Andrea Pascucci (September 2021)

Education & employment
2017-present: Tutor del Collegio Superiore dell'Alma Mater Studiorum Università di Bologna
2014-present: Full professor of Probability (SSD MAT/06), University of Bologna
2007-2014: Associate professor of Mathematical Finance and Actuarial Mathematics (SSD SECS-S/06), University of Bologna
1998-2007: Assistant professor of Mathematical Analysis (SSD MAT/05), University of Bologna
PhD in Mathematics from the University of Bologna (1999) Thesis advisor: Prof. Ermanno Lanconelli Degree in Mathematics cum laude from the University of Bologna (1993)

Editorial board membership
Associate Editor of

- Journal of Computational Finance
- SeMA Journal (Boletin de la Sociedad Española de Matemática Aplicada)

Publications
Five books and more than 70 papers on the following topics: second order partial differential equations of degenerate parabolic type; Kolmogorov equations; stochastic differential equations; free boundary and optimal stopping problems; applications to mathematical finance; American options; Asian/path-dependent options and volatility modelling. The complete list of downloadable papers is available at

http://www.dm.unibo.it/matecofin/member.php?id=6&m=pascucci

Books
- Teoria della Probabilità, Springer (2020) pp. 356
- PDE and Martingale Methods in Option Pricing, Bocconi & Springer Series (2010) pp. 720
- Financial Mathematics: Theory and problems for multi-period models, (with W.J. Runggaldier) Springer (2012) pp. 288
- Calcolo stocastico per la finanza, Springer Unitext (2007) pp. 520
- Finanza Matematica, Teoria e problemi per modelli multiperiodali, (with W.J. Runggaldier) Springer Unitext (2009) pp. 270

Research projects
- Italian coordinator of the ABC-EU-XVA project H2020-MSCA-ITN-2018 Project ID 813261
- Italian coordinator of the "WAKEUPCALL - Applied mathematics for risk measures in finance and insurance, in the wake of the crisis" H2020-MSCA-ITN-2014 Project ID 643045
- 2006-2009: co-investigator of the EU NEST STREP project GALA - Geometric analysis in Lie group and applications
- 2005-2006: co-investigator of the National PRIN project "Viscosity, metric and control methods in the theory of nonlinear partial differential equations "
- 2004-2006: Director of the "Young researchers" projects of the University of Bologna:
- "Equazioni differenziali paraboliche nel mercato delle opzioni e in finanza matematica"
- "Equazioni differenziali degeneri non ipoellittiche in finanza matematica"
- "Esistenza e regolarità di soluzioni viscose di equazioni non-lineari degeneri"

- 2004: Director of the interdisciplinary research project INDAM “Matematica e mercati finanziari"

Scientific activities

Director (with Sergio Polidoro) of the master programme in Mathematical Finance of the Department of Mathematics (University of Bologna)
http://www.dm.unibo.it/finanza/
Several internships (approximately 250) organized for graduate and PhD students in banks and financial institutions.

Teaching

Since 1998 at University of Bologna: courses on

- Stochastic Calculus and Stochastic Differential Equations
- Probability and Statistics
- Financial Mathematics

Supervision of approximately 150 BSc and MSc dissertations.

PhD students advised

- Giacomo Lucertini (Università di Bologna)
- Elisa Raspanti (A2A - Università di Bologna)
- Kevin Kamm (Università di Bologna - ABC-EU-XVA project)
- Pasquale Cascarano (Università di Bologna)
- Antonello Pesce (Università di Bologna)
- Anastasia Borovykh (Università di Bologna - WAKEUPCALL project)
- Sidy Diop (Università di Bologna - WAKEUPCALL project)
- Michele Pignotti (Università di Bologna)
- Stefano Pagliarani (Università di Padova)
- Alessandro Carciola
- Laura Monti (Università di Bologna)
- Marco Di Francesco (Università di Bologna)

