmetric Simple Exclusion Processes (with A. Occelli)

Refereeing activity

2016–present ○ Scientific Reports ○ Electronic Journal of Probability ○ Journal of Functional Analysis ○ Electronic Communications in Probability
 O Demonstratio Mathematica
 O Probability Theory and Related Fields o Manuscripta Mathematica o Stochastic and Partial Differential Equations o Stochastic Processes and Applications o Quarterly Journal of Mathematics

Selected attended schools, conferences, seminars, talks

- 19-22/11/24 Workshop Probability Event: Point Processes, Exchange & Research, Münster, DE
- 18–22/12/23 Conference Mean field interactions with singular kernels and their approximations [™], IHP, Paris, FR

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6–10/11/23 Conference Stochastic Analysis<sup>□</sup>, RIMS, Kyōto, JP
  23-26/10/23 21st Symposium Stochastic Analysis on Large Scale Interacting Systems, RIMS, Kyōto, JP
    4-9/09/23 XXII Congress of the Unione Matematica Italiana, Pisa, IT
   24-28/7/23 Stochastic Processes and Applications, Lisbon, PT
   27-30/3/23 SPP 2265 Random Geometric Structures Second Annual Conference, DLR, Cologne, DE
27/11-3/12/22 MFO 2248b A Geometric Fairytale full of Spectral Gaps & Random Fruit, Oberwolfach, DE
30/10-5/11/19 MFO 2244 Heat Kernels, Stochastic Processes and Functional Ineq.s, Oberwolfach, DE
  24-28/10/22 10<sup>th</sup> conference on Optimal Transportation and Applications, CRM E. De Giorgi, Pisa, IT
     7-9/9/22 Austrian Stochastic Days, Vienna, AT
  29/8-3/7/22 Joint conferences: New Trends in Dirichlet Forms and Optimal Transport & From Dirichlet Forms
                 to Wasserstein Geometry, HCM, Bonn, DE
     1-3/8/22 Three research days on "random geometries and interacting processes", HIM, Bonn, DE
   13-16/6/22 Third Italian Meeting on Probability and Mathematical Statistics, Bologna, IT
   11-14/4/22 SPP 2265 Random Geometric Structures First Annual Conference, Harnack-Haus, Berlin, DE
    7-12/3/21 BIRS 5184 Stochastics and Geometry (Online), Banff, CA (virtual)
  17-23/11/19 MFO 1947 Heat Kernels, Stochastic Processes and Functional Ineq.s, Oberwolfach, DE
     2-6/7/19 9th Japanese-German Open Conference on Stochastic Analysis, Fukuoka, JP
    7–12/7/19 5<sup>th</sup> School on Stochastic and Geometric Analysis<sup>™</sup>, Piz Buin, AT
   11-13/3/19 Retreat 2019 of the Collaborative Research Center 1060, Weilburg, DE
  12-16/11/18 9<sup>th</sup> conference on Optimal Transportation and Applications, SNS, Pisa, IT
   12-14/3/18 Retreat 2018 of the Collaborative Research Center 1060, Bad Neuenahr-Ahrweiler, DE
    4-29/9/17 Metric Measure Spaces and Ricci Curvature - Intense Activity Period, MPIM, Bonn, DE
   7-11/11/16 8<sup>th</sup> conference on Optimal Transportation and Applications, SNS, Pisa, IT
  10-14/10/16 Stochastic Partial Differential Equations and Related Fields, Bielefeld U, Bielefeld, DE
  29/8-2/9/16 Follow-up Workshop to JTP Optimal Transportation<sup>©</sup>, HIM, Bonn, DE
    4–8/04/16 4<sup>th</sup> School on Stochastic and Geometric Analysis<sup>□</sup>, Vlieland, NE
  21–23/10/15 Panorama of Mathematics<sup>™</sup>, HCM, Bonn, DE
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Languages

Italian (native), English (proficient), German (proficient)