

Curriculum Vitae Damiano Brigo

Table of Contents

Summary (150 words)	2
1 Academic roles: Imperial College, King's College, Bocconi & others	2
2 Industry: Fitch, IntesaSanPaolo, Macquarie, IHS Markit, CB, EY, Capco	4
3 Education: Bsc/MSc, PhD	8
4 Publications, citation metrics, impact	9
5 Press columns, interviews and media outreach	10
6 Editorial boards and related work	10
7 Conferences organization, invitations and societies membership	11
8 Teaching and student supervision (UG, MSc, PhD)	11
9 Hiring panels, university management and working groups	12
10 Grant Applications, Funding	12

ATTACHMENTS

Attachment A: List of Publications	14
Attachment B: List of press interviews, columns and media outreach	31
Attachment C: List of Academic Talks, Lectures and Panels	33
Attachment D: Lectures for regulators, central banks, industry	45
Attachment E: Editor roles	54
Attachment F: Scientific and organizing committee of conferences	55
Attachment G: Supervised UG, MSc and PhD students	57
Attachment H: Teaching	59

Summary

Damiano Brigo has been Head of Group and holds a Chair (Professor) in Mathematical Finance and Stochastic Analysis at Imperial College London. Previous roles include Gilbert Professor and Head of Group at King's College, Managing Director and Quantitative Innovation Global Head in Fitch Ratings, Head of Credit Models in Banca IMI and Fixed Income Professor at Bocconi. Damiano serves in the advisory board of leading firms and published 100+ journal works in Quantitative Finance, Systems Theory, Probability and Statistics, and field reference books in Interest Rates and Credit Modelling (H-index 42, 9700+ citations on Scholar as of 2023). Damiano has been the most cited Risk Magazine author in 1998-2017. Damiano's interests span valuation, hedging, risk management, optimal investment and execution, interpretability for machine learning in finance, path-wise finance, stochastic dynamics on manifolds, rough differential equations and nonlinear filtering. Damiano holds a PhD in stochastic filtering with differential geometry.

1 Academic roles: Imperial College, King's College, Bocconi and others

1.1 Full roles: Imperial College London and King's College London

2012 on: Imperial College: Chair & Head of Mathematical Finance

Appointed in August 2012 as Full Professor (Chair) of Mathematical Finance, serving as Head of the Mathematical Finance Research Group at Imperial College, London in 2012-2019. Member of the Stochastic Analysis Group. Imperial College is consistently ranked by Times Higher Education and QS among the top ten universities in the world.

- Leading research in financial modeling with stochastic models: Modeling of counterparty credit risk, collateral and funding costs, modeling multiple interest rate curves including credit and funding effects, multivariate dynamics for the volatility smile of indices and portfolios, liquidity adjusted risk measures, dynamics of dependence of default times, top down and bottom up models for multi-name credit risk, optimal trade execution and algorithmic trading, fundamentals of option pricing and probability-free models using rough paths, pathwise optimal execution, machine learning methods for recovery rate and default predictions in credit risk, and interpretability for deep learning in finance. Tools from probability and statistics include Stochastic Differential Equations (SDEs), Multivariate diffusion processes with non-diagonal state dependent diffusion matrix implying dynamical mixtures of distributions, Jump diffusion models, Levy Processes, Rough Paths, Machine Learning, Characterization of lack of memory in multivariate arrival times and Marshall Olkin distribution, HJB approaches and Backward Stochastic Differential Equations.
- Leading research in signal processing: Stochastic nonlinear filtering with differential geometric methods based on exponential families and mixture distributions. Mathematical tools used here include projection of infinite dimensional stochastic partial differential equations in Fisher or Direct L2 metric onto finite dimensional manifolds of densities (typically exponential families or mixture families).

- Stochastic Differential Geometry: A new approach to stochastic calculus on manifolds based on the notion of 2-Jets and analysis of three different types of projections for SDEs dimensionality reduction, with applications to optimal projection filters.
- Teaching of the undergraduate course for years 3, 4 and MSc “Stochastic differential equations in financial modeling”.
- Teaching of Core Master Courses “Interest Rate Modeling under credit and funding liquidity risk”, “Financial Engineering”.
- Teaching the PhD Courses (London Graduate School in Mathematical Finance) Counterparty Credit Risk, Collateral and Funding Costs with Arbitrage-free Models, Nonlinear Valuation via FBSDEs and Semilinear PDEs.
- Responsible for the Research Excellence Framework (REF) assessment for the Mathematical Finance Research Group.
- Invited and Plenary speaker at a number of important academic, industry and institutional venues, see attachments for the details.
- Interviewed by press and industry magazines both in relation to academic research and to research work done through Imperial Consultants, see attachments for the details,
- Author of several academic journal publications and also monographs, see attachments,
- Editor in Chief, Managing Editor and Editorial Board of several academic journals for World Scientific, Routledge, Springer, see attachments,
- Scientific and Organizing Committee of several international conferences.
- Supervision of a number of PhD students, and 5-7 MSc students each year.
- PhD admissions committee and Deputy MSc director.
- Group representative for the London Graduate School of Mathematical Finance.
- Selected as college representative for the Pension review working group.

