

CURRICULUM VITAE: Omiros Papaspiliopoulos

Born 26/08/1977, Athens, Greece

Nationality Greek

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University Degrees

2003: **PhD**, "Non-centered parameterisations for hierarchical models and data augmentation (*with applications to Lévy-based stochastic volatility models*)", supervised by G.O. Roberts, Department of Mathematics and Statistics, Lancaster University, funded by Lancaster University and Onassis foundation (examined by N. Shephard and C. Fernández).

1999: **B.Sc.**, first class honours degree in Statistics, Department of Statistics, Athens University of Economics (final mark 97%).

Academic posts

September 2012 - , ICREA Research Professor at the Department of Economics, Universitat Pompeu Fabra

March 2012 - September 2012, Full Professor, Department of Economics, Universitat Pompeu Fabra

January 2008 - March 2012, Assistant Professor and Ramon y Cajal Fellow, Universitat Pompeu Fabra

October 2006 - January 2008, (CRISM) Assistant Professor in Statistics, University of Warwick

February 2004 - August 2006, Research Associate under the EPSRC Grant GR/S61577/01 for "Inference for Partially Observed Diffusion Processes", Lancaster University and Nuffield College, Oxford

February 2004 - March 2004, Research Associate within the DYNSTOCH European Network, Universidad Politécnica de Cartagena, Spain

May 2003 - February 2004, Assistant Professor in Medical Statistics, Lancaster University

November 2002 - April 2003, Research Associate under the EPSRC Grant M62723, Lancaster University

Academic leadership

Scientific Director of the Master in Data Science, Barcelona Graduate School of Economics (2013 - present)

Prizes and other esteem indicators

- Royal Statistical Society's Guy Medal in Bronze, 2010
- Savage award finalist for the best PhD dissertation in Bayesian Statistics, 2004
- Onassis Foundation scholarship, 2000-2003

Editorial work

• Associate Editor:

- ▷ Biometrika (2008-2012 & 2015-present)
- ▷ SIAM Journal of Uncertainty Quantification (2017-present)
- ▷ Statistics and Computing (2013-present)
- ▷ Bulletin of the Hellenic Mathematical Society (2016-present)
- ▷ Journal of the Royal Statistical Society, series B (2008-2012)
- Management Committee of SORT, published by the Statistical Institute of Catalonia (2014-present)
- Area chair for AISTAT (Artificial Intelligence and Statistics) 2010
- Member of the Savage Award Committee 2015

