

Allegato B

UNIVERSITÀ DEGLI STUDI DI MILANO
selezione pubblica per n. 1 posto di Ricercatore a tempo determinato in tenure track (RTT) per il settore concorsuale 01/A3 - Analisi Matematica, Probabilità e Statistica Matematica, settore scientifico-disciplinare MAT/06 - Probabilità e Statistica Matematica, presso il Dipartimento di Matematica “Federigo Enriques”, (avviso bando pubblicato sulla G.U. n. 35 del 30/04/2024). Codice concorso 5540.

FEDERICO SAU
Curriculum Vitae

Place: Trieste, Italy
Date: 31/05/2024

Part I – General Information

Full Name	Federico Sau
Date of Birth	5 August 1991
Spoken Languages	Italian (mother tongue); English (fluent); French, Dutch (Basic)

Part II – Education

Type	Year	Institution	Details
PhD	2019	Delft University of Technology	PhD degree in Mathematics Advisor: Frank Redig
MSc	2015	Università degli Studi di Milano	Laurea Magistrale in Matematica Grade: 110/100 <i>cum laude</i> Advisors: Daniela Morale & Frank Redig
BSc	2013	Università degli Studi di Milano	Laurea Triennale in Matematica Grade: 110/110 <i>cum laude</i>

Part III – Academic Appointments

Start	End	Institution	Position
02/01/23	Today	Università degli Studi di Trieste	Ricercatore a tempo determinato (RTD-a, SSD MAT/06)
01/11/21	31/12/22	Institute of Science and Technology Austria (ISTA)	Lise Meitner Postdoctoral Fellow
01/11/19	31/10/21	Institute of Science and Technology Austria (ISTA)	ISTplus Postdoctoral Fellow

Part IV – Teaching experience

Year	Institution	Lecture/Course
2024	Università degli Studi di Trieste	“Probabilità e Statistica Matematica 1” Bachelor course in Mathematics Lecturer (6CFU, 48h)

2023	Università degli Studi di Trieste	“Probabilità e Statistica” Bachelor course in Mathematics Lecturer (6CFU, 48h)
2022	Institute of Science and Technology Austria (ISTA)	“Gaussian Free Fields” Graduate course in Mathematics Co-lecturer (3CFU, 15h)
2022	Hausdorff Institute of Mathematics (HIM)	“Duality, symmetric IPS, and their stationary non-equilibrium states” Mini-course in Summer School “Stochastic Modeling in the Life Sciences” Lecturer (3h)
2022	Institute of Science and Technology Austria (ISTA)	“Concentration of Measure” Graduate course in Mathematics and CS Teaching assistant (3CFU, 24h)
2016 2017	Delft University of Technology	“Analysis and Differential Equations” Bachelor course in Technology, Policy and Management Teaching assistant
2016 2017	Delft University of Technology	“Linear Algebra and Differential Equations” Bachelor course in Technology, Policy and Management Teaching assistant

Part V - Awards and Honours

Year	Title
2019	ISTplus individual Fellowship (part of EU’s Horizon 2020 programme)
2017	LabEx CARMIN Scholarship
2014	Erasmus Scholarship, 10 months, Università degli Studi di Milano
2011-2015	Excellence Course - Università degli Studi di Milano Partial reimbursement of university fees

Part VI - Funding Information

Year	Title	Program	Grant
2023	“Universalità in modelli stocastici di dinamica delle opinioni”	UniTS Microgrants 2022 (Regione FVG) PI: Federico Sau	€5.000
2021	“Reaching consensus in heterogeneous random opinion dynamics”	Lise Meitner Fellowship (Austrian Science Fund) PI: Federico Sau	€164.080
2016	“Large deviations and gradient flows: beyond equilibrium”	NWO TOP Research Grant (The Dutch Research Council) PI: Mark Peletier	N/A

Part VII – Research Activities

Keywords:

- Interacting particle systems

- Scaling limits
- Duality and exact solvability
- Random motion in random media
- Markov chains' mixing times
- Functional inequalities
- Concentration of measure
- Opinion dynamics