Organization of meetings and courses

- June 2021: International E-Conference on Pure and Applied Mathematical Sciences (ICPAMS-2021), Tunisi.
- May 2021: International Conference on Computational Finance 2021, Wuppertal (Germany)
- July 2019: invited minisymposium on “Stochastic differential equations and applications in Physics and Finance” at the 9th International Congress on Industrial and Applied Mathematics - ICIAM 2019, Valencia
- July 2019: member of the scientific committee of the Third International conference on Computational Finance, La Coruna (Spain),
- June 2019, member of the scientific committee of the Third International Congress on Actuarial Science and Quantitative Finance, Manizales (Colombia)
- June 2019, member of the scientific committee of the Second Italian Meeting on Probability and Mathematical Statistics, Salerno
- May 2019: Spring School on XVA modeling, Bologna
- January 2019: Winter School on “Stochastic PDEs and Mean-Field Games”, Bologna
- September 2018: session “Analytic and numerical methods for stochastic differential equations and applications in Physics and Finance” at ICNAAM 2018, Rhodes
- June 2016: invited session at http://icasqf.org/ - Cartagena (Colombia)
- March 2016: Spring School in Finance 2016
- September 2012: Organizing commitee of the Conference in honor of the 70th birthday of Wolfgang J. Runggaldier, Università di Padova
- December 2011: Scientific commitee of the Conference “Mathematical Finance and Partial Differential Equations 2011” Rutgers, The State University of New Jersey (USA)
- September 2010: Workshop “Kolmogorov equations in Physics and Finance” Co-organizer: S. Polidoro, Università di Modena e Reggio Emilia

- June 2010: Session “Models and Numerical Methods in Quantitative Finance” in SIMAI-2010 Co-organizer: Carlos Vazquez, University of A Coruna.
- May 2008: Geometric Methods in PDE's: a conference in occasion of the 65th birthday of Ermanno Lanconelli Co-organizer: G. Citti, A. Montanari, S. Polidoro, Università di Bologna.
- May 2007, 2008 and 2009: Spring School in Finance
- May 2004, 2005 and 2006: Spring School in Finance Co-organizer: Francesca Biagini, Università di Bologna
- September 2004: Session “Mathematical and computational methods in finance” in SIMAI-2004 Co-organizer: S. Polidoro, Università di Bologna

Research visits
- October 2013: Princeton University (US), invited by prof. Matthew Lorig
- March 2008: Umea University (Sweden), invited by professor Kaj Nystrom
- September 2008: University of La Coruña (Spain), invited by professor Carlos Vázquez Cendón
- September 2008: Korea Advanced Institute of Science and Technology (South Korea), invited by professor Geon Ho Choe

Invited PhD Courses
- 2019: Discrete-time models in option pricing, HSE University, Moscow
- 2014: Analytical approximations in option pricing, Institut Henri Poincare, Parigi.
- 2012: Fourier methods in option pricing, course on “Temas Avanzados de Matemática Aplicada”, University of A Coruña (Spain).
- 2011: Asian options and Lévy models, course on “Temas Avanzados de Matemática Aplicada”, University of A Coruña (Spain).
- 2009: American options: discrete and continuous models, course on “Temas Avanzados de Matemática Aplicada IV”, within the official PhD program “Métodos Matemáticos y Simulación Numérica en Ingeniería y Ciencias Aplicadas”, jointly offered by the Universities of A Coruña, Santiago de Compostela and Vigo (Spain).
- 2008: A short course on American options, KAIST of Daejeon (South Korea)
- 2004-05: Metodi di equazioni differenziali in finanza matematica (30 ore), Università di Bologna.

Refereeing activities
Referee for more than 30 international journals:
https://publons.com/author/482906/andrea-pascucci#profile

- Dicembre 2019: Member of the PhD Committee in Applied Mathematics at Delft University of Technology, NL
- Settembre 2019: Referee for the PhD in Mathematics Monash University, Australia
- Dicembre 2018: Member of the Committee for the doctorate of the Departamento de Matematicas, Universidade da Coruna, Spain
- Novembre 2018: Referee for the PhD in Mathematics Université Paris-Est Marne-La-Vallée and Università di Roma Tor Vergata
- Ottobre 2018: Referee for the doctorate of the Departamento de Matematicas, Universidade da Coruna, Spain
- Dicembre 2017: Referee for the PhD in Economics and Finance at Bocconi University, Italy
- Giugno 2017: Member of the Committee for the PhD in Mathematics at Delft University of Technology, NL
- Gennaio 2017: Referee per l'esame finale del Dottorato di Ricerca in Matematica, Università di Genova
- Settembre 2016: Member of the Committee for the PhD at School of Business and Social Sciences, Aarhus University, Denmark
- Ottobre 2013: Member of the Committee for the PhD at the Ecole Doctorale at the Ecole Polytechnique, Paris, France
- Luglio 2013: External Assessor for the MPhil examination at the University of Mauritius
- Settembre 2012: Member of the Committee for the doctorate of the Departamento de Matematicas, Universidade da Coruna, Spain