Publications

Papers in Journals

1. Roberts, G.O., Papaspiliopoulos, O. and Dellaportas, P. (2004). Bayesian inference for non-Gaussian Ornstein-Uhlenbeck stochastic volatility processes, **J. R. Statist. Soc. B**, 66, 369-393.
2. Beskos, A., Papaspiliopoulos, O., Roberts, G.O. and Fearnhead, P. (2006) Exact and computationally efficient likelihood-based inference for discretely observed diffusions, **J. R. Statist. Soc. B**, 68, 333-382. Presented at the Ordinary Meeting of the Research Section of the Royal Statistical Society on the 12/10/2005.
3. Beskos, A., Papaspiliopoulos, O. and Roberts, G.O. (2006). Retrospective Exact Simulation of Diffusion Sample Paths with Applications **Bernoulli**, 12, 1077-1098.
4. Papaspiliopoulos, O., Roberts, G.O. and Sköld, M. (2007) A general framework for parametrisation of hierarchical models **Statistical Science**, 22, 59–73.
5. Papaspiliopoulos, O. and Roberts, G.O. (2008) Stability of the Gibbs sampler for Bayesian hierarchical models **Annals of Statistics**, 36, 95–117.
6. Beskos, A. Papaspiliopoulos, O. and Roberts, G.O. (2008) A factorization of diffusion measure and finite sample path constructions **Methodol. Comput. Appl. Probab.** 10:1, 85–104.
7. Papaspiliopoulos O. and Roberts, G.O. (2008). Retrospective MCMC for Dirichlet process hierarchical models **Biometrika**, 95, 169–186.
8. Fearnhead, P. Papaspiliopoulos, O. and Roberts, G.O. (2008). Particle filters for partially observed diffusions, **J.R.Statist. Soc. B**, 70, 755–777.
9. Beskos, A. Papaspiliopoulos, O. and Roberts G.O. (2009) Monte Carlo maximum likelihood estimation for discretely observed diffusion processes, **Annals of Statistics**, 37, 223–245
10. Fearnhead, P., Papaspiliopoulos, O., Roberts, G.O. and Stuart, A.M. (2010). Random weight particle filtering of continuous-time processes, **J.R.Statist. Soc. B**, 72:4, 497–513
11. Yau, C, Papaspiliopoulos, O., Roberts, G.O. and Holmes, C. (2011) Bayesian nonparametric Hidden Markov Models with applications in genomics **J.R.Statist. Soc. B**, 73:1, 37–58
12. Łatuszyński, K., Kosmidis, I., Papaspiliopoulos, O. and Roberts, G.O. (2011) Simulating Events of Unknown Probabilities via Reverse Time Martingales. **Random Structures and Algorithms**, 38, 441–452
13. Papaspiliopoulos, O., Roberts, G.O. and Sermaidis, G. (2011) Whether 'tis nobler in the mind to suffer the slings and arrows of outrageous mixing problems, or to take arms against a sea of troubles, and by opposing end them? (Discussion to Meng and Yu's "To Center or Not to Center, That is Not the Question: An Ancillarity-Sufficiency Interweaving Strategy (ASIS) for Boosting MCMC Efficiency"), **Journal of Computational and Graphical Statistics**, 20:3, 592–602
14. Papaspiliopoulos, O., Pokern, Y., Roberts, G.O. and Stuart, A.M. (2012) Nonparametric estimation of diffusions: a differential equations approach **Biometrika**, 99:3, 511–531
15. Ditlevsen, S., Jensen, A.C., Kessler, M. and Papaspiliopoulos, O. (2012) A Markov Chain Monte Carlo approach to parameter estimation in the FitzHugh-Nagumo model, **Physical Review E - Statistical, Nonlinear, and Soft Matter Physics**, 86:4, art. no. 041114
16. Sermaidis, G., Papaspiliopoulos, O., Roberts, G., Beskos, A. and Fearnhead, P. (2013) Markov chain Monte Carlo for exact inference for diffusions **Scandinavian Journal of Statistics**, 40:2, 294 – 321
17. Chopin, N., Jacob, P. and Papaspiliopoulos, O. (2013) SMC²: an efficient algorithm for sequential analysis of state-space models **J.R.Statist. Soc. B**, 75:3, 397–426
18. Papaspiliopoulos, O., Roberts, G.O, Stramer, O. (2013) Data augmentation for diffusions **Journal of Computational and Graphical Statistics**, 22:3, 665–688
19. Papaspiliopoulos, O. and Ruggiero, M. (2014) Optimal filtering and the dual process, **Bernoulli** 20:4, 1999-2019
20. Agapiou, S., Bardsley, J., Papaspiliopoulos, O., and Stuart, A. (2014) Analysis of the Gibbs sampler for hierarchical inverse problems. **Journal on Uncertainty Quantification (SIAM/ASA)** 2-1, 511–544
21. Papaspiliopoulos, O., Roberts, G.O., and Taylor, K. (2016) Exact sampling of diffusions with a discontinuity in the drift. To appear in **Advances in Applied Probability**, 48A (Bingham Festschrift)
22. Papaspiliopoulos, O., Ruggiero, M., and Spanò, D. (2016) Conjugacy properties of time-evolving Dirichlet and gamma random measures **Electronic Journal of Statistics**, 10:2, 3452–3489

23. Agapiou, S. Papaspiliopoulos, O., Sanz-Alonso, D., and Stuart, A.M. (2017) Importance Sampling: Computational Complexity and Intrinsic Dimension **Statistical Science** (to appear)
24. Papaspiliopoulos, O. and Rossell, D. (2017) Scalable Bayesian variable selection and model averaging under block orthogonal design **Biometrika** (to appear)

Selected papers in conference proceedings (refereed)