2010-2012: King’s College, Professor and Head of Financial Mathematics

Appointed Full Professor (Gilbart Chair) and Head of the Financial Mathematics group at the dept. of Mathematics at King’s College, London, in August 2010. King’s College has been ranked among the top 25 universities worldwide in 2009 and has been awarded the title of University of the Year by the Sunday Times in 2010. Main roles as Gilbart Chair:

- Head of the Financial Mathematics Research Group at the Dept. of Mathematics
- Master Programme Director for the Master in Financial Mathematics.
- Lecturing two master courses: FM07 “Interest Rates and Foreign Exchange Dynamics” and FM10 “Credit Risk Management”.

- Lecturing the PhD course for the London Graduate School of Mathematical Finance: “Arbitrage free pricing of Credit Valuation Adjustment”.
- Hired three new colleagues at Lecturer, Reader and Professor level, bringing the size of the group to seven.
- Helped reform the “Mathematics with Management” programme.
- Provided Impact by having one of the publications being quoted as a technical support in a sentence in the court of law in Novara, Italy
- Authored several publications in top journals and books
- Interviews with newspapers and industry magazines.
- Invited Plenary speaker at several key industry conferences and networking events (Royal Society, Royal Stock Exchange)
- Advisory board of NumeriX
- Co-originated a grant applications for the creation and three years funding of a joint research center RISC (Risk In the Social Contract) comprising King’s College Financial Mathematics, King’s College Geography, King’s College European Law and Imperial College Business School.

1.2 Visiting and adjunct academic roles

- 2008-2010: Imperial College, Visiting professor. Visiting Professor at the department of Mathematics at Imperial College, London, January 2008 - July 2010.
- 2009: Adjunct Professor at Essex University. Adjunct Professor at Essex University, CCFEA, teaching advanced MSc Course “CF907-7-SP: Fixed-Income Asset Pricing, Default Risk, and Credit Ratings 2008/09”.
- 2005-2007: Bocconi University, Milan. External Professor (“Professore a contratto”), Bocconi University (Milan). Teaching of the advanced course “Fixed Income”, MSc level, for the CLEFIN group.

2 Industry roles

2.1 Full roles: Fitch Ratings, Banca Intesa San Paolo

2007-2010: Fitch Ratings, Managing Director & Global Head of Quantitative Analytics

2007: Managing Director and Global Head of the Quantitative Innovation team, comprising **10 quantitative analysts in London, New York and Hong Kong**, July - December 2007.

- Quantitative analysis of risk and ratings in deals involving Collateralized Obligations on Credit (CDO), commodities (CCO), funds (CFO), exchange rates (CFXO), equity (CDO of EDS), Constant Proportion Debt Obligations CPDO, CPDO's on tranche spreads, CMS CPDO.
- Analysis of Ratings for quantitative strategies for pension funds, FX carry trades, Credit Fund Notes
- Investigation of alternative dependence structures for the Vector framework changes project, aiming at redesigning the rating procedures for CDOs and structured products while taking into account dependence dynamics, extreme events, systemic risk and the economic cycle. This included analysis of stochastic recovery rates, alternative copula functions, stochastic intensity models, dynamic loss models.

2008-2010: Managing Director and Global Head of the Quantitative Analytics team, reporting directly to the Head of Fitch Solutions, in the period January 2008 - July 2010. The team consisted of 9 quantitative analysts in London and New York.

- Refining the design of a trading liquidity scoring model for the CDS pricing service, based on the CDS contributors data, using inactivity, bid offer and dispersion measures.
- Design of a trading liquidity model for extracting a liquidity spread in basis points from CDS contribution, consistently with the liquidity scores.
- Pricing of multi-currency CDS. Relationship between CDS spreads on the same name when protection is offered in different currencies.
- Pricing of first to default baskets in emerging markets.
- Bond-CDS basis analysis, sovereign CDS analysis.
- Pricing prototypes for bilateral counterparty risk in Interest Rates and Credit Default swap payoffs.
- Pricing of Contingent CDS and counterparty risk for interest rate, credit and commodity products under correlation between default and the underlying assets. Analysis of wrong way risk profiles.
- Pricing of Credit Index Options and analysis during the subprime crisis.
- Inflation, FX and hybrids modeling for both valuation and risk management.
- Valuation of deals involving Collateralized Obligations (CDO) on corporates, residential mortgages (RMBS), commercial mortgages (CMBS), and corporate loans (CLOs).
- Development of a new dynamic loss model for correlation products and CDOs on corporates with consistent calibration of index tranches across maturities and consistency with single names and cluster defaults.
- Research defending the quantitative analysts work before and during the crisis, culminating in a monograph for Wiley entitled "Credit Models and the Crisis".
- Recruiting new team members. from Analyst to Director level, to replace team analysts on leave.