Part VIII – Summary of Scientific Achievements

Product	#	Authors and Title	Year	Journal	IF*
Paper	1	F. Sau <i>Concentration and local smoothness of the averaging process</i>	2024	Electronic Journal of Probability (to appear)	1.4
Paper	2	S. Kim, F. Sau <i>Spectral gap of the symmetric inclusion process</i>	2024	Annals of Applied Probability (to appear)	1.8
Paper	3	L. Dello Schiavo, L. Portinale, F. Sau <i>Scaling limits of random walks, harmonic profiles, and stationary non-equilibrium states in Lipschitz domains</i>	2024	Annals of Applied Probability 34(2):1789-1845	1.8
Paper	4	P. Caputo, M. Quattropiani, F. Sau <i>Cutoff for the Averaging process on the hypercube and complete bipartite graphs</i>	2023	Electronic Journal of Probability 28(100):1-31	1.4
Paper	5	M. Quattropiani, F. Sau <i>On the meeting of random walks on random DFA</i>	2023	Stochastic Processes and Their Applications 166(140225):1-33	1.4
Paper	6	M. Quattropiani, F. Sau <i>Mixing of the Averaging process and its discrete dual on finite-dimensional geometries</i>	2023	Annals of Applied Probability 33(2):937-971	1.8
Paper	7	C. Franceschini, P. Goncalves, F. Sau <i>Symmetric inclusion process with slow boundary: hydrodynamics and hydrostatics</i>	2022	Bernoulli 28(2):1340-1381	1.5
Paper	8	S. Floreani, F. Redig, F. Sau <i>Orthogonal polynomial duality of boundary driven particle systems and non-equilibrium correlations</i>	2022	Annales de l'Institut Henri Poincaré (B) Probabilités et Statistiques 58(1):220-247	1.5

Paper	9	S. Floreani, F. Redig, F. Sau <i>Hydrodynamics for the partial exclusion process in random environment</i>	2021	Stochastic Processes and their Applications 142:124-158	1.430
Paper	10	J. P. Chen, F. Sau <i>Higher order hydrodynamics and equilibrium fluctuations of interacting particle systems</i>	2021	Markov Processes and Related Fields 27(1):339–380	0.441
Paper	11	F. Redig, E. Saada, F. Sau <i>Symmetric simple exclusion process in dynamic environment: hydrodynamics</i>	2020	Electronic Journal of Probability 25(138):1-47	1.151
Conf. Proc.	12	F. Redig, F. Sau <i>Stochastic duality and eigenfunctions</i>	2019	Stochastic dynamics out of equilibrium, 621-649, Springer Proc. Math. Stat., 282, Springer, Cham, 2019	
Paper	13	F. Redig, F. Sau <i>Factorized duality, stationary product measures and generating functions</i>	2018	Journal of Statistical Physics 172(4):980–1008	1.513
Paper	14	F. Redig, F. Sau <i>Generalized immediate exchange models and their symmetries</i>	2017	Stochastic Processes and their Applications 127(10):3251-3267	1.051
Paper	15	F. Redig, F. Sau <i>Duality and stationary distributions of the “Immediate Exchange Model” and its generalizations</i>	2016	Journal of Statistical Physics 163(1):92-112	1.349
Preprint	16	F. Sau <i>Tiny fluctuations of the averaging process around its degenerate steady state</i>	2024	Annals of Probability (submitted)	
Preprint	17	A. Chiarini, S. Floreani, F. Sau <i>From quenched invariance principle to semigroup convergence with applications to exclusion processes</i>	2023	Electronic Communications in Probability (under revision)	

Preprint	18	C. Landim, R. Misturini, F. Sau <i>Full Γ-expansion of reversible Markov chains level two large deviations rate functionals</i>	2023	Annals of Applied Probability (under revision)	
Preprint	19	A. Chiarini, S. Floreani, F. Sau <i>Fractional kinetics equation from a Markovian system of interacting Bouchaud trap models</i>	2023	Annales de l'Institut Henri Poincaré (B) Probabilités et Statistiques (submitted)	

Total Impact factor*	19.535 (computed as the sum of each published paper's impact factor)
Total Citations	Scopus: 83 Google Scholar: 185
Average Citations per Product	Scopus: 6.385 (computed as 83/13) Google Scholar: 9.737 (computed as 185/19)
Hirsch (H) index	Scopus: 6 Google Scholar: 8
Normalized H index**	Scopus: 1.5 (computed as 6/4) Google Scholar: 2 (computed as 8/4)

* Journal Impact Factors are computed on Journal Citations Report according to the year of publication. Impact factors after 2022 are updated to 2022.