25. Papaspiliopoulos, O., Roberts, G.O. and Sköld, M. (2003). Non-centered parameterisations for hierarchical models and data augmentation (*with discussion*). In **Bayesian Statistics 7** (eds. J. Bernardo, M. Bayarri, J. Berger, A. Dawid, D. Heckerman, A.F.M. Smith and M. West), 307–327. Oxford: Oxford University Press.
26. Lugosi, G., Papaspiliopoulos, O. and Stoltz, G. (2009) Online multi-task learning with hard constraints. In **Computational Learning Theory (COLT) 2009**

Book chapters

27. Papaspiliopoulos, O. (2011). Monte Carlo Probabilistic Inference for Diffusion Processes: A Methodological Framework. In *Bayesian Time Series Models*, 82-99, Cambridge University Press. Available *here*
28. Papaspiliopoulos, O. and Roberts, G.O. (2012). Importance sampling techniques for estimation of diffusion models. In *Statistical Methods for Stochastic Differential Equations, Monographs on Statistics and Applied Probability*, 311–337, Chapman & Hall. Available *here*

Selected technical Reports

29. Papaspiliopoulos, O. (2008) A note on posterior sampling from Dirichlet mixture models. Available from *here*

Extended academic visits

1. Berlin Mathematical School, Freie Universität, Bio-Computing group, May-June 2009
2. Collegio Carlo Alberto, Turin, July 2009, July 2013
3. Graduate School of Engineering Sciences, Osaka University, June-July 2010
4. CRISM at Warwick University, May 2010, September 2010, July 2012
5. Groupe des Écoles nationales d'économie et statistique, ENSAE, Paris, March-April 2013
6. Isaac Newton Institute, Cambridge, April-May 2014
7. Big Data Institute, University College London, December 2016

Invited Courses

1. Inference and simulation for stochastic differential equations: Laboratory of Statistics at CREST, Paris, 2009, Berlin Mathematical School, 2009, Warwick University, 2009 (jointly with G. Roberts), Osaka University, 2010
2. Hidden Markov Models: Greek Stochastics Meeting, Lefkada, 2009
3. Simulation-based continuous-time finance: MSc program ENSAE, Paris, 2010-2012
4. Prediction-based statistical modelling in finance: MSc program ENSAE, Paris, 2013
5. Sequential inference in state-space models, 10th Summer School in Stochastic Finance, Athens, 2013
6. Markov chain Monte Carlo in Statistics (jointly with G. Roberts), University of Copenhagen, 2013, Warwick University, 2015
7. Gibbs sampler: geometry and algorithms, ICMS program on Computational Methods in Statistical Mechanics, Edinburgh, June 2014, London Probability Seminar, January 2015
8. State Space Models and Particle Methods, University of Copenhagen, 2015, (IEEE-sponsored) Summer school Foundations and Advanced in Stochastic Filtering, Barcelona, June 2015

Presentations

More than 40 invited talks at conferences and 40 seminars since 2001. In recent years:

1. Seminar at Department of Statistics, Harvard, April 2012
2. Scientific and Statistical Computing Seminar, University of Chicago, May 2013
3. Uncertainty Quantification, SIAM conference, Georgia USA, March 2014
4. ICMS Research program on Computational methods for statistical mechanics - at the interface between mathematical statistics and molecular simulation, Edinburgh, June 2014
5. Plenary speaker at the European Meeting of Statisticians 2015, Amsterdam
6. Van Dantzig Lecture, Delft, 2016 Amsterdam

PhD student and PDRA supervision

PhD

1. Giorgos Sermaidis (Warwick, 2006-2010)
2. Miguel Belmonte (Warwick, 2006-2010)
3. Ilse Lindelaub (UPF, jointly with J. Eeckhout, 2012-2014)
4. Anders Christian Jensen (Copenhagen, 2011-2014, jointly with S. Ditlevsen)
5. Aggelos Alexopoulos (Athens, jointly with P. Dellaportas, 2012-)
6. Fiori Labrinakou (Athens, jointly with P. Dellaportas, 2012-)
7. Jacopo Capra (UCL, jointly with P. Dellaportas, 2015-)
8. Miquel Torrens (UPF, jointly with D. Rossell, 2016-)