1998-2007: Banca IMI, Head of Credit and Interest Rate Models

The work done in Banca IMI, the investment bank of the Intesa San Paolo group, went from October 1998 to July 2007, first as head of Interest-rate models and from 2002 on as head of Credit Models and Counterparty risk models. The modelling activity has involved at different stages also equity derivatives modelling in presence of volatility smile, basket derivatives, cross currency derivatives. There has also been active involvement in Risk Measurement models, procedures and decisions. This work consisted also in managing a group of three junior analysts.

The main activities carried out in Banca IMI can be summarized as follows:

- **Credit Derivatives Models (2002-2006).** Design of proprietary and industry credit models for valuation of single name and multi-name credit derivatives. In particular, Stochastic intensity/interest-rate models and calibration to Credit Default Swaps (CDS). Closed form formulas for CDS options. Market models for CDS options and defaultable floaters. First to default, CDO, CDO squared and Basket credit derivatives valuation with copulas and deterministic intensities. A new dynamic loss model for correlation products with consistent calibration of index tranches across maturities. Implementation and customization of the “Perfect Copula” approach by Hull and White. Tractable structural model calibrated to the CDS term structure and pricing of hybrid products such as equity return swaps with counterparty risk. Counterparty risk valuation in general. Counterparty risk for portfolios of swaps in presence of netting and for non-standard swaps: derivation of an analytical approximation and monte-carlo approach.
- **Risk Management (2002).** Comparative study of different risk measurement formulations, and design of a prototype for value at risk calculations based on historical simulation.
- **LIBOR market model (1998-2002).** Design and testing of different formulations for instantaneous covariance parameterization in the LIBOR (BGM) market model for interest rate derivatives valuation. Study of possibly joint caps/swaptions calibration, terminal correlation configuration, and volatility term structure diagnostics. Monte Carlo simulations of the model.
- **Smile modelling (1998-2004).** Design and prototype implementation of proprietary models for volatility smile modelling, including the “lognormal mixture dynamics” and its uncertain parameters generalizations and extensions.
- **Basket derivatives (1998-2001).** Monte Carlo pricing of basket options through approximated dynamics involving the first two or three moments of the basket.
- **Short interest-rate models (1999-2005).** Design and prototype implementation for calibration and pricing of proprietary and standard instantaneous short-interest-rate models such as CIR++, Extended Exponential Vasicek, G2++ (Hull White), SSRD, Black Karasinski, and others.
- **Cross-currency and Quanto derivatives (1998-2001).** Monte-Carlo pricing with two-factor Hull White model of Quanto Constant maturity swaps with optional components, and cross currency interest rate derivatives in general, including correlation between interest rate curves of different currencies.

1997-1998: Banca Intesa: Quantitative Analyst

Quantitative Analyst from February 1997 to October 1998 at the Risk Management department of Banca Intesa on the following projects:

- Italian floating rate notes (CCT) analysis based on short rate models (Hull and White) and presentation of the results at “riunione degli operatori telematici al Ministero del Tesoro.”
- Value at risk calculations for different interest rate swap portfolios.
- Analysis of the total market risk of the bank as implied by the operational limits through a delta-normal value-at-risk model.
- Single name and basket exotic equity option pricing through Monte Carlo simulation.
- Codes for Garch estimation of volatility through maximum likelihood estimation.
- Pricing opportunities for LIBOR-Rendistato swaps through the Hull and White model.

2.2 Advisory Roles: IHS Markit, Macquarie, CB, CFM, Capco, Fitch, EY & others

Academic Advisory board for IHS Markit (2017-2022)

IHS Markit is a global provider of services, data and analytics. Assisting IHS Markit via quarterly strategy meetings and presentations.

Academic Advisory board and Methodology Consultant for Macquarie Bank (2018-2020)

Modeling consulting for Macquarie Bank on alternative risk premia and related issues, and Macquarie Academic Advisory Board.

