

UNIVERSITY OF MILAN

Public selection for recruiting No. \_\_ tenure track researcher(s) (RTT) for competition sector  
13/D4, (scientific-disciplinary sector  
SECS-S/06, (announcement published in Official Gazette No. G.U. 41 \_\_\_\_\_ of 21/05/2024) -  
Competition code 5552

## Francesco lafrate CURRICULUM VITAE

### PERSONAL DATA (DO NOT INCLUDE YOUR PERSONAL ADDRESS AND LANDLINE OR MOBILE PHONE NUMBER)

|               |                  |
|---------------|------------------|
| SURNAME       | IAFRATE          |
| NAME          | FRANCESCO        |
| DATE OF BIRTH | [ 22, 05, 1992 ] |

### QUALIFICATIONS

#### DEGREE

B.Sc., Statistical Sciences, Sapienza University of Rome, Mark 110 cum laude/110 Thesis on "Lagrange Multipliers test" (2014)

M.Sc., Statistical Sciences, Sapienza University of Rome. Mark 110 cum laude/110 Thesis on "Fractional Telegraph Equation and related Stochastic Processes" (2016)

#### DOCTORAL DEGREE OR EQUIVALENT QUALIFICATION EARNED IN ITALY OR ABROAD / MEDICAL SPECIALISATION DIPLOMA OR EQUIVALENT QUALIFICATION, FOR THE RELEVANT SECTORS, EARNED IN ITALY OR ABROAD

PhD in Methodological Statistics, Sapienza University of Rome, Department of Statistical Sciences. Advisor: prof. E. Orsingher. Thesis entitled "Functionals of drifted Brownian motion and tempered fractional equations". Date 17/02/2020.

#### RESEARCH CONTRACTS, RESEARCH FELLOWSHIP CONTRACTS, POSTDOCTORAL SCHOLARSHIPS OR SIMILAR CONTRACTS

Postdoctoral Research Assistant, Sapienza University of Rome, Department of Statistical Sciences. 01/02/2020 - 31/01/2021. Research project: "Multiple penalties Bridge estimation and applications to Stochastic Differential Equations". Supervisor: prof. A. De Gregorio.

Fellow Researcher (RTDA) - Sapienza University of Rome, Department of Basic and Applied Sciences for Engineering (SBAI). 01/07/2021 - 30/06/2024.

**QUALIFICATIONS UNDER ART.24, PARAGRAPH 3.a AND 3.b, OF LAW No.240/2010 OF 30 DECEMBER 2010**

Fellow Researcher (RTDA) - Sapienza University of Rome, Department of Basic and Applied Sciences for Engineering (SBAI). 01/07/2021 - 30/06/2024.

**TEACHING ACTIVITIES AT ITALIAN OR FOREIGN UNIVERSITIES**

PhD courses.

Probability for Data Science. Statistical Sciences Ph.D Programme, Sapienza University of Rome, April 2024, 18 h.

Probability for Data Science, Statistical Sciences Ph.D Programme, Sapienza University of Rome. June 2023, 15 h.

Statistical Learning for Stochastic processes, Statistical Sciences Ph.D Programme, Sapienza University of Rome. June 2023, 18 h.

Undergraduate Courses.

2020, 2022, 2023, 2024, Probability, Management Engineering, Sapienza University of Rome, 60 h

2018, 2020, Probability and Statistics, Mechanical Engineering, Sapienza University of Rome, 30 h

2024 Probability and Statistics, Electronic Engineering, Sapienza University of Rome, 30 h

Teaching Assistant

2017, 2018 Probability and Statistics, Computer Engineering, Sapienza University of Rome, 40h

2017, 2018, Probability, Management Engineering, Sapienza University of Rome, 40h

2017, 2018, 2019, Probability and Applications to Finance, Economics and Finance LUISS University, 40h

**ATTESTED TRAINING OR RESEARCH ACTIVITIES AT QUALIFIED ITALIAN OR FOREIGN INSTITUTIONS**

01/12/2024 - 31/03/2024, Visiting scholar, Harvard University, Institute for Quantitative Social Sciences

27/02/2024 - 27/02/2024, Visiting scholar, Fordham University of New York, Department of Mathematics.

**ORGANISATION, SUPERVISION AND COORDINATION OF NATIONAL AND INTERNATIONAL RESEARCH GROUPS, OR PARTICIPATION IN THEM**

Anomalous Phenomena on Regular and Irregular Domains: Approximating Complexity for the Applied Sciences, PRIN 2022. Role: Investigator

Fractal and Fractional, "Fondi Ateneo 2022", Role: Investigator

Stochastic models related to fractional porous medium equations. "Fondi Ateneo 2018", Role: Investigator