** H index divided by the academic seniority to be intended as the number of years (4) from the PhD completion

Part IX– 12 Selected Publications

List of the publications selected for the evaluation. For each publication report title, authors, reference data, journal IF (if applicable), citations, press/media release (if any).

1. F. Sau,
Concentration and local smoothness of the averaging process,
Electronic Journal of Probability, accepted and to appear in 2024
Scopus citations: N/A
Google scholar citations: 2
Journal impact factor: 1.4 (2022)

2. S. Kim and F. Sau,
Spectral gap of the symmetric inclusion process,
Annals of Applied Probability, accepted and to appear in 2024
 Scopus citations: N/A
 Google scholar citations: 2
 Journal impact factor: 1.8 (2022)

3. L. Dello Schiavo, L. Portinale and F. Sau,
Scaling limits of random walks, harmonic profiles and stationary non-equilibrium steady states in Lipschitz domains,
Annals of Applied Probability, 34(2):1789-1845, 2024
 Scopus citations: 0
 Google scholar citations: 9
 Journal impact factor: 1.8 (2022)

4. P. Caputo, M. Quattropiani and F. Sau,
Cutoff for the Averaging process on the hypercube and complete bipartite graphs,
Electronic Journal of Probability, 28(100):1-31, 2023
 Scopus citations: 1
 Google scholar citations: 6
 Journal impact factor: 1.4 (2022)

5. M. Quattropiani and F. Sau,
On the meeting times of random walks on random DFA,
Stochastic Processes and their Applications, 166(104225):1-33, 2023
 Scopus citations: 1
 Google scholar citations: 2
 Journal impact factor: 1.4 (2022)

6. M. Quattropiani and F. Sau,
Mixing of the Averaging process and its discrete dual on finite-dimensional geometries,
Annals of Applied Probability, 33(2):936-971, 2023
 Scopus citations: 3
 Google scholar citations: 15
 Journal impact factor: 1.8 (2022)

7. C. Franceschini, P. Goncalves and F. Sau,
Symmetric inclusion process with slow boundary: hydrodynamics and hydrostatics,
Bernoulli, 28(2):1340-138, 2022
 Scopus citations: 8
 Google scholar citations: 18
 Journal impact factor: 1.5 (2022)

8. S. Floreani, F. Redig and F. Sau,
Orthogonal polynomial duality of boundary driven particle systems and non-equilibrium correlations,
Annales de l'Institut Henri Poincaré (B) Probabilités et Statistiques, 58(1):220-247, 2021
 Scopus citations: 13
 Google scholar citations: 32
 Journal impact factor: 1.5 (2021)

9. S. Floreani, F. Redig and F. Sau,
Hydrodynamics for the partial exclusion in random environment,
Stochastic Processes and their Applications, 142:124-158, 2021
 Scopus citations: 7
 Google scholar citations: 15
 Journal impact factor: 1.430 (2021)

10. F. Redig, E. Saada and F. Sau,
Symmetric simple exclusion process in dynamic random environment: hydrodynamics,
Electronic Journal of Probability, 25(138):1-47, 2020
 Scopus citations: 5
 Google scholar citations: 9
 Journal impact factor: 1.151 (2020)

11. F. Redig and F. Sau,
Factorized duality, stationary product measures and generating functions,
Journal of Statistical Physics, 172(4):980–1008
 Scopus citations: 23
 Google scholar citations: 35
 Journal impact factor: 1.513 (2018)