Academic Advisory board for Credit Benchmark (from Nov 2015 to 2017)

Credit Benchmark (CB) is a global provider of credit data and analytics. Assisting CB via quarterly strategy meetings and presentations. Provided advice in analysis and analytics related to credit migration, default probabilities, recovery analysis and rating transition matrices analytics.

Board of CFM-Imperial Institute in Quantitative Finance (2014 on)

Capital Fund Management (CFM) is a global asset management fund that founded an institute with Imperial College in 2014. I have been in the board of the institute since its foundation and I have been contributing with conferences organization, research collaboration, visitors programme and related activities.

Director of the EY GFSI Institute and Editor of EY JFP (2016-2017)

Editor in Chief of the EY Journal of Financial Perspectives and Director of the Global Financial Services Institute from June 2016 to June 2017.

Director of the Capco Research Institute (Oct 2012 to Oct 2015)

- Designed the methodology for the creation of the CEPIX Euro Exit probability index, see press releases in the attachments.
- Strategic Research and Thought Leadership
- Organizing three Finance conferences a year in London, NY and Euro area
- Providing methodology leadership and support in particularly sensitive projects (ETF Fund risk analysis, analytics acceleration for valuation adjustments).
- Editor in Chief of the Capco Journal of Financial Transformation

Other industry advisory roles

- Fitch Academic Advisory Board (2007-2010)
- NumericX Advisory Board (2010)

3 Education (BSc/MSc and PhD)

1993-1996: Ph.D. in Probability & Signal Processing

The Ph.D. program (September 1993 - Oct 1996) occurred under the supervision of Prof. J.H. van Schuppen of the Center for Mathematics and Computer Science (CWI) of Amsterdam, and under the tutorship of Dr. Bernard Hanzon of the Department of Econometric of the Free University of Amsterdam. A second tutor was Dr. François Le Gland at the French Institute of Computer Science and Stochastic Systems (IRISA/INRIA) in Rennes, France, where the candidate worked for one year. Some parts of the program occurred at the CNR institute “LADSEB” in Padua and at the Mathematics department of the University of Padua. The PhD thesis “Filtering By Projection on the Manifold of Exponential Densities” was successfully defended against an international committee featuring among others Prof. O.E. Barndorff-Nielsen (Theoretical Statistics, University of Aarhus, Denmark), Prof. G.B. Di Masi (Mathematics, Padua), Prof. J. Schumacher (CWI, Amsterdam), Dr. F. LeGland (IRISA, Rennes), Dr. P.J.C. Spreij (VU, Amsterdam). The research carried out during the PhD program led to several scientific results that were later published on journals of the Systems and Control Theoretical community, of the Mathematical Finance community and of the Probability community.

1991-1992: Military Service

Military service from May 1991 to May 1992 at the Missile artillery division of the Italian army.

1985-1990: BSc/MSc (Laurea) degree in Mathematics

BSc/MSc (4 years Laurea programme with dissertation) at the University of Padua on November 21, 1990, with honors (110/110 e lode). The dissertation was on nonlinear filtering problems with asymptotic analysis and solution for piecewise linear systems, under the supervision of Prof. Giovanni Battista Di Masi.

4 Publications, citation metrics, REF impact

Publications

More than 100 publications in mathematical finance, probability, statistics and systems theory (both journal publications and volume chapters/contributions) in journals such as *Proceedings of the Royal Society A*, *Proceedings of the London Mathematical Society*, *IEEE Transactions on Automatic Control*, *European Journal of Operational Research*, *Mathematics of Control, Signals and Systems*, *Mathematical Finance*, *Finance and Stochastics*, *Bernoulli*, *Stochastic Processes and their applications*, *Systems and Control Letters*, *Insurance Mathematics and Economics*, *Statistics and Probability Letters*, *Communications in Statistics: Theory and Methods*, *Quantitative Finance*, *International Journal of Theoretical and applied finance*, and the more industry oriented *Risk Magazine*, *Journal of Derivatives*, *Journal of Risk Management in Financial Institutions*.

Books:

- One book entitled “Interest Rate Models: Theory and Practice” for Springer Verlag that has become the main international field reference, used in several PhD courses and on trading floors of top financial institutions across the world (3000+ citations).
- A book for Wiley on “Counterparty Credit Risk, Collateral and Funding”, dealing with the challenges of valuation post 2007-2008.
- A volume “Credit Models and The Crisis” for Wiley that focuses on Credit Derivatives models before and during the crisis.
- Co-Editor of the volume “Credit Risk Frontiers: Subprime crisis, Pricing, Hedging, CVA, MBS, Ratings and Liquidity” for Wiley/Bloomberg Press. Finally, leading author of the influential volume “Counterparty Credit Risk, Collateral and Funding, with pricing cases for all asset classes”, Wiley, 2013, the first monograph to deal in detail with the theory of funding costs from an advanced mathematical point of view.

