CURRICULUM VITAE

Personal Information:
Family Name: DAI PRA
First Name: PAOLO
Date of birth: November 1, 1962 Nationality: Italian

Education:
1992 - PhD in Mathematics
Department of Mathematics, Rutgers University, U.S.A.
1986 - Master in Mathematics
Dipartimento di Matematica, Università di Padova, Italy

Current Position:
2019 - Full Professor
Dipartimento di Informatica, Università di Verona, Italy

Previous Positions:
2000 - 2019 Full Professor Dipartimento di Matematica, Università di Padova, Italy
1998 - 2000 Associate Professor Dipartimento di Matematica, Politecnico di Milano, Italy
1992 - 1998 Assistant Professor Dipartimento di Matematica, Università di Padova, Italy

Fellowships and awards:
2015 Visiting Position at the Université de Poitiers
1998 Visiting Position at UST Lille
1996 Visiting Position at Rutgers University

SUPERVISION OF GRADUATE STUDENTS; PhD POSTDOC STUDENTS:
2000 - 2019 Supervision of 3 Postdocs, 11 Ph.D. students, Dipartimento di Matematica, Università di Padova, Italy

2020 - now Supervision of 1 Postdoc, 1 Ph.D. student, Dipartimento di Informatica, Università di Verona, Italy

Former Ph.D. Students (with academic positions):

Luisa Andreis (Associate Professor, University of Milano)
Francesca Collet (Assistant Professor, University of Verona)
Giovanni Conforti (Associate Professor, University of Padova)
Marco Formentin (Associate Professor, University of Padova)
Pierre-Yves Louis (Associate Professor, AgroSup Dijon)
Ida Minelli (Assistant Professor, University of L'Aquila)
Elena Sartori (Associate Professor, University of Padova)
Marco Tolotti (Full Professor, University of Venezia)

RECENT TEACHING ACTIVITIES:
2023-2025 - Course responsible - Probabilità e Statistica, Università di Verona
2023-2025 - Course responsible - Statistical Learning, Università di Verona
2023-2025 - Course responsible - Probability for Data Science, Università di Verona
2023-2025 - Course responsible - Sistemi Stocastici, Università di Verona

RECENT MAIN INVITED TALKS (CONFERENCES, SCHOOLS AND COLLOQUIUM SERIES)

- Invited Speaker at the Conference “Deep Patterns 2026”, Eindhoven 2026.

- Invited speaker at the Conference “Mean Field Games, Mean Field Control and Applications in Economics and Finance”, Pavia, 2025

- Invited speaker at the International Joint AMS - UMI Meeting, Palermo 2024.

- Invited speaker at "Francesca Romana Nardi: a life in probability, building communities across Europe", Firenze 2022,

- Invited speaker at the "Third Spring Colloquium on Probability and Finance", Padova, 2022.

- Invited speaker at Biohazard Conference 2021 (online),

- Invited speaker at the Rhein-Main Kolloquium Stochastik, 2021

- Invited speaker at the "Workshop on Phase Transitions and Particle Systems”, Berlin, 2019

- Invited speaker at the seminar series “Kac Seminars”, Utrecht, 2018.

- Invited speaker at the workshop “Self interacting processes”, Melbourne 2017.

- Invited speaker at the “Workshop on Random Walks, Folding Transitions and related topics”, Firenze 2017,

- Invited lecturer of a mini course at the CIRM School “Stochastic Dynamics out of Equilibrium”, Marseille-Paris 2017.