## SPEAKING AT NATIONAL AND INTERNATIONAL CONFERENCES AND CONVENTIONS

- Path dynamics of time-changed Lévy processes: a martingale approach, 4<sup>th</sup> Italian Meeting on Probability and Mathematical Statistics, June 10-14 2024, Rome.
- Elastic Net estimation for diffusion processes, Dynstoch 2024, May 22 2024, Kiel, Germany.
- Regularized statistical problems for diffusion processes. Invited. February 28 2024, Fordham University, New York City
- Pathwise optimization for adaptive Bridge-type estimators: applications to SDEs. Invited. 16th International Conference of the ERCIM WG on Computational and Methodological Statistics, December 16-18 2023, Berlin (hybrid)
- Path dynamics of time-changed Lévy processes: a martingale approach. Workshop: Fractional Calculus, Special Functions and Applications, May 12, 2023, Roma
- Some families of random fields related to multiparameter Lévy processes. Workshop: Probability and Non-Local Operators 3, Dicembre 2, 2022, Torino
- Bridge-type estimation with mixed-rate asymptotics: applications to SDE's. Workshop: Mathematics for Artificial Intelligence and Machine Learning, November 24, 2022, Torino
- Non-local boundary conditions and elastic drifted Brownian motions, Invited. Third Italian Meeting on Probability and Mathematical Statistics, June 13-16, 2022, Bologna
- Porting the Yuima package to Python: difficulties and feasibility, Invited. 14th International Conference of the ERCIM WG on Computational and Methodological Statistics, December 18-20, 2021, London (online)
- Tempered fractional derivatives and related drifted Brownian motions. Workshop: Probability and non-local operators, October 29, 2021, Rome
- Tempered fractional derivatives and related drifted Brownian motions. International Conference on Fractional Differentiation and its Applications, 6-8 September 2021, Varsavia (online)
- Adaptive lq penalized estimation for diffusion processes in Yuima package. Third Yuima Workshop, Brixen, 28 June 2019.
- Tempered fractional derivatives and related Brownian motions. Second Italian Meeting of Probability and Mathematical Statistics, Vietri sul Mare, June 17-20, 2019.

## **SCIENTIFIC PRODUCTION**

### **SCIENTIFIC PUBLICATIONS**

F. Iafrate and C. Ricciuti, Some families of random fields related to multiparameter Lévy processes, with C. Ricciuti, *Journal of Theoretical Probability* (2024)

D'Ovidio, Mirko, and Francesco Iafrate. "Elastic drifted Brownian motions and non-local boundary conditions." *Stochastic Processes and their Applications* 167 (2024): 104228. DOI <https://doi.org/10.1016/j.spa.2023.104228>

De Gregorio A., Iafrate F. (2021). Telegraph random evolutions on a circle. *Stochastic Processes and their Applications*, vol. 141, p. 79-108, ISSN: 0304-4149, doi: 10.1016/j.spa.2021.07.001

Iafrate F., Orsingher E. (2019). Some Results on the Brownian Meander with Drift. *Journal of Theoretical Probability*, ISSN: 0894-9840, doi: 10.1007/s10959-019-00891-3

De Gregorio, A., Iafrate, F. Regularized bridge-type estimation with multiple penalties. *Ann Inst Stat Math* 73, 921-951 (2021). <https://doi.org/10.1007/s10463-020-00769-w>

Iafrate, F.; Orsingher, E. On the Fractional Wave Equation. *Mathematics* 2020, 8, 874. <https://doi.org/10.3390/math8060874>

Iafrate, Francesco, and Enzo Orsingher. "On the sojourn time of a generalized Brownian meander." *Statistics & Probability Letters* 168 (2021): 108927. <https://doi.org/10.1016/j.spl.2020.108927>

Iafrate, Francesco, and Claudio Macci. "Asymptotic results for the last zero crossing time of a Brownian motion with non-null drift." *Statistics & Probability Letters* 166 (2020): 108881. DOI <https://doi.org/10.1016/j.spl.2020.108927>

F. Iafrate & E. Orsingher (2020) The last zero-crossing of an iterated Brownian motion with drift, *Stochastics*, 92:3, 356-378, DOI: 10.1080/17442508.2019.1624752

Mirko D'Ovidio, Francesco Iafrate, Enzo Orsingher, Drifted Brownian motions governed by fractional tempered derivatives, *Modern Stoch. Theory Appl.* 5(2018), no. 4, 445-456, DOI 10.15559/18-VMSTA114

### **PREPRINTS AND WORKING PAPERS**

Network Stochastic Differential Equations, with S. Iacus, working paper

Adaptive Elastic Net estimation for diffusion processes, with A. De Gregorio, D. Frisardi, S. Iacus working paper

Path dynamics of time-changed Lévy processes: a martingale approach, with A. De Gregorio, preprint (2023)

Pathwise optimization for adaptive Bridge-type estimators, with A. De Gregorio, preprint (2022)

#### WORKSHOPS, CONFERENCES AND GRADUATE SCHOOLS ATTENDANCE

European Meeting of Statisticians- EMS 2019, Palermo July 2019.

Bocconi Summer School in Advanced Statistics and Probability: Random Graphs and Complex Networks, Como July 2019.

YUIMA Summer School on Computational and Statistical Methods for Stochastic Processes, Brixen, June 2019.

6th Workshop on Fractional Calculus, Probability and Non-Local Operators, Bilbao, September 2018.

IST Austria Summer School in Probability and Mathematical Physics, Vienna, June 2018. First Italian Meeting of Probability and Mathematical Statistics, Turin, June 2017.

#### REVIEWER

I served as referee for the following journals:

Stochastics and Dynamics, Methodology and Computing in Applied Probability, Journal of Probability and Statistics, Computational and Applied Mathematics, Metron.

Date

20/06/2024

Place

Roma

