

Curriculum Vitae for Elisa Alòs

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Elisa Alòs Alcalde

Date and place of birth: 11/30/1971, Barcelona, Spain

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EDUCATION

Llicenciada en Ciències Matemàtiques, University of Barcelona, 1995

PhD. in Mathematics, University of Barcelona, 1998

PROFESSIONAL EXPERIENCE

Teaching Fellow, Department of Statistics, University of Barcelona, 11/21/1995-1/31/1996

PhD. Fellow (MEC reference: FP95 38108511), Department of Statistics, University of Barcelona, 1/31/1996-09/15/1997

Assistant Professor, Department of Mathematics, *Universitat Autònoma de Barcelona*, 09/15/1997-12/31/2000

Associate Professor, Department of Economics and Business, University Pompeu Fabra, 01/01/2001-

ORGANIZATIONAL ACTIVITY

Co-organizer of the Workshop on Fractional Brownian motion, IMUB, Barcelona, Spain, Feb. 15-16, 2001

Organizer of the Session on Asymptotic Methods in Option Pricing in the *SIAM Conference on Financial Mathematics and Engineering (FM12)*, Minnesota, July 2012

Co-organizer of the *Interdisciplinary Workshop on Quantitative Finance*, held in the CRM from 25th to 26th of June, 2015

CCASC September 2016 Barcelona

PUBLICATIONS (articles in refereed journals)

E. Alòs and D. Nualart: Anticipating stochastic Volterra equations. *Stochastic Processes and their Applications* **72** (1997) 73-95

E. Alòs and D. Nualart: An extension of Itô's formula for anticipating processes. *Journal of Theoretical Probability* **11** (2) (1998) 493-514

E. Alòs, J. A. León y D. Nualart: Stochastic heat equation with random coefficients. *Probability Theory and Related Fields* **115** (1) (1999) 41-94.

E. Alòs, D. Nualart and F. Viens: Stochastic heat equation with white-noise drift. *Annales de l'Institut Henry Poincaré* **36** (2) (2000) 181-218.

E. Alòs, O. Mazet and D. Nualart: Stochastic calculus with respect to fractional Brownian motion with Hurst index lesser that 1/2. *Stochastic Processes and their Applications* **86** (2000) 121-139.

E. Alòs, O. Mazet and D. Nualart: Stochastic calculus with respecto to the Gaussian processes. *The Annals of Probability* **29** (2) (2001) 766-801

E. Alòs, J. A. León and D. Nualart: Stochastic Stratonovich calculus for fractional Brownian motion with Hurst parameter less than 1/2. *Taiwanese Journal of Mathematics* **5** (3) (2001) 609-632.

E. Alòs and S. Bonaccorsi: Stochastic partial differential equations with Dirichlet white-noise boundary conditions. *Annales de l'Institut Henry Poincaré* **38** (2) (2002) 125-154.

E. Alòs and S. Bonaccorsi: Stability for stochastic partial differential equations with Dirichlet white-noise boundary conditions. *Infin. Dimens. Anal. Quantum Probab. Relat. Top.* **5** (4) (2002) 465-481.

E. Alòs and D. Nualart: Stochastic integration with respect to the fractional Brownian motion. *Stochastic and Stochastic Reports* **75** (3) (2003) 129-152.

E. Alòs: A generalization of the Hull and White formula with applications to option pricing approximation. *Finance and Stochastics* **10** (3) (2006) 353-365

E. Alòs, J. A. León and J. Vives: On the short-time behaviour of the implied volatility for jump-diffusion models with stochastic volatility. *Finance and Stochastics* **11** (4) (2007), 571-589.

E. Alòs and C. O. Ewald: Malliavin Differentiability of the Heston Volatility and Applications to Option Pricing. *Advances in Applied Probability* **40** (1) (2008), 144-162.

E. Alòs, J. A. León and J. Vives: An anticipating Itô's formula for Lévy processes. *Latin American Journal of Probability and Mathematical Statistics*, Vol 4 (2008), 285–305

E. Alòs, J. A. León, M. Pontier and J. Vives: A Hull and White Formula for a General Stochastic Volatility Jump-Diffusion Model with Applications to the Study of the Short-Time Behavior of the Implied Volatility. *Journal of Applied Mathematics and Stochastic Analysis*, vol 2008 (2008).

E. Alòs, A. Eydeland and P. Laurence: A Kirk's and a Bachelier's formula for three-asset spread options. *Energy Risk*, September 2011.

E. Alòs: A decomposition formula for option prices in the Heston model and applications to option pricing approximation. *Finance and Stochastics* **16** (3) (2012)

A Brú, E Alòs, JC Nuño, M Fernández de Dios. *Scientific reports* (4) *Nature Publishing group* (2014).