ORGANISATION OF SCIENTIFIC MEETINGS:

Co-organizer of the 12th General AMaMeF Conference, Verona, 2025
Co-organizer of the workshop “Random Polymers and Networks”, Porquerolles, 2020.
Organizer of the workshop “Large Scale Random Structures”, Padova, 2018.
Co-organizer of the workshop “Stochastic models in ecology and evolutionary biology”, Venezia, 2018.
Co-organizer of the First Italian Meeting on Probability and Mathematical Statistics, Torino 2017.
Co-organizer of the Summer School RTG1845 Berlin-Potsdam “Stochastic Analysis with applications to Biology, Finance and Physics”, Levico
Terme 2015
Co-organizer of the International Conference “Interacting Particle Systems”, Villa Finally, Firenze 2012 Co-organizer of the XII Workshop on
quantitative finance, Padova 2011

INSTITUTIONAL RESPONSIBILITIES:

• Adjoint Director, Dipartimento di Informatica, Università di Verona, 2024-
• Coordinator of the Bachelor and Master in Mathematics, Università di Verona, 2022-2025
• Coordinator of the Master in “Data Science”, Università di Verona, 2020-
• Coordinator of the Master in “Data Science”, Università di Padova, 2019.
• President of the Teaching Committee of the degrees in Mathematics, Università di Padova, 2017-2019
• Coordinator of the Doctoral School in Mathematical Sciences, Università di Padova, 2009-2014.

REVIEWING ACTIVITIES:

2018 - 2025 Member of the Editorial Board of Electronic Journal of Probability and Electronic Communications in Probability
2003 - 2014 Member of the Editorial Board of Mathematics of Control, Signal and Systems
2012 - 2014 Member of the Editorial Board of ISRN Probability and Statistics
2007 - 2012 Member of the Editorial Board of "La Matematica nella Società e nella Cultura" (Journal of the Unione Matematica Italiana)

MEMBERSHIPS OF SCIENTIFIC SOCIETIES:

2021 - Member of Istituto Veneto di Scienze, Lettere e Arti

MAJOR COLLABORATIONS:

- Marco Tolotti, Mean-field particle systems and games with applications to Social Sciences, Department of Management, Università Ca' Foscari,
Venezia
- Elena Sartori, Mean-field particle systems and games with applications to Social Sciences, Dipartimento di Matematica, Università di Padova
- Francesca Collet, Scaling behavior of Interacting particle systems, Dipartimento di Informatica, Università di Verona
- Marco Formentin, Scaling behavior of Interacting particle systems, Dipartimento di Matematica, Università di Padova
- Luisa Andreis, Scaling behavior of Interacting particle systems, Dipartimento di Matematica, Politecnico di Milano
- Amine Asselah, Quasi-stationary measures, Laboratoire d'Analyse et de Mathématiques Appliquées, Paris-Est Créteil, France
- Pierre-Yves Louis, Reinforcement processes, DSIP et Laboratoire UMR PAM, Université de Bourgogne Franche-Comté, France
- Ida Minelli, Reinforcement processes, Dipartimento di Matematica, Università dell'Aquila
- Irene Crimaldi, Reinforcement processes, IMT Lucca
- Sylvie Roelly, Reciprocal Processes, Institut für Mathematik, Universität Potsdam, Germany
- Giovanni Conforti, Reciprocal Processes, Dipartimento di Matematica, Università di Padova

RECENT ARTICLES IN PEER REVIEW JOURNALS:

M. Aleandri and P. Dai~Pra, Long time fluctuations at critical parameter of Hopf's bifurcation, Stochastic Process. Appl. {\bf 192} (2026), Paper No. 104785, 24 pp.; MR4970155

P. Dai~Pra and E. Marini, Noise-induced oscillations for the mean-field dissipative contact process, Electron. J. Probab. {\bf 30} (2025), Paper No. 98, 31 pp.; MR4915693

P. Dai~Pra, E. Sartori and M. Tolotti, Polarization and coherence in mean field games driven by private and social utility, J. Optim. Theory Appl. {\bf 198} (2023), no.~1, 49--85; MR4612370

P. Dai~Pra, M. Formentin and G. Pelino, A hierarchical mean field model of interacting spins, Stochastic Process. Appl. {\bf 140} (2021), 287--338; MR4287820

R. Cerf et al., Rhythmic behavior of an Ising model with dissipation at low temperature, ALEA Lat. Am. J. Probab. Math. Stat. {\bf 18} (2021), no.~1, 439--467; MR4219671