12. F. Redig and F. Sau,
Generalized immediate exchange models and their symmetries,
Stochastic Processes and their Applications, 127(10):3251-3267
 Scopus citations: 4
 Google scholar citations: 4
 Journal impact factor: 1.051 (2017)

Part X - Research visits, seminars and conferences

Long-term research visits:

- 2022 (6 weeks) IMPA, Rio de Janeiro. Host: Claudio Landim
- 2017 (3 months) Institut Henri Poincaré, Paris. Trimester “Stochastic Dynamics Out of Equilibrium”

Short-term research visits:

- 2024 (1 week) *Roma Tre University*, Rome. Host: Pietro Caputo
- 2023 – 2024 (1-week \times 2) *University of Padova*, Padova. Host: Alberto Chiarini
- 2023 (2 weeks) *Université Paris Cité (MAP5)*, Paris. Hosts: Ellen Saada & Assaf Shapira
- 2019 – 2023 (1 week \times 5) *Roma Tre University*, Rome. Host: Matteo Quattropani
- 2023 (1 week) *University of Oxford*, Oxford. Host: Simone Floreani
- 2019 – 2022 (1 week \times 2) *Delft University of Technology*, Delft. Host: Simone Floreani
- 2022 (1 week) *CRM*, Montreal. Visiting researcher
- 2019 – 2020 (1 week \times 2) *Instituto Superior Técnico*, Lisbon. Host: Patricia Goncalves
- 2018 (1 week \times 3) *University of Padova*, Padova. Host: Marco Formentin
- 2017 – 2018 (1 week \times 2) *Université Paris Cité (MAP5)*, Paris. Host: Ellen Saada

Invited Talks in Conferences and Seminars:

- 08/2024 - Intertwining between Probability, Analysis and Statistical Physics @ *NUS IMS*, Singapore (upcoming)
- 05/2024 Seminario di Probabilità @ *Roma Tre University* / Rome, Italy
- 01/2024 KIAS Analysis, PDE & Probability Seminar @ *KIAS* / Seoul, South Korea (online)
- 09/2023 Séminaire de Probabilités du MAP5 @ *Université Paris Cité* / Paris, France
- 06/2023 Seminars in Probability and Finance @ *University of Padova* / Padova, Italy
- 06/2023 Probability Seminars @ *Sapienza University of Rome* / Rome, Italy
- 05/2023 Seminário de Probabilidade e Mecânica Estatística @ *IMPA, IST Lisboa*, etc. (online)
- 04/2023 Applied Probability Seminar @ *University of Warwick* / Warwick, UK
- 04/2023 Stochastic Analysis Internal Seminar @ *University of Oxford* / Oxford, UK
- 12/2022 Recent Developments in Stochastic Duality @ *Eurandom* / Eindhoven, the Netherlands
- 06/2022 Third Italian Meeting on Probability and Mathematical Statistics / Bologna, Italy
 Invited talk in parallel session: *Interacting particle systems*
- 06/2022 Not so Informal Probability Seminar @ *Universität Wien* / Vienna, Austria
- 11/2021 Probability and Stochastic Processes Seminar @ *University of Tennessee* / Knoxville, USA (online)
- 07/2021 Encontro Nacional SPM 2021 (ENSPM2021) / Lisbon, Portugal (online)
 Invited talk in parallel session: *Stochastic duality for Markov processes*
- 06/2021 PDE Afternoon / Vienna, Austria (online)
- 03/2021 SMAQ Seminars / L'Aquila, Italy (online)
- 02/2021 Probability Seminar @ *UCD* / Dublin, Ireland (online)
- 10/2020 Stochastics Seminars @ *ISTA* / Klosterneuburg, Austria (online)
- 02/2020 Seminários de Probabilidades @ *Instituto Superior Técnico* / Lisbon, Portugal
- 11/2019 Vienna Probability Seminar / Vienna, Austria
- 06/2019 Second Italian Meeting on Probability and Mathematical Statistics / Vietri sul Mare, Italy
 Invited talk in parallel session: *Stochastic processes with interaction*
- 04/2019 Seminario di Probabilità @ *Università degli Studi di Padova* / Padova, Italy
- 03/2019 An Afternoon in Analysis and Probability @ *TU Delft* / Delft, the Netherlands
- 02/2019 Seminários de Probabilidades @ *Instituto Superior Técnico* / Lisbon, Portugal
- 10/2018 Most Informal Probability Seminars @ *Leiden University* / Leiden, the Netherlands
- 09/2018 Rencontres de Probabilités 2018 / Rouen, France
- 06/2018 Mark Kac Seminar / Utrecht, the Netherlands
- 05/2018 Seminar Series in Probability and Statistics, *TU Delft*, Delft, the Netherlands
- 08/2017 Genealogies of Interacting Particle Systems / *NUS IMS*, Singapore
- 09/2017 Rencontres de Probabilités 2017 / Rouen, France