RA

1. Tim Stumpf-Fetizon (UPF, jointly with J. Garcia-Montalvo)
2. Rishabh Agnihorti (UPF, 2015)

Track record of research funding

- EPSRC, 2004: 3-year grant GR/S61577/01 for "Bayesian inference for discretely observed continuous-time processes". Named Research Associate and proposal co-writer. Other members of the projects: G.O. Roberts, N. Shephard, S. Godsill, G. Young. Total of £173,098.
- Ministry of Science, Spain, 2008: "Ramon y Cajal" 5-year research fellowship RYC-2008-02395 in the field of Mathematics. Project title "Monte Carlo methods and relevant probabilistic constructions". Principal Investigator. Total of €192.480.
- Ministry of Science, Spain, research group grants: 2009-2012 MTM2009-0906, €59,290, 2012-2015 MTM2012-37195, €34,000. PI: G. Lugosi, 2015-2018 MTM2015-67304-P €43,000 (PI, jointly with Lugosi)
- Aristeia, Ministry of Education, Greece, 2012: 3-year research grant for "Likelihood methods for jump diffusions and related Markov processes", jointly investigated with P. Dellaportas. Total of €200,000.

Named collaborator in other projects

- NSF Integrated Lifecycle Approach to the Development of Health & Other Capabilities, PI J. Heckman, Chicago
- EPSRC grant EP/K001264/1 for "Bayesian Inference for Stochastic Processes from Partial Observations and Future Projections", PI K. Kalogeropoulos, LSE

Other professional activities

• Organisation of recent conferences and meetings

1. Barcelona Data Science Meeting, Barcelona, March 2016
2. Invited Session on "Bayesian Computation", Joint Statistical Meeting, Seattle, August 2015
3. Co-organiser of the Greek Stochastics meetings

• **Evaluator.** Reviewer for European Research Council (ERC) grants, reviewer for Scientific Board of the Spanish National Evaluation and Foresight Agency (ANEP).

• **Refereeing. Statistics:** Journal of the American Statistical Association, Journal of the Royal Statistical Society, series B and C, Annals of Statistics, Biometrika, Statistical Science, Scandinavian Journal of Statistics, Statistics and Computing, Electronic Journal of Statistics, Journal of Machine Learning Research, Foundations and Trends in Machine Learning, Journal of Time Series Analysis, Computational Statistics and Data analysis, Journal of Statistical Planning and Inference, Statistica Sinica, Bayesian Analysis, American Statistician; **Applied Probability:** Annals of Applied Probability, Bernoulli, Stochastic Processes and their Applications, Methodology and Computing in Applied Probability, ESAIM P & S; **Economics/Econometrics:** Journal of Econometrics, Journal of Economic Theory, Journal of Financial Econometrics, Journal of Economic Dynamics and Control; **Applied Math & Engineering:** IEEE Transactions on Information Theory, IEEE Transactions on Signal Processing, SIAM Journal on Scientific Computing, SIAM Multiscale Modeling and Simulation, Inverse Problems (IOP), ESAIM: Mathematical Modelling and Numerical Analysis, Proceedings of the Royal Society; **Biology:** Journal of Theoretical Biology

• **PhD thesis examiner:** Drovandi, 2012, Queensland University of Technology; Guy, Paris V, 2014; Suda, Lancaster, 2014, Lindenlaub, European University Institute, 2014; Schauer, Delft, 2015

Teaching experience

Bayesian Statistics (Msc in Medical Statistics, Lancaster, 2003)

Computer intensive statistical methods (Msc in Medical Statistics, Lancaster 2004, 2005)

Modelling and likelihood inference with stochastic differential equations (4th year MORSE, Warwick, 2006).

Statistics for Economics (UPF, in Spanish and English, 2008, 2009, 2012)

Stochastic Processes and Mathematical Finance (Barcelona GSE, 2008-2013).

Prediction with Time Series (UPF, 2010, 2011, 2013)

Statistical modelling and inference (MSc in Data Science, BGSE, 2014)

Lecture Notes

1. Computer intensive statistical methods, available from [here](#)
2. Modelling and likelihood inference with stochastic differential equations, available from [here](#)
3. Prediction with time series

Languages

Greek (mother tongue), English (fluent), Spanish (fluent), Catalan (intermediate), Italian (intro), German (basic)