For the detailed list of publications see attachment “A” below.

Citation metrics, H-index

Output through google scholar as of 2023: **H-Index 42**. Citations: **9700+**.
SSRN Paper Downloads: **62000+**.

Risk Magazine Most Cited Author

Damiano has been listed as the most cited author in 1998-2018 and in several single years (Risk Magazine, Dec. 2017, Dec 2012, Dec 2010, Dec 2006).

Impact: REF 2014 Case

King’s College London submitted a REF impact case for REF 2014, based on the paper by Brigo, Morini and Tarengi (2011) [106] and on a number of other papers by Brigo and co-authors. The case is based on the court of law of Novara in Italy citing said paper as part

1998–2017		2012		2010		2006	
Brigo D	73	Brigo D	9	Brigo D	7	Brigo D	8
Piterbarg	63	Pallavicini A	6	Glasserman	6	Hull J	7
Andersen	48	Piterbarg V	6	Brody D	5	Martin R	7
Basel	47	Bergomi L	4	Gregory J	5	Mercurio F	7
Mercurio	47	Glasserman	4	Lipton A	5	Piterbarg V	6
Glasserman	43	Hagan	4	Hughston L	5	Andersen L	5
		Labordere	4	Madan D	5	Black F	5
						Frye J	5
						Litterman R	5
						Thomson K	5

Table 1: Authors and number of citations in Risk Magazine in 1998–2017, 2012, 2010 and 2006, from Risk Magazine, December issues, 2017, 2012, 2010 and 2006.

of the official documentation and evidence of a legal case. Furthermore, the case is based on quantitative analysts in banks declaring they use Brigo’s models and results. The submission is the impact case study n. 41220.

5 Press and media outreach

- Authored the Bracken column (May 2018) for “The Banker”, the FT monthly magazine.
- Interviewed by Risk Magazine, The Banker, The Guardian, Thomson Reuters
- Several comment columns authored for Risk Magazine on model risk in LIBOR-RFR transition, systemic risk, rogue traders risk limits, XVA, and the need to move beyond risk neutral valuation.
- Full columns and interviews list in Attachment B.

6 Editorial Boards and related work

- Editorial Board, Managing Editor and Editor in Chief of a number of academic journals including Mathematics of Control, Signals and Systems, the International Journal of Theoretical and Applied Finance, Applied Mathematical Finance, Information Geometry. See Attachment E for a full list.
- Referee for a number of journals in the Mathematical finance/ Financial Engineering/ Operations Research / Systems and Control / Probability communities, and Book reviews for Wiley, Academic Press, Risk Books and Palgrave Macmillan. Journals for which reviews were done include Mathematical Finance, Finance and Stochastics, Operations Research, European Journal of Operational Research, Management Science, Journal of Banking and Finance, Stochastic Processes and their Applications, Systems and Control Letters, Automatica.

7 Conferences organization, invitations, and societies membership

- Organization: scientific committee of several international conferences including FEA at MIT 2004 and 2006, 200 years George Boole conference at University College Cork, French Finance Association 50th conference, several editions of the Italian Workshop of Mathematical Finance, several editions of Quant Congress Europe; Scientific and Organizing committee of the 2018 Workshop on Stochastic Analysis, Geometry and Statistics; Scientific and Organizing committee of the 2018 IMS-FIPS Workshop in London; Organizing committee of the 80th birthday celebration workshop for Professor Alan Hawkes, Swansea, 2018. See attachment F for a full list with more details.
- Delivered seminars and talks: More than 200 presentations at invited seminars, workshops, conferences and congresses all over the world, including Columbia University, NYU, Oxford University, Cambridge University, University of Chicago, Princeton, and many others (see Attachment “C” for the details).
- Appointed as Council member of the Bachelier Finance Society, 2017-2019.
- Member of the London Mathematical Society since 2017.

