Curriculum Vitae

Eulalia Nualart
Department of Economics and Business
Universitat Pompeu Fabra and Barcelona Graduate School of Economics
C/ Ramón Trias Fargas 25-27, 08005 Barcelona, Spain
E-mail and Homepage: eulalia@nualart.es, http://nualart.es
Phone: + 34 630 727 584

Research interests: Stochastic analysis, Malliavin calculus and applications to finance. Study of densities of solutions to SDEs and SPDEs. Fractional Brownian motion. Lévy processes. Statistical Inference for parametic models driven by SDEs.

University Positions:

- **September 2012-:** *Tenured Associate Professor Serra Hunter Programme*, Department of Economics, Universitat Pompeu Fabra and Barcelona Graduate School of Economics
- **2004-12:** *Maître de Conférences (permanent research and teaching position)*, Department of Mathematics, Université de Paris 13
- **2010-11:** *Research visit* (1 semester), Hausdorff Research Institute of Mathematics, University of Bonn
- **2008-09:** *Invited Professor* (1 year), Department of Statistics, Universidad Pública de Navarra
- **2006-07:** *Invited Professor* (1 semester), Department of Mathematics, University of Utah
- **2002-04:** *PostDoc*, Department of Mathematics, Université de Paris 6
- **1998-02:** *Assistant*, Department of Mathematics, École Polytechnique Fédérale de Lausanne

Degrees and bonus:

- **2013:** *Acreditació d'Agregat*, AQU Catalunya
- **2011:** *Acreditación Nacional de Profesor Titular de Universidad*, ANECA
- **2010:** *Prime d'Excellence Scientifique (3 years bonus for scientific excellence)*, Université de Paris 13
- **2009:** *Habilitation à Diriger des Recherches (Qualification for Ph.D. supervision)*, Université de Paris 13
- **2009:** *Acreditación Nacional de Contratado Doctor*, ANECA
- **2002:** *Ph.D. in Probability Theory*, École Polytechnique Fédérale de Lausanne
- **2004:** *Master in Financial Analysis*, Universitat Oberta de Catalunya
- **1998:** *Mathematics Degree*, Universitat Politècnica de Barcelona

Grants and scientific projects:

- **2016-18:** Ministerio de Economía y competividad (MINECO). Plan Nacional de I+D+i (2015). Project title: Estimación de redes latentes. Amount 43.800. Members: 5 UPF + 3
- **2013-15:** Ministerio de Economía y competividad (MINECO). Plan Nacional de I+D+i (2008-2011). Project title: Predicción e inferencia en modelos estructurados de dimensión alta. Amount 39.780. Members: 5 UPF + 3 externals.
- **2014-16:** Agencia gestió ajuts Universitaris i recerca. Pla de Recerca i Innovació de Catalunya (2010-2013). Project title: Grup d'estadística i investigació operativa. Amount 43.000. Members: 12 UPF + 2 externals.
- **2013-17:** Marie Curie European Union programme FP7-PEOPLE-2012-CIG grant agreement 333938. Budget: 100.000 Euros. Members: Eulalia Nualart. Title of the project: Statistical Inference and Malliavin calculus.
- **2010-13:** Title of the project: Grup d'estadística i investigació operativa (ayudas para grupos de investigación SGR-DGR). Entity: AGAUR-Generalitat de Catalunya. Budget: 47.840 Euros. Principal researcher: Gabor Lugosi. Number of members: 13.
- **2010-11:** Junior Semester Program in Stochastics at HIM (Hausdorff Research Institute of Mathematics), University of Bonn. Members: C. Marinelli, E. Nualart, L. Quer-Sardanyons. Description: Development of a research project and organisation of mini-courses during 4 months, salary 3.000 euros per month for each member.
- **2008-09:** Contract between the Public University of Navarra and CENER (Centro de Energías Renovables). Members: F. Mallor, E. Nualart, E. Omey. Description: Course of 10h at CENER on statistical and probability methods to evaluate the maximum wind speed in an area for the design of wind turbines, notes of the course and implementation of a code in R. 3.000 euros for the whole project.

Publications and preprints:

- Published research papers:

  21. Kohatsu-Higa, A., Nualart, E. and Tran, N.K. **(2016)**, LAN property for an ergodic diffusion with jumps, *Statistics, to appear*.

  20. Baudoin, F., Nualart, E., Ouyang, C. and Tindel, S. **(2016)**, On probability laws of solutions to differential systems driven by a fractional Brownian motion, *The Annals of Probability*, 44, 2554-2590.

  19. Delarue, F., Menozzi, S. and Nualart, E. **(2015)**, The Landau equation for Maxwellian molecules and the Brownian motion on $SO_N(\mathbb{R})$, *Electronic Journal of Probability*, 20, 1-39.

  18. Foondun, M. and Nualart, E. **(2015)**, On the behaviour of stochastic heat equations on bounded domains, *ALEA, Lat. Am. J. Probab. Math. Stat.*, 12, 551-571.

  17. Kohatsu-Higa, A., Nualart, E. and Tran, N.K. **(2014)**, LAN property for a simple Lévy process, *C. R. Acad. Sci. Paris*, 352, 859-864.

