CURRICULUM VITÆ

Dimitrios K. Tsagkarogiannis
Professore Ordinario, DISIM, University of L'Aquila
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Tel: +39 0862 433170
Nationality: Greek
Marital status: Married, two children
Languages: Greek, English, French, Italian, German

Studies

PGCert Learning and Teaching in Higher Education, 11/12/2015, University of Sussex, UK.

Ph.D. in Mathematics, University of Massachusetts, Amherst, 1/09/2005.
Thesis title: "Mathematical strategies for the coarse-graining of interacting particle systems".
Thesis advisor: Markos Katsoulakis.

Piano diploma, 16/06/2000, Athens Conservatoire (Odeion Athinon), class of Maria Efstratiadis.

Diploma in Electrical and Computer Engineering, National Technical University of Athens, 15/07/1999.
Thesis title: "Recursive methods for the approximation of dynamical systems".
Thesis advisor: Ioannis Diamesis.

Academic positions

Full Professor, DISIM, University of L'Aquila, from 30/12/2021.

Associate Professor, DISIM, University of L'Aquila, 01/10/2020 - 29/12/2021.

Associate Professor, DSFC, University of L'Aquila, 07/05/2019 - 30/09/2020.

Associate Professor, DISIM, University of L'Aquila, 01/10/2017 - 06/05/2019.

Senior Lecturer, Department of Mathematics, University of Sussex, 01/10/2016-30/09/2017.

Lecturer B, Department of Mathematics, University of Sussex, 01/09/2013 - 30/09/2016.

Assistant professor, Department of Applied Mathematics, University of Crete, 13/07/2012 - 01/10/2013. (Initially elected for this post on March 2009, but took service later due to state budget cuts.)

Post-doc, Hausdorff Center for Mathematics, University of Bonn, 01/09/2011 - 12/07/2012.

Marie Curie Researcher, (Ricercatore tempo determinato), Università degli Studi di Roma "Tor Vergata", 18/11/2009 - 15/04/2011 and 15/10/2008 - 18/05/2009 (Military service: 18/05/2009 - 18/11/2009).

Post-doctoral associate: Max Planck Institute for Mathematics in the Sciences, Leipzig, 27/09/2005 - 30/09/2008.

Research assistant, University of Massachusetts (12/1/03 - 22/5/04 and 5/9/04 - 3/9/05).

Teaching associate, University of Massachusetts (1/9/02 - 11/1/03).

Teaching assistant, University of Massachusetts (3/9/00 - 26/5/01 and 2/9/01 - 25/5/02).

Research interests

Probability and mathematical statistical mechanics: phase transitions, non-equilibrium systems, cluster expansions. Large Deviations and Scaling Limits for Interacting Particle Systems. Modelling and coarse-graining methods for stochastic systems.

Grants

PI, Marie Curie Intra European Fellowships for career development, FP7-

PEOPLE-2007-2-1-IEF. Title: "Phase Transitions: Modelling, Analysis and Simulations (PhaTraMAS)". Total amount: 154 254,02 euro.

Co-PI, ARISTEIA II, GSRT, Greece, 2014 - 2015. Title: "Hierarchical Multiscale Modeling of Complex Materials". Budget of the grant: 200.000 Euro. PI: Vagelis Harmandaris.

Participation in the project DFG, JA 2511/2-1 on "Renormalization for Gibbs point processes" per SPP 2265 "Random geometric systems", coordinated by Prof. Dr. Sabine Jansen (Ludwig Maximilian University of Munich), from 01-09-2020.

PI, London Mathematical Society, 2015, "Scheme 4 grant": research in pairs, £600.

PI, London Mathematical Society, Celebrating New Appointments - Scheme 1 grant, £595.

Co-PI, PRIN 2009TA2595, Italy, 2011. Title: "Dal microscopico al macroscopico: analisi di strutture complesse e applicazioni." PI: Errico Presutti.