P. Dai~Pra, M. Formentin and G. Pelino, Oscillatory behavior in a model of non-Markovian mean field interacting spins, J. Stat. Phys. {\bf 179} (2020), no.~3, 690--712; MR4099997

P. Dai~Pra, E. Sartori and M. Tolotti, Climb on the bandwagon: consensus and periodicity in a lifetime utility model with strategic interactions, Dyn. Games Appl. {\bf 9} (2019), no.~4, 1061--1075; MR4031947

P. Dai~Pra, Stochastic mean-field dynamics and applications to life sciences, in {\it Stochastic dynamics out of equilibrium}, 3--27, Springer Proc. Math. Stat., 282, Springer, Cham, ; MR3986061

A. Cecchin et al., On the convergence problem in mean field games: a two state model without uniqueness, SIAM J. Control Optim. {\bf 57} (2019), no.~4, 2443--2466; MR3981375

P. Dai~Pra and D. Tovazzi, The dynamics of critical fluctuations in asymmetric Curie-Weiss models, Stochastic Process. Appl. {\bf 129} (2019), no.~3, 1060--1095; MR3913279

I. Crimaldi et al., Synchronization and functional central limit theorems for interacting reinforced random walks, Stochastic Process. Appl. {\bf 129} (2019), no.~1, 70--101; MR3906991

L. Andreis, A. Asselah and P. Dai~Pra, Ergodicity of a system of interacting random walks with asymmetric interaction, Ann. Inst. Henri Poincar\'e{} Probab. Stat. {\bf 55} (2019), no.~1, 590--606; MR3901656

L. Andreis, P. Dai~Pra and M. Fischer, McKean-Vlasov limit for interacting systems with simultaneous jumps, Stoch. Anal. Appl. {\bf 36} (2018), no.~6, 960--995; MR3925147

RESEARCH PROJECTS:

1. Principal Investigator of the Research Project "Mean-field stochastic dynamics and games", University of Verona, (2020/21, 25K Euros)
2. Principal Investigator of the Grant ‘New challenges in reciprocal processes, Schroedinger bridges, optimal transport and their respective geometries
with applications to control engineering problems for classical and quantum systems’, University of Padova (2015-16, 20742 Euros)
3. PRIN 2015“Research Projects of National Interest”, Italian Ministry of University. Project “ Large scale random structures”, responsible for the
unit of Padova (2016-2019, 29100 Euros)

AWARDS

Member of "Istituto Veneto di Scienze, Lettere ed Arti”

Description of main research results:

My main research topics are:
1. Complex systems in Biological and social sciences.
2. Geometric and scaling properties of stochastic processes.
3. Convergence to equilibrium and functional inequalities for interacting particle systems.
4. Mean field games

Main Results:

1. I have introduced and studied dissipative complex dynamics, with the aim of showing that collective time-periodic behavior may emerge in the large scale limit. The proof has been given for several mean-field models and some models with short-range interaction.
2. I have obtained results on multiscaling phenomena in stochastic volatility models, in agreement with empirical evidences in financial data. Moreover, I have studied various stochastic models subject to reinforcement mechanisms, obtaining results on the limit behavior of suitable rescalings
of these processes. In particular, I have proved Functional Central Limit Theorems (both standard and non-standard) for urn models of Ehrenfest or Polya type. Finally, I have proved principles of Large Deviations for several classes of interacting particle systems, including disordered mean-field
models.

3. I gave the first proof of the conjectured diffusive scaling of the spectral gap of zero-range processes. Moreover, I developed a partial extension to jump processes of the Bakry-Emery theory for diffusions. This has allowed to obtain sharp estimates of the spectral gap and of the logarithmic-Sobolev constant for several classe of interacting dynamics, including exclusion processes and Glauber dynamics for point processes. These estimatesare rather explicit, as they do not rely on the 2-block estimates on the traditional Yau's approach.
4. I have obtained the phase diagram for several mean field games with discrete state space.

Verona, 22/01/2026