8 Teaching and student supervision (UG, MSc, PhD, ExecEd)

- Academic: Teaching of MSc, PhD and UG courses in Mathematical Finance (Interest Rate Modeling, Credit Risk Modeling, Financial Engineering, Nonlinear Valuation and XVA, Stochastic Differential Equations in Financial Modelling) at several universities including King’s College London, Imperial College London (Department of Mathematics, Business School), Bocconi University, Milano Bicocca University, Essex University. Consistent high rating across subjects and institutions. See Attachment H for details.
- MSc director for the MSc in Financial Mathematics at King’s College London and the MSc in Mathematics and Finance at Imperial College London.
- Executive Education: Provided seminars, specialized training courses, lectures, executive education, summer and winter schools for a variety of institutions, providers and private clients, including *banks*, *hedge funds*, *regulators*, *central banks*, *ESM*, *EBA*, energy firms, academic institutions, training companies. More than 120 such initiatives in 2000-2018. See Attachment D for details.
- Tutor, advisor or supervisor of undergraduate, master and PhD students from several universities including Imperial College, Stanford, New York University, Bocconi, Sorbonne, Ecole Polytechnique, ENPC, Ghent University, Pavia University, Milano Bicocca University, King’s College London, Aarhus University. See Attachment G for details.
- PhD examiner, both internal and external. More than ten students examined for several institutions. Institutions include: King’ College London (Oct 17, 2016), Imperial College London on several dates, HEC Montreal (June 6, 2017), Paris-Saclay (November 10, 2017) and Catholic University of Leuven.

9 Hiring panels, university management, university working groups

On top of the administrative work done as head of group and MSc director, the following roles have been covered over the years

- 2018: Hiring panel chair for lecturer in Mathematical Finance at Imperial College London.
- 2018: Hiring panel for full professor position at Università di Padova, Italy. Procedura selettiva 2017PO184, settore concorsuale 13/D4 - Metodi matematici dell'economia e delle scienze attuariali e finanziarie, January-April 2018.
- 2018: Hiring panel for professor of Mathematical Finance, Probability and Statistics at Imperial College London, March-June 2018.
- 2018: Selection panel for Chapman fellowship postdoc at the Dept. of Mathematics, Imperial College London, Jan 2018.
- 2018: Chair of hiring panel for lecturer at Imperial College London.
- 2016: Hiring panel for lecturer or senior lecturer/reader at Imperial College London
- 2014-17: Pension working group for Imperial College London. The pension working group was an internal group, comprising members of the departments of mathematics and physics, who compiled reports challenging the USS pension fund valuation assumptions and methodology in 2014-2017. Co-authored the reports, authored several responses to USS and UCU, and met USS at a joint meeting with the college Provost and Finance Officers.
- 2011: Hiring panel for a lecturer position in Financial Mathematics at King's College London.
- 2011: Hiring panel for a professor position in Financial Mathematics at King's College London.

10 Grant Applications, Funding and REF Impact case

PhD studies, 1993-1997

The PhD project was financed and supported by several institutions, including:

- **European Union:**
 - SCIENCE Project System Identification (contract number SC1*-CT92-0779);
 - HCM Network Statistical Inference for Stochastic Processes (contract number SC1*-CT92-0779);
 - Individual fellowship of the program Training and Mobility of Researchers (contract number FMBICT960791);
- **U.S. Army** (contract number DAAH04-95-1-0164);

- **The “INDAM” Italian Institute for Advanced Mathematics**, Senior fellowship;
- **The University of Padua**, 18 months individual fellowship for foreign-studies.
- **CNR:** The candidate was also elected for a CNR fellowship for foreign studies in 1996, but had to give up the fellowship given that the TMR fellowship above was not compatible with the CNR one.

Recent Grant Applications, 2010 on

Given the years spent in the industry (1997-2010), grant applications started in 2010.

- EPSRC Mathematics Platform grant EP/I019111/1, funding for research visits of Prof. Marek Rutkowski (Sydney) and Dr Andrea Pallavicini (Milan), 5800 GBP
- Nomura funding for supervision of MPhil student Alexander Gyandzhuntsev, Fellowship number P51846, 63275 GBP.
- Initiated Nomura funding for supervision of a MF group PhD student, Douglas Machado Vieira (2016-2020), 152841 GBP.

ATTACHMENTS

Attachment A: List of Publications

References

[BOOKS]

- [1] D. Brigo, F. Mercurio: *Interest-Rate Models: Theory and Practice*, Springer-Verlag, 2001. This book has quickly become one of the main international references for interest rate derivatives pricing and is being used in PhD courses and teaching, as well as in trading floors, all over the world. The second edition (2006) with 400 more pages (for a total of 1000 pages) includes credit derivatives, counterparty risk, inflation and extensive smile modelling.
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- [20] Brigo, D., Market Models for CDS Options and Callable Floaters, *Risk*, (2005), January issue.
- [21] Brigo, D., Alfonsi, A., Credit Default Swap Calibration and Derivatives Pricing with the SSRD Stochastic Intensity Model, *Finance and Stochastic* (2005), Vol. 9, N. 1.
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[PhD Thesis and Laurea Dissertation]

- [223] D. Brigo, "Problemi di Filtraggio non Lineare: Analisi asintotica e soluzione per sistemi lineari a tratti", Laurea dissertation, University of Padua, 1990
- [224] D. Brigo, *Filtering by Projection on the Manifold of Exponential Densities*, PhD Thesis, Free University of Amsterdam, 1996. This thesis includes the published references [81], [82] [83] [84] [117] [118] above and elements from a few others.