Marie Curie fellowship for graduate students, April-July 2004. Mathematics Institute, Warwick University, U.K.

Awards

Marie Curie Intra European Fellowships for career development, FP7-PEOPLE-2007-2-1-IEF.

Outstanding graduate student award, College of Natural Sciences and Mathematics, University of Massachusetts, 2005.

Marie Curie fellowship for graduate students, April-July 2004. Mathematics Institute, Warwick University, U.K.

Organization of conferences

Co-organizer (with Roberto Fernandez and Sabine Jansen) of a Mini-Workshop "Cluster expansions: From Combinatorics to Analysis through Probability",

Oberwolfach, 5-11 February 2017.

Co-organizer (with Vagelis Harmandaris) of a workshop on "Mathematical and Computational Techniques for Molecular Systems", 16-18 September 2015, University of Crete.

Co-organizer of "Intensive research week 2015: New perspectives in Analysis and Probability", 2-6 March 2015, University of Sussex.

Co-organizer of "Conference on Partial Differential Equations", 15-17 September 2014, University of Sussex.

Co-organizer of an "Intensive research week: Calculus of Variations, Geometric Analysis & PDEs", Department of Mathematics, University of Sussex, 24 - 28 March 2014.

Co-organizer (with Alessandro Giuliani) of a mini-symposium on "Phase transitions" at the International Conference on Applied Mathematics, Heraklion, Crete on September 16-20, 2013.

Co-organizer (with Athanasios Tzavaras) of a Workshop on "Kinetic description of multiscale phenomena", June 17-29, 2013, "Archimedes Center for Modeling, Analysis and Computation", Department of Applied Mathematics, University of Crete.

Long term scientific visits

Newton Institute, University of Cambridge (Program: The mathematical design of new materials, 14-19 January 2019 and 16-26 June 2019)

Institut Henri Poincaré, (Program: Stochastic dynamics out of equilibrium, 11-21 June 2017)

International centre for theoretical sciences (ICTS), Bangalore, India, October 26 - November 7, 2015.

Gran Sasso Science Institute, L'Aquila, 16/10/2013 - 15/12/2013.

Hausdorff Institute of Mathematics, Bonn, 14/07/2012 - 20/08/2012. (Trimester Program: Mathematical challenges of materials science and condensed matter physics, HIM, Bonn, May 2 - August 31, 2012.)

ACMAC, University of Crete, 01/06/2011 - 15/07/2011.

Graduate students and postdoctoral supervision

Member of the doctoral council "Mathematics and Models", DISIM, University of L'Aquila, 2018-present (cycles XXXIV, XXXV, XXXVI, XXXVII, XXXVIII, XXXIX).

Francesco Drago, PhD student, Cycle XXXIX (together with Tobias Kuna)

Giuseppe Scola, PhD student, Gran Sasso Science Institute, L'Aquila, Cycle XXXIV, (defence date: 21/04/21).

Panagiota Birmpa, PhD student, University of Sussex, September 2014 - March 2018.

Dr Stephen Tate, Post Doc, University of Sussex, recipient of an LMS Postdoctoral Mobility grant, November 2014 - March 2015.

Elena Pulvirenti, Post Doc, University of Crete, May-September 2013.

Co-advisor (together with Vagelis Harmandaris) of Anastasios Tsourtis (University of Crete), February 2017.

Teaching experience

A.A. 23-24: Calcolo delle Probabilità B, Laurea in Matematica, Calcolo delle Probabilità e Statistica Matematica, Laurea Informatica e Laurea Ingegneria Informatica.
A.A. 22-23: Advanced Probability, Laurea Magistrale in Matematica, Calcolo delle Probabilità, Laurea Ingegneria Informatica.
A.A. 21-22: Probability e Stochastic Processes, Laurea Magistrale in Matematica, Calcolo delle Probabilità, Laurea Ingegneria Informatica, Calcolo delle Probabilità e Statistica Matematica, Laurea Informatica.
Fall 2020: Probability e Stochastic Processes, Laurea Magistrale in Matematica, Università dell'Aquila.
Spring 2018, 2019, 2020: Calcolo delle Probabilità A, Laurea in Matematica, Università dell'Aquila.
Spring 2018, 2019, 2020, 2021: Stochastic Processes, Laurea Magistrale in