- Dicembre 2012: Member of the Committee for the PhD examination at the Edgeworth Centre, University College Cork, Ireland
- Giugno 2011: Member of the Committee for the doctorate of the Frankfurt School of Finance & Management
- Febbraio 2008: Commissario per l'esame finale del Dottorato di Ricerca in "Matematica per le Applicazioni Economiche-Finanziarie", Università degli Studi di Roma "La Sapienza"
- Ottobre 2008: referee per l'esame finale del Dottorato di Ricerca in Matematica, Università degli Studi di Bari
- Referee for the Natural Sciences and Engineering Research Council of Canada
- Referee for Italian PRIN, FIRB projects and VQR
- Reviewer for Zentralblatt MATH and MathSciNet

Invited talks
- September 2021: LSA Autumn Meeting 2021, HSE Moscow. "Kolmogorov SPDEs and applications to stochastic filtering"
- June 2021: International E-Conference on Pure and Applied Mathematical Sciences (ICPAMS-2021), Tunisi. "Stochastic Langevin equations"
- April 29, 2021: Wrocław University of Science and Technology. "On stochastic Langevin and Fokker-Planck equations"
- April 27, 2021: Le Mans Université. "Kolmogorov SPDEs and applications to stochastic filtering"
- March 25, 2021: Workshop Nonlocal Operators and Markov Processes. "Kolmogorov SPDEs and applications to stochastic filtering" (Kraków/Dresden)
- September 2019: Dynamics, Equations and Applications (DEA 2019). "On stochastic Langevin and Fokker-Planck equations". (Kraków, Poland)
- September 2018: Kolmogorov days, Evry, "The parametrix method for parabolic SPDEs"
- June 2018: LSA Summer meeting, Higher School of Economics, Moscow, "The parametrix method for parabolic SPDEs"
- September 2016: Dipartimento di Matematica, Università di Genova, "The Taylor formula of implied volatility"
- February 2016: – Frontiers in Stochastic Modelling for Finance – Università di Padova, "The parabolic Taylor formula of implied volatility"
- July 2015. Stochastics & Computational Finance, Lisbon (Portugal)
- May 2015: Workshop " Models and Numerics in Financial Mathematics", Leiden (The Netherlands), *"The Taylor formula of implied volatility"*
- September 2014: Workshop "Stochastic Computing and Optimization", Würzburg (Germany)
- April 2014: Frankfurt MathFinance Conference, *"Implied Volatility for any Local-Stochastic Volatility Model"*
- November 2013: Math Finance seminar at UCL, London (UK), *"Analytical Expansions in Option Pricing"*
- October 2013: AMS Fall Eastern Sectional Meeting, Philadelphia (US), *"Implied vol for any local-stochastic vol model"*
- June 2013: Aarhus University (Denmark), *"Expansion formulas for volatility models"*
- April 2013: Workshop on Large deviations and asymptotic methods in finance, Imperial College London, 9-11 April 2013, "*Adjoint expansions in local Lévy models"*
- January 2013: Dipartimento di Matematica, Università di Bari, "Asymptotics for Kolmogorov equations in finance"
- November 2012: Evolution equations, deterministic and stochastic models and applications, Trento, 26-27 November 2012, "*Asymptotics for Kolmogorov equations in finance"*
- October 2012: Dipartimento di Matematica, Università di Trento, "Equazioni di Kolmogorov nella valutazione di derivati finanziari"
- September 2012: Conference in honor of the 70th birthday of Wolfgang J. Runggaldier, Università di Padova , "Adjoint expansions in local Lévy models"
- September 2012: Workshop on Stochastic and PDE Methods in Financial Mathematics, Yerevan, Armenia. "Adjoint expansions in local Lévy models"
- June 2012: Workshop on Lévy processes: approximation and applications, Paris. "Adjoint expansions in local Lévy models"