  16. Dalang, R.C., Khoshnevisan, D., and Nualart, E. **(2013)**, Hitting probabilities for systems of non-linear stochastic heat equations in spatial dimension $k \geq 1$, *SPDEs: Analysis and Computations*, 1, 94-151.

15. Marinelli, C., Nualart, E., and Quer-Sardanyons, L. **(2013)**, Existence and regularity of densities for semilinear dissipative parabolic SPDEs, *Potential Analysis*, 39, 287-311.

14. Nualart, E. **(2013)**, On the density of systems of non-linear spatially homogeneous SPDEs, *Stochastics and Stochastics Reports*, 85, 48-70.

13. Nualart, E. and Quer-Sardanyons, L. **(2012)**, Gaussian estimates for the density of the non-linear stochastic heat equation in any space dimension, *Stochastic Processes and their Applications*, 122, 418-447.

12. Dalang, R.C., Khoshnevisan, D., Nualart, E., Xiao, Y., and Wu, D. **(2012)**, Critical Brownian sheet does not have double points, *The Annals of Probability*, 40, 1829-1859.

11. Nualart, E. **(2012)**, L'aplicabilitat de la fórmula d'integració per parts en un espai Gaussià, *Butlletí de la Societat Catalana de Matemàtiques*, 26, 103-136.

10. Foondun, M., Khoshnevisan, D. and Nualart, E. **(2011)** A local-time correspondence for stochastic partial differential equations, *Trans. Amer. Math. Soc.*, 363, 2481-2515.

9. Malliavin, P. and Nualart, E. **(2009)** Density minoration of a strongly non-degenerated random variable, *Journal of Functional Analysis*, 256, 4197-4214.

8. Nualart, E. and Viens, F. **(2009)**, The fractional stochastic heat equation on the circle: Time regularity and potential theory, *Stochastic Processes and their Applications*, 119, 1505-1540.

7. Dalang, R.C., Khoshnevisan, D., and Nualart, E. **(2009)**, Hitting probabilities for systems of non-linear stochastic heat equations with multiplicative noise, *Probab. Th. Rel. Fields*, 144, 371-427.

6. Khoshnevisan, D. and Nualart, E. **(2008)**, Level sets of the stochastic wave equation driven by a symmetric Lévy noise, *Bernoulli*, 14, 899-925.

5. Dalang, R.C., Khoshnevisan, D., and Nualart, E. **(2007)**, Hitting probabilities for systems of non-linear stochastic heat equations with additive noise, *ALEA*, 3, 231-271.

4. Guérin, H., Méléard, S. and Nualart, E. **(2006)**, Estimates for the density of a non-linear Landau process, *Journal of Functional Analysis*, 238, 649-677.

3. Mountford, T.S. and Nualart, E. **(2004)**, Level Sets of Multiparameter Brownian Motions, *Electronic Journal of Probability*, 9, 594-614.

2. Nualart, E. **(2004)**, Exponential divergence estimates and heat kernel tail, *C.R. Math. Acad. Sci. Paris*, 338, 77-80.

1. Dalang, R.C. and Nualart, E. **(2004)**, Potential theory for hyperbolic SPDEs, *The Annals of Probability*, 32, 2099-2148.

- Submitted research papers:

1. Brownlees, C., Nualart, E. and Sun, Y. **(2016)**, Realized Networks.

2. Brownlees, C., Nualart, E. and Sun, Y. **(2016)**, A truncated two-scales realized volatility estimator.

3. De Diego, S., Ferreira, E. and Nualart, E. **(2016)**, Variance reduction applied to Greeks for jump-diffusion models.

- Mathematics divulgation papers:

  1. Nualart, E., García Landeras, J. **(2010)**, Cómo mirar a través de una cámara fotográfica, *Materials Matemàtics*, 28, ISSN: 1887-1097.

Referee:

- *Referee for the journals:* Journal of Theoretical Probability, Stochastic Processes and Applications, Electronic Communications in Probability, Conference Proceedings, The Annals of Probability, Probability Theory and Related Fields, Journal of Functional Analysis, Acta Applicandae Mathematicae, ESAIM: Probability and Statistics, Transactions of the American Math. Society, Proceedings of the American Math. Society, Potential Analysis, Stochastic Analysis and Applications, Journal of Computational Finance.

Teaching activities:

- *Courses at Undergraduate level:*

  - **September 2012-:** Universitat Pompeu Fabra:
    - Probability and Statistics (L2 Economics)
    - Linear Algebra and Dynamical Systems (L3-4 Economics)
  - **2004-12:** Université de Paris 13:
    - Integration and Probability theory (L3 Math and Financial Engineering)
    - Stochastic Processes in discrete time (Financial Engineering)
    - Statistics (L2 Math and Financial Engineering)
    - Econometrics (L3 Economics)
  - **2008-09:** Universidad Pública de Navarra:
    - Data treatment with computers (L1 Economics)
    - Statistics applied to business (L2 Management)
    - Statistics methods with computers (L2 Management)
  - **1998-02:** EPF-Lausanne:
    - Linear Algebra (Engineering)
    - Analysis (L2 Physics)
    - Probability theory and Stochastic Processes (L3 Math)