Ingegneria Matematica, Università dell'Aquila.
Fall 2019: Matematica e biotecnologia, Università dell'Aquila.
Spring 2019: Lectures on Cluster expansions and applications (6 hours), GSSI.
Fall 2017: Introduction to Probability, University of Sussex.
Spring 2016: Introduction to Statistical Mechanics, PhD course, University of Sussex.
Spring 2015, 2016, 2017: Random processes (per studenti BSc and MSc), University of Sussex.
Spring 2014, 2015, 2016, 2017: Numerical Analysis I, University of Sussex.
Spring 2013: Probability, University of Crete.
Fall 2012: Linear and non-linear programming/Optimisation Theory, University of Crete.
Fall 2002: Calculus I (Math 131), University of Massachusetts.
Spring 2002: Calculus II (Math 132), University of Massachusetts.
Fall 2001: Calculus I (Math 131), University of Massachusetts.

Publications

Articles in scientific journals

1. *On a class of solvable stationary non equilibrium states for mass exchange models*, (with Monia Capanna and Davide Gabrielli), J. Stat. Phys. **191**(25), (2024).
2. *Solvable stationary non equilibrium states*, (with G. Carinci, C. Franceschini, D. Gabrielli and C. Giardinà), J. Stat. Phys. **191**(10), (2024).
3. *Cluster expansions, trees, inversions and correlations*, Ensaios Matemáticos (2023), **38**, pp. 359–397.
4. *Virial inversion and density functionals*, (with Sabine Jansen and Tobias Kuna), Journal of Functional Analysis 284 (2023), Issue 1, 109731.
5. *Lagrange inversion and combinatorial species with uncountable color palette*, (with Sabine Jansen and Tobias Kuna), Ann. Henri Poincaré, 2021, 22, pp. 1499-1534.
6. *Cluster expansions with renormalized activities and applications to col-*

loids, (with Sabine Jansen), Ann. Henri Poincaré 2020, 21(1), pp. 45-79.

7. *Convergence of density expansions of correlation functions and the Ornstein-Zernike equation*, (with Tobias Kuna), Ann. Henri Poincaré 2018, 19(4), pp. 1115-1150.
8. *Parameterization of Coarse-Grained Molecular Interactions through Potential of Mean Force Calculations and Cluster Expansion Techniques* (with Anastasios Tsourtis and Vagelis Harmandaris), Entropy 2017, 19(8), 395.
9. *Action minimization and macroscopic interface motion under forced displacement*, (with Panagiota Birmpa), ESAIM: COCV 2017, 24(2), pp. 765-792.
10. *Large deviations for the macroscopic motion of an interface*, (with Panagiota Birmpa and Nicolas Dirr), J. Stat. Phys. (2017), 166 (5), pp. 1163-1192.
11. *Thermodynamics for spatially inhomogeneous magnetization and Young-Gibbs measures*, (with Alessandro Montino and Nahuel Soprano Loto), J. Stat. Phys. (2016), 164, 1318-1353.
12. *Finite volume corrections and decay of correlations in the canonical ensemble*, (with Elena Pulvirenti), 2015, J. Stat. Phys., Vol. 159, 5, 1017-1039.
13. *Exponential rate of convergence in current reservoirs*, (with Anna De Masi, Errico Presutti and Maria Eulalia Vares), 2015, Bernoulli 21(3), 1844-1854.
14. *Extinction time for a random walk in a random environment*, (with Anna De Masi, Errico Presutti and Maria Eulalia Vares), 2015, Bernoulli 21(3), 1824-1843.
15. *Multispecies Virial Expansions*, (with Sabine Jansen, Stephen Tate and Daniel Ueltschi), Comm. Math. Phys., 330, 801-817 (2014).
16. *Coarse-graining schemes for stochastic lattice systems with short and long range interactions*, (with Markos Katsoulakis, Petr Plecháč and Luc Rey-Bellet), Mathematics of Computation (AMS), 83 (2014), 1757-1793.
17. *Cluster expansion in the canonical ensemble*, (with Elena Pulvirenti),

Comm. Math. Phys., 2012, Vol. 316, Issue 2, pp 289-306.