Attachment B: List of press interviews, columns, media outreach

1. **Author of column in Risk Magazine**, “Model risk in the transition to risk-free rates”, June 5, 2018.
2. **Author of column in Risk Magazine**, “Simple models wont cut it for systemic risk”, May 8, 2018.
3. **Author of the Bracken column in The Banker, the Financial Times monthly publication**. “Basel risk limits will not curb rogue traders”, May 1, 2018.
4. **Author of column in Risk Magazine**, “Curbing rogue behaviour”, April 9, 2018.
5. **Author of column in Risk Magazine**, “XVA: back to CVA?”, March 20, 2018.
6. **Author of column in Risk Magazine**, “Time to move on from risk-neutral valuation?”, Feb 8, 2018.
7. Interview in Risk Magazine by Nazneen Sherif, “the danger of ignoring trader behaviour in risk management”, Apr 4, 2018.
8. **Financial Times:** Interviewed by ”The Banker”, the Financial Times monthly international financial affairs publication. “The rise of the data scientist”, May 2, 2017.
9. Interview for Q&A in the newspaper “**The Guardian**” by Nicola Davis on clustering of random events, “From dust-free bottles to easy-peeling bananas: your science questions answered”, July 13, 2014.
10. Interview by Rachel Wolcott for Thomson Reuters, “Five questions to ask CCPs before mandatory clearing starts”, June 27, 2014.
11. “Counterparty Credit Risk, Collateral and Funding”, interview by Jacob Bettany, the MoneyScience Blog, Jan 13, 2014.
12. Interview by Reuters on the CEPIX index, published online, ”Euro zone crisis exposes poor quality of risk and regulatory risk information”, June 6, 2013.
13. Press releases on the CEPIX index, designed by Brigo, by both Imperial Consultants and Capco, March 2013.
14. Interview in Waters Technology, Jan 2013 issue, ”Credit Valuation Challenge”, pp 22-25.
15. Risk Magazine: ”FVA ends platonic price, says Brigo”, interview and quotes, published online in Oct 2012.
16. **Financial Times:** quoted in the FT blog ”Alphaville”, July 2012.
17. Risk Magazine: quoted in the article ”Banks will struggle to fill top quant roles”, published online in July 2012.
18. Mentioned and quoted in the article ”Traders v. theorists”, Risk Magazine, Sept 2012.

19. Risk Magazine: "Risk Annual Summit: DVA hedging creates systemic risk, says Brigo", published online in March 2012.
20. Risk Magazine: "Quants call for Isda to clarify close-out values", interview and quotes, published online in Dec 2011.
21. Press interview in the leading investment banking magazine, Risk Magazine, in the article "Adjustment anxiety", Sept 2011 issue.
22. **Financial Times:** Interviewed by "The Banker", the Financial Times monthly international financial affairs publication. "Has Basel got its numbers wrong?", June 21 2011.
23. **Interview and Profile** published in the leading investment banking magazine, **Risk Magazine**, with the title "The risk-free myth", March 2011 issue

Attachment C: List of Academic Talks, Lectures and Panels.

The following list includes some of the conference talks, invited seminars and presentations given since 1995. Seminars and talks given by coauthors of joint papers are omitted.