- *Courses at Master and Ph.D. level:*

  - **2013-15:** *Master in Finance*, *'Continuous-Time Finance'*, Barcelona GSE
  - **2010-11:** *Ph.D. course*, *'Introduction to Malliavin calculus'*, Université de Paris 13
  - **2009-11:** *Master in Finance*, ENSAE/Université de Dauphine
  - **2009:** *Summer course*, University of Madison
  - **2008:** *Ph.D. course*, Universidad de San José (Costa Rica)
  - **2006:** *Ph.D. course*, University of Utah

Ph.D. students:

- *Ngoc Khue Tran*, Université de Paris 13, in co-direction with Arturo Kohatsu-Higa,

  Ph.D. title: LAN property for jump diffusion processes with discrete observatiosa via the Malliavin calculus. Presented: 24th September **2014**.

- *Yucheng Sun*, Universitat Pompeu Fabra, in co-direction with Christian Brownlees,

  Ph.D. subject: Large dimensional realized covariance estimators based on LASSO regression. Estimated presentation date: March **2017**.

Organisation of International Conferences:

- **June 2015:** Co-organisation with Christian Brownlees of the Workshop: *High frequency financial econometrics* for the Summer Forum 2015 of the Barcelona GSE
- **June 2014:** Organisation of the Workshop: *Statistics, jump processes and Malliavin calculus: recent applications* for the Summer Forum 2014 of the Barcelona GSE
- **September 2013:** Co-organisation with L. Quer-Sardanyons of the session *Probabilidad y Modelos Aleatorios* in the *Congreso de Jóvenes Investigadores RSMR*, Universidad de Sevilla
- **March 2011:** Co-organisation with F. Viens, Y. Hu, J. Feng, L. Coutin, L. Quer, I. Nourdin, G. Peccati, C. Tudor, S. Tindel *International Conference on Malliavin Calculus and Stochastic Analysis in Honor of Professor David Nualart*, University of Kansas
- **October 2006:** Co-organisation with D. Khoshnevisan *AMS Western Sectional Meeting,* Interface of stochastic PDEs and Gaussian analysis, University of Utah

Books Edition:

- Co-editor with F. Viens, Y. Hu and J. Feng of the *Malliavin Calculus and Stochastic Analysis: Festschrift in Honor of David Nualart*, Springer, 2013.

Invitation to International Conferences:

- BCAM, Bilbao (Spain), **2016** *4th Fractional Calculus, Probability and non-local operators workshop*
- Barcelona (Spain), **2016** *Session on Mathematical Finance CSASC*
- Aarhus University (Denmark), **2016** *Ambit fields and related topics*
- CIRM, Levico (Italy), **2016** *Stochastic Partial Differential Equations and Applications X*
- Toulouse (France), **2016** *Financial Econometrics Conference*
- Barcelona (Spain), **2015** *Edinburgh Mathematical Society and Societat Catalana de Matemtiques joint meeting, Session: 'Stochastics'*,
- University of Nevada (USA), **2015**, *AMS Spring Eastern Sectional Meeting, Session 'Stochastic analysis and rough paths'*

- Georgetown University (USA), **2015**, *AMS Spring Eastern Sectional Meeting, Session 'Stochastic analysis and SPDEs'*
- TU Dresden (Germany), **2014**, *START 2014-Workshop on Stochastic Analysis and Related Topics*
- Tech Univ Munich (Germany), **2014**, *Mini-Workshop: Malliavin calculus and applications to finance*
- Levico Terme (Italy), **2014**, *SPDEs and Applications IX*
- Michigan University (USA), **2013**, *NSF-CBMS course in SPDEs by Davar Khoshnevisan*
- CIRM (France), **2012**, *Thematic school: Control of PDE's, interactions and application challenges*,
- Cambridge (UK), **2012**, *Stochastic Partial Differential Equations-Follow-up Meeting*
- Málaga (Spain), **2012**, *II Congreso Conjunto de la RSME (Real Sociedad Española de Matemáticas) y la SMM (Sociedad de Matemáticas de México)*
- Soria (Spain), **2011**, *Congreso de Jóvenes Investigadores RSME*
- Ascona (Switzerland), **2011**, *7th Seminar on Stochastic Analysis, Random Fields and App.*
- Avila (Spain), **2011**, *Congreso de la Sociedad Española de Matemáticas*
- Rennes (France), **2008**, *Journées MAS*
- Singapore, **2008**, *7th World Congress in Probability and Statistics*
- Northwestern Chicago University, **2007**, *Midwest Probability Colloquium*
- Princeton University , **2006**, *Seminar on Stochastic Processes*
- ZIF, University of Bielefeld (Germany), **2005**, *Workshop on SPDEs*
- Berne (Switzerland), **2005**, *Swiss probability seminar*
- Yep, Eurandom, Eindhoven (Holland), **2005**, *Workshop on self-similar random structures Hausdorff dimension and branching*
- Banff (Canada), **2003**, *Conference on Stochastic Partial Differential Equations*