18. *Non equilibrium stationary state for the symmetric simple exclusion with births and deaths*, (with Anna De Masi, Errico Presutti and Maria Eulalia Vares), J. Stat. Phys., 147 (3) 2012, 519-528.
19. *Truncated correlations in the stirring process with births and deaths*, (with Anna De Masi, Errico Presutti and Maria Eulalia Vares), Electron. J. Probab. 17 (2012), no. 6, 1-35.
20. *Current Reservoirs in the simple exclusion process*, (with Anna De Masi, Errico Presutti and M. E. Vares), J. Stat. Phys., 144 (6) 2011, 1151-1170.
21. *Fourier law, phase transitions and the stationary Stefan problem*, (with Anna De Masi and Errico Presutti), Arch. Rat. Mech. Anal., Vol. 201, No. 2 (2011), 681–725.
22. *From mesoscale back to microscale: Reconstruction schemes for coarse-grained stochastic lattice systems*, (with José Trashorras), SIAM J. Numer. Anal., Vol. 48, No. 5 (2010), pp. 1647-1677.
23. *Mathematical strategies and error quantification in coarse graining of extended systems*, (with Markos Katsoulakis, Petr Plecháč and Luc Rey-Bellet), Jour. Non-Newtonian Fluid Mech., Vol. 152, 1-3, June 2008, pp. 101-112.
24. *Coarse-graining schemes and a posteriori error estimates for stochastic lattice systems*, (with Markos Katsoulakis, Petr Plecháč and Luc Rey-Bellet), ESAIM: Math. Model. and Num. Analysis, Vol. 41, No 3, 2007, pp. 627-660.
25. *Mesoscopic modeling for continuous spin lattice systems: model problems and micromagnetics applications*, (with Markos Katsoulakis and Petr Plecháč), J. Stat. Phys., 119, 1-2 (2005), 347-389.

Conference proceedings, with referees

1. *Mayer expansion for the Asakura-Oosawa model of colloid theory*, (with Sabine Jansen), Lectures in Pure and Applied Mathematics Verlag: Potsdam University Press. Vol.6. Proceedings of the XI international conference Stochastic and Analytic Methods in Mathematical Physics, pp. 127–134.

2. *Virial inversion for inhomogeneous systems*, (with Sabine Jansen and Tobias Kuna), Lectures in Pure and Applied Mathematics Verlag: Potsdam University Press. Vol.6. Proceedings of the XI international conference Stochastic and Analytic Methods in Mathematical Physics, pp. 135–144.

3. *On non-equilibrium fluctuations for the Stirring process with births and deaths*, (with Panagiota Birmpa and Patrícia Gonçalves), accepted for publication in Particle Systems and Partial Differential Equations VI, VII and VIII, ed. C. Bernardin, F. Golse, P. Gonçalves, V. Ricci and A. J. Soares Springer Proceedings in Mathematics and Statistics.

4. *Phase transitions and coarse graining for a system of particles in the continuum*, (with Elena Pulvirenti), 2016, P. Goncalves and A. J. Soares (eds.), From Particle Systems to Partial Differential Equations III, Springer proceedings in Mathematics and Statistics 162.

5. *A Tridiagonal canonical form for dynamical systems*, (with I. Diamesis), in proceedings of Conference on Information Sciences and Systems (CISS), Princeton, NJ, 2000.