- 04/2017 Young Researchers' Seminar @ *IHP* / Paris, France

Invited Contributions in Conferences and Workshops:

- 10/2022 Oberwolfach Arbeitsgemeinschaft: *Quantitative Stochastic Homogenization*
Joint lecture with M. Barchiesi
- 09/2022 Oberwolfach Workshop: *Large Scale Stochastic Dynamics*
Joint talk with M. Quattropani
- 03/2022 IPS and Hydrodynamic Limits / *CRM*, Montréal, Canada
Short talk speaker
- 11/2021 Oberwolfach Seminar: *The Cutoff Phenomenon for Finite Markov Chains* (online)
Short talk speaker

Contributed Talks in Conferences and Workshops:

- 08/2021 International Congress on Mathematical Physics (ICMP 2021) | Geneva, Switzerland
Short talk in thematic session: "Nonequilibrium Statistical Mechanics"

Part XI - Academic service

Organization of Seminars:

- 2023 – Today Probability Seminars @ *UniTS* / Trieste, Italy
- 2016 – 2019 PhD Seminar in Probability and Statistics @ *TU Delft* / Delft, the Netherlands
- 2017 Young Researchers' Seminar @ *IHP* / Paris, France

Organization of Workshops & Sessions:

- 09/2024 Conference @ *UniTS* / Trieste, Italy (upcoming)
PSPDE XII. Particle Systems and Partial Differential Equations
- 06/2024 Invited Session, *Fourth Italian Meeting on Probability and Mathematical Statistics* / Rome, Italy (upcoming)
"Mixing times"
- 06/2022 Session, *Third Italian Meeting on Probability and Mathematical Statistics* / Bologna, Italy
"Scaling limits, criticality, and random media in statistical physics"
- 08/2021 Workshop @ *Eurandom* / Eindhoven, the Netherlands
YEP XVII Interacting Particle Systems
- 06/2019 Session, *Second Italian Meeting in Probability and Mathematical Statistics* / Vietri sul Mare, Italy
"Phase transition and particle systems"

Peer reviewing:

Scientific Journals *Probability Theory and Related Fields (PTRF)* / *Annals of Applied Probability (AAP)* / *Annales de l'Institut Henri Poincaré (B) Probab. Stat. (AIHP)* / *Electronic Journal of Probability (EJP)* / *ALEA Latin American Journal of Probability and Mathematical Statistics (ALEA)* / *Discrete and Continuous Dynamical Systems (DCDS)* /

Operations Research (OR) / Symmetry, Integrability and Geometry: Methods and Applications (SIGMA) / Mathematical Physics, Analysis and Geometry (MPAG) / Communications in Algebra (CA)

MathSciNet MR4341080; MR4456130; MR4555283

Supervision of students:

- Carlo De Ambroggio (MSc thesis: “On the varentropy criterion for Markov chains’ cutoff phenomenon”). Expected graduation date: 07/2024
- Alessandro Isgrò (BSc thesis: “Erdos-Renyi random graphs”). Expected graduation date: 07/2024
- Vittoria Pinzi (BSc thesis: “A mathematical introduction to game theory”). Expected graduation date: 07/2024

Others:

- 2023 – Today Member of CRMCS
Department delegate for the University Research Center on Migrations and International Cooperation for Sustainable Development

***Trieste, 31/05/2024
Federico Sau***