E. Alòs and J. A. León: On the short-time behaviour of the implied volatility skew for random strike options and applications to option pricing approximation. *Quantitative Finance* (2015)

E. Alòs, R. De Santiago and J. Vives: Calibration of stochastic volatility models via second order approximation: the Heston model case. *IJTAF* , vol. 18, n.6 (2015)

E. Alòs, Z. Chen and T. Rheinländer Hedging of Barrier Options via a General Self-duality. *Mathematical Finance* **26** (3), 492-515 (2016)

E. Alòs and Yan Yang. A closed-form option pricing approximation formula for a fractional Heston model. *Stochastics* (published online 2016)

PUBLICATIONS (divulgative)

E. Alòs: Geometría fractal y crecimiento tumoral. *Aportaciones matemáticas. Comunicaciones* 44 (2011).

PUBLICATIONS (proceedings)

E. Alòs and D. Nualart: A maximal inequality for the Skorohod integral. In *Progress in Systems and Control Theory*, **23**, 241-251. Birkhauser, 1997.

PREPRINTS

E. Alòs and J. A. León *On the local convexity of the implied volatility curve in uncorrelated stochastic volatility models*. Working Paper 1458, UPF (2014)

E. Alòs and T. Rheinländer *On Margrabe options written on stochastic volatility models*. Working Paper 1475, UPF (2014)

INVITED COURSES

· IXIS Corporate and Investment Bank (Paris), December 2006. One-day seminar. Title: *Some applications of the Malliavin Calculus to the study of jump-diffusion stochastic volatility models*.

· University of St. Andrews, May 2009. *Introductory short course on Fractional Brownian motion*.

SHORT VISITS

-Universidad Complutense de Madrid. July 2006.

-Universidad Complutense de Madrid. December 2009 (invitation).

-Universidad Autónoma de Aguascalientes México, July 27-August 2 (2010) , (invitation),

-Ecole Polytechnique, Paris, May 2012 (invitation),

-LSE, London, September 2012 (invitation)

-University of Applied Sciences in Munich, April 2014 (invitation)

-Vienna Institute of Technology, July 2014 (invitation)

- Imperial College, March 2014 (invitation)
- University of Applied Sciences in Munich, June 2015 (invitation)
- University of Augsburg, June 2015 (invitation)
- Vienna Institute of Technology, July 2015 (invitation)
- University of Sussex, February 2016 (invitation)
- Kyoto University, March 2016 (invitation)
- CINVESTAV, Mexico (invitation, July 2016)

RESEARCH TALKS AND SEMINARS

Anticipating stochastic Volterra equations. Department of Statistics, University of Barcelona, 1996.

An extension of Itô's formula for anticipating processes. Advanced course on Stochastic Analysis. CRM, Barcelona, 1997

An extension of Itô's formula for anticipating processes. École de Probabilités de St. Flour, Université Blaise Pascal, 1997

An extension of Itô's formula for anticipating processes. Laboratoire de Statistique et Probabilités de la Université Paul Sabatier (Toulouse), 1997.

The stochastic heat equation with random generators. Stochastic PDEs and Kolmogorov equations in infinite dimensions. Centro Internazionale Matematico Estivo, Cetraro, 1998.

Stochastic calculus with respect to the fractional Brownian motion. Dipartimento di Matematica de la Università Degli Studi di Trento, 1998.

Stochastic partial differential equations with Dirichlet white-noise boundary conditions. University of Barcelona, 1999

Stochastic partial differential equations with Dirichlet white-noise boundary conditions. Durham Symposium on Stochastic Analysis, London Mathematical Society, 1999.

Integration with respect to the fractional Brownian motion. Universitat Autònoma de Barcelona, 2000.

Stochastic partial differential equations with Dirichlet white-noise boundary conditions (poster). Stochastic PDEs and Applications. Centro Per la Ricerca Matematica, Trento, 2000.

Random kernels in the study of SPDEs with boundary noises. Workshop on stochastic infinitely dimensional systems. Charles Universtiy, Prague, 2000.

The fractional Brownian motion. Dipartimento di Matematica de la Università Degli Studi di Trento, 2000.

Option pricing approximation for stochastic volatility models. University of Barcelona, 2004.

An extension of the Hull and White formula with applications to option pricing approximation. University Pompeu Fabra, 2004

An extension of the Hull and White formula with applications to option pricing approximation (poster). 6th World Bernoulli Congress. Barcelona, 2004

An extension of the Hull and White formula Stochastic Analysis, Random Fields and Applications. Ascona, Switzerland, 2008

An extension of the Hull and White formula with applications. Université Marné la Vallée, France, 2008.

On the impact of correlation on option prices: a Malliavin Calculus approach. Linz (december 2008)

How can we use Stochastic Calculus to Develop Closed-form Approximate Option Pricing Formulas?. ICIAM, Vancouver 2011.

A Decomposition Formula for Option Prices in the Heston Model and Applications to Option Pricing Approximation. Minneapolis 2012, SIAM Conference on Financial Mathematics and Engineering (FM12).

A Decomposition Formula for Option Prices in the Heston Model and Applications to Option Pricing Approximation. École Polytechnique, Paris, May 2012.