- May 2011: Seventh Seminar on Stochastic Analysis, Random Fields and Applications, Ascona (CH). "Analytical approximation of Kolmogorov PDEs and Asian options"
- March 2011: Frankfurt MathFinance Conference, Frankfurt (DE). "Analytical Approximation of the SABR Model with Jumps"
- December 2010: Mathematical Finance and Partial Differential Equations, Rutgers, The State University of New Jersey (US). "Kolmogorov equations and Asian options"
- June 2010: SIMAI-2010, Cagliari (Italy). "Free boundary problem for arithmetic Amerasian options"
- October 2009: Workshop "Modelling and Numerical Techniques in Quantitative Finance", A Coruna (Spain)
- June 26, 2009: Colloque "EDP, analyse stochastique et simulation de processus", INRIA Sophia Antipolis (France). "Kolmogorov Equations and Analysis on Lie Groups"
- June 4, 2009: Financial and Actuarial Mathematics Group of the Vienna University of Technology "Kolmogorov equations and applications to path dependent derivatives"
- April 8, 2009: Giornata di Finanza Matematica (IMATI-CNR, Milano) "Linear SDE in option pricing"
- November 2008: RICAM Austrian Academy of Sciences in Linz (Austria) "Kolmogorov equations and applications to path dependent derivatives"
- September 2008: KAIST Businness School of Seoul (South Korea). "Kolmogorov equations in Finance"
- September 2008: University of La Coruna (Spain). "American path dependent options"
- July 2008: Workshop on Computational Methods for Pricing and Hedging Exotic Options, Warwick (UK). "Analytic valuation by parametrix approximation"
- February 2008: Università La Sapienza, Roma. "Kolmogorov equations and Asian options"
- October 2007: Workshop PDE Methods in Finance 2007, University of Marne-la-Vallee. "Obstacle and optimal stopping problems for American Asian options"
- October 2007: University of Paris 13. "Kolmogorov Equations in Physics and in Finance"
- April 2007: Convegno su Equazioni di Kolmogorov e misure invarianti, Bologna. "Problema con ostacolo ed applicazioni alle opzioni Americane path-dependent"
- October 2006: Università de L'Aquila. "Kolmogorov Equations in Physics and in Finance"
- June 2006: 6th AIMS International Conference, Poitiers (France). "Kolmogorov equations and option pricing"
- June 2006: 12th International conference on Computing in Economics and Finance, Limassol (Cyprus). "Degenerate Kolmogorov equations in option pricing"
- June 2006: Meeting on Subelliptic PDEs and applications to Geometry and Finance, Cortona. "Equations of Kolmogorov type and applications to stochastic volatility modeling"
- September 2004: Viscosity, metric and control theoretic methods in nonlinear PDE's, Gaeta. "Equations of Kolmogorov type and applications"
- June 2004: Conference on Elliptic and Parabolic Problems: A special tribute to the work of Haim Brezis, Gaeta. "The Moser's iterative method for a class of ultraparabolic equations"
- June 2003: Workshop on Second Order Subelliptic Equations and Applications, Cortona. "Optimal Harnack inequality for a class of Kolmogorov equations"
- May 1999: Evolution equations and applications, Cortona. "A nonlinear degenerate parabolic equation in Mathematical Finance"

Other talks
- September 2011: XXXV Convegno AMASES, Pisa. "Analytical Approximation of Models with Jumps"
- September 2011: Convegno UMI, Bologna. "Equazioni di Kolmogorov nella valutazione di derivati finanziari di tipo Asiatico"
- September 2009: XXXIII Convegno AMASES, Parma. "Free boundary problem for Arithmetic Amerasian options"
- June 2008: Conference on Numerical Methods in Finance, Udine. "Parametrix approximations in finance"
- September 2007: XXXI Convegno AMASES, Lecce. "The American Asian option"
- September 2006: XXX Convegno AMASES, Trieste. "Path dependent volatility"
- October 2005: Workshop di Finanza Matematica, Politecnico di Milano. "Kolmogorov Equations in Physics and in Finance"
- September 2005: XXIX Convegno AMASES, Palermo. "Parametrix approximation of risk neutral transition densities and option valuation"

- July 2005: 2nd International Workshop on Functional Analysis Methods in Economics and Finance, Cetraro. “Parametrix approximation of risk neutral transition densities and option valuation”
- June 2005: 8th Spanish-Meeting on Financial Mathematics, Verbania. “On the calibration of the Hobson-Rogers model”
- January 2005: VI Workshop di Finanza quantitativa, Milano. “On the calibration of the Hobson-Rogers model”
- September 2004: XXVIII Convegno AMASES, Modena. “On a volatility model with dependence on the past”
- January 2004: V Workshop di Finanza quantitativa, Siena. “Analysis of an uncertain volatility model”
- September 2003: XXVII Convegno AMASES, Cagliari. “On a complete model with stochastic volatility”
- June 2002: Advances on Nonlinear PDEs, L'Aquila. “On the Cauchy problem for a non linear ultraparabolic equation”
- May 2002: SIMAI 2002, Chia (CA). “A nonlinear PDE in mathematical finance”
- June 2001: 4th European Conference on elliptic and parabolic problems, Rolduc (NL). “On the Cauchy problem for a non linear ultraparabolic equation”
- June 2000: SIMAI 2000, Ischia (NA). “On the smoothness of viscosity solutions to a nonlinear equation of mathematical finance”
- June 1998: IV CongressoNazionale SIMAI, Messina. “Fujita type results for a class of degenerate parabolic operators”

Consulting and industry collaborations

2012 Research contract with DSE: “Stochastic models for electricity forward prices”
2010-11 Consulting projects for the risk management team of Unipol GF: “Interest rate derivatives: calibration, pricing of models for volatility and correlation”