A Decomposition Formula for Option Prices in the Heston Model and Applications to Option Pricing Approximation. LSE, London, September 2012.

Calibration of stochastic volatility models via second order approximation: the Heston model case. Jornada CRM-Empresa sobre finanzas quantitativas. CRM, Bellaterra, February 2013.

On the closed-form approximation of short-time random strike options. SIRE Conference on 'Finance and Commodities'. University of St Andrews, Scotland, July 2013.

On the closed-form approximation of short-time random strike options. "Two-day Workshop on Finance and Stochastics", 26-27 November, 2013, Universitat de Barcelona.

On the closed-form approximation of short-time random strike options. CRM Finance Seminar, February 2014.

On the closed-form approximation of short-time random strike options. LMU, Munich, April 2014.

On the closed-form approximation of short-time random strike options. Workshop in Statistics, Jump Processes and Malliavin Calculus: Recent Applications. Barcelona, June 2014

Solutions for three-asset spread options. 2^a Jornada CRM – Empresa. Finanzas Cuantitativas. June 2014

On the closed-form approximation of short-time random strike options. Vienna Institute of Technology. July 2014

On the closed-form approximation of short-time random strike options. SEFE Conference in Oslo, April 2015 (plenary speaker)

On the closed-form approximation of short-time random strike options. Interdisciplinary Workshop on Quantitative Finance. CRM, Bellaterra, June 2015

Fractional Brownian motion in Finance. University of Applied Sciences in Munich, June 2015

Fractional Brownian motion and applications .University of Augsburg, June 2015

Approximation formulas for spread option prices. University of Sussex, February 2016

On the link between the Malliavin derivative operator and the implied volatility behaviour. [International Conference on Financial Risks and Their Management 2016](#) Kyoto, March 2016 (Invitation).

On the link between the Malliavin derivative operator and the implied volatility behaviour. Vienna congress on Mathematical Finance, September 2016

On the link between the Malliavin derivative operator and the implied volatility behaviour.
CSASC, Barcelona, September 2016.

REFEREE FOR:

- Proceedings of the Seventh Symposium on Probability and Stochastic Processes, published in the Contemporary Mathematics Series of the American Mathematical Society.
- Proceedings of the VIII Symposium on Probability and Stochastic Processes, 'Probabilistic Models in Risk Theory and Actuarial Mathematics'
- *Stochastics and Stochastic Reports*
- Documentos de Trabajo de la Facultad de Economía de la Universidad de Barcelona- Colección de Economía
- Revista Colombiana de Estadística
- Mathematical Finance
- Annales de l'Institut Henry Poincaré
- Journal of Applied Mathematics and Stochastic Analysis
- International Journal of Control
- Stochastic Processes and their Applications
- International Journal of Theoretical and Applied Finance
- European Journal of Operational Research
- Quantitative Finance
- Journal of Probability and Statistics
- Applied Mathematics Research Express
- Bachelier Finance Society World Congress 2010
- SIAM Journal on Financial Mathematics
- Energy Risk
- Stochastic Analysis and Applications
- International Journal of Stochastic Analysis
- Advances in Difference Equations
- Stochastics
- "Statistical Methods and applications in Insurance and Finance" which has been held in Marrakesh from 8 to 13 April 2013.

- Statistics and Probability Letters
- Publicationes Mathematicae Debrecen. University of Debrecen, Hungary
- Stochastics and Stochastic Reports
- Computational Economics

Reviewer for:

- Zentralblatt für Mathematik
- Mathematical Reviews

RESEARCH GRANTS

Barcelona GSE Seed Grant for the project "*Numerical problems in Finance*" (2014)

OTHERS (RESEARCH)

- External referee of the PhD. Thesis of Reyla Navarro Cruz (CINVESTAV, Mexico, 2003)
- Member of the jury of the PhD dissertation of Jesús Pérez Colino (Universidad Carlos III de Madrid, Enero 2009)
- External referee of the PhD. Thesis of ZJ Guo (THE UNIVERSITY OF NEW SOUTH WALES, Australia, 2009)
- External referee of the PhD. Thesis of Johanna Garzón (CINVESTAV, Mexico, 2010)
- Member of the jury of the PhD dissertation of Amel Bentata. (Université de Paris VI-VII, París, 2012).
- External referee of the PhD. Thesis of Roy Nawar (University of Sydney, Australia, 2012).
- Member of the jury of the PhD dissertation of Hossein Jafari (Universitat de Barcelona, 2012)
- Member of the jury of the PhD dissertation of Gergely Farkas (Universitat de Barcelona, 2014)
- Referee of the book project *Lecture notes on Continuous Time Finance in Economics*, by Ser-Huang Poon (Professor of Finance, Manchester Business School, Manchester)
- Referee of the research project *Asymptotics of Volatility Surfaces and Option Prices* by GERHOLD Stefan, presentado a la Austrian Science Foundation.
- Referee of the book project *The Economics of Continuous-Time Finance*, by Bernard Dumas and Elisa Luciano.