1. *The Projection filter: Simulations for the cubic sensor*, third workshop of the *European Network System Identification* (ERNSI) Noordwijkerhout, The Netherlands, 23 Sept 1994.
2. *A Differential Geometric approach to nonlinear filtering: the projection filter*, seminar at the Department of Mathematics of the University of Padua, 19 Dec 1994.
3. *On the relationship between the Assumed Density Filter and the Projection Filter*, seminar at the research institute LADSEB of CNR in Padua, 22 Dec 1994.
4. Presentation of the paper [140] at the *Workshop Statistical Inference for Stochastic Processes*, Tinbergen Institute of Amsterdam, 5–7 Apr 1995.
5. Presentation of the paper [140] at the annual meeting of the “*Gruppo Nazionale Analisi Matematica e Applicazioni*” (GNAMF-CNR, “gruppo di studio di finanza matematica”), Perugia, 25–27 May 1995.
6. Presentation of the paper [140] at the fourth Workshop of the *European Network on System Identification* (ERNSI), Padua, 7–9 giugno 1995.
7. *A differential geometric approach to nonlinear filtering: the projection filter*, seminar at the National Research Institute on Computer Science and Automatica (INRIA), Sophia Antipolis, France, 21 Jul 1995.
8. *A differential geometric approach to nonlinear filtering : the projection filter. New developments*, seminar at IRISA/INRIA, Rennes, France, 19 Oct 1995.
9. *A differential geometric approach to nonlinear filtering : the projection filter. New developments*, seminar at the Department of Mathematics of the Milan University, 6 Dec 1995.
10. *A differential geometric approach to nonlinear filtering : the projection filter. New developments*, seminar at the “Politecnico di Torino”, Department of Mathematics, 13 Dec 1995.
11. *On the existence of one dimensional diffusions with prescribed diffusion coefficients whose laws evolve in a prescribed exponential family*, seminar at the Department of Mathematics of the University of Padua, 23 Jan 1996.
12. *Filtering by projection on the manifold of exponential densities*, seminar at the Department of Theoretical Statistics of the Århus University, Denmark, Seminar invited by Prof. O.E. Barndorff-Nielsen, 26 Apr 1996.
13. Presentation of the results appeared later in Chapter 7 of the Thesis [224] at the *Workshop Statistical Inference for Stochastic Processes 1996*, Sandbjerg, Denmark, 30 Apr 1996.

14. *Diffusion processes, manifolds of exponential densities and nonlinear filtering*, seminar at the *Center for Mathematics and Computer Science (CWI)*, Amsterdam, 11 June 1996.
15. Presentation of the paper [117] at the conference *Conference on Stochastic differential and difference equations*, Győr, Hungary, 21–24 Aug 1996.
16. Presentation of the paper [118], invited by Professor O.E. Barndorff-Nielsen, at the conference *Geometry in Present Day Science*, held at the *Mathematical Research Centre of the University of Aarhus (MCAA)*, 16–18 Jan 1997.
17. Invited presentation of the paper [6] *On some filtering problems arising in mathematical finance* at the *International Workshop on The Interplay between Insurance, Finance and Control, Mathematical Research Centre of the University of Aarhus (MCAA)*, 25 Feb - 1 Mar 1997.
18. Presentation of the paper [6] at the *Third Italian conference on Mathematical Finance*, Trento, 26 - 30 May 1997.
19. Invited seminar at the *Department of Econometrics* of the Free University of Amsterdam, 19-22 Nov 1997: *Option Pricing Impact of Alternative Continuous–Time Dynamics for Discretely–Observed Stock Prices* [8].
20. Presentation of the paper [11] *A deterministic–shift extension of analitically tractable and time–homogeneous short–rate models* at the International Conference on Mathematical Finance, Hammamet, Tunisia, 14–18 June 1999.
21. Invited seminar (Prof. Cassese) *Option Pricing Impact of Alternative Continuous–Time Dynamics for Discretely–Observed Stock Prices* [8] at the IGIER Institute of the Bocconi University in Milan, 19 oct 1999.
22. Invited seminar (Prof. Barone Adesi) *Option Pricing Impact of Alternative Continuous–Time Dynamics for Discretely–Observed Stock Prices* [8] at the “Università della Svizzera Italiana” in Lugano, 10 Nov 1999.
23. Presentation of *Option Pricing Impact of Alternative Continuous–Time Dynamics for Discretely–Observed Stock Prices* [8] at the Workshop on Mathematical Finance held at the “Facoltà di Economia dell’Università D’Annunzio di Pescara”, 28-29 Jan 2000.
24. Seminar “Theory and Practice of the lognormal forward Libor and swap market models” at the Dept. of Mathematics of the University of Padua, 26 May 2000.
25. Presentation of *Discrete Time vs Continuous Time Stock-price Dynamics and implications for Option Pricing* at “Mathematical Finance - First Bachelier World Congress”, Paris, June 28 - July 1, 2000.
26. Presentation of the paper “The CIR++ Model and other deterministic-shift extensions of short rate models” at the Columbia-JAFEE International Conference of Mathematical Finance, Tokyo, 16-17 Dec 2000.
27. Seminar “La nuova generazione dei modelli di tasso d’interesse: Il Libor market model” for students of the “Scuola per le Applicazioni della Matematica all’Industria” (SAMI) at the Dept. of Mathematics of the Bicocca University in Milan, 23 May 2001.

28. Presentation of the work “On the joint calibration of the LIBOR market model to caps and swaptions data” to the “Annual Research Conference in Financial Risk”, Budapest, 12-14 July 2001.
29. Seminar “Mixture-Diffusion Stochastic Differential Equations and Volatility-Smile Modelling” at the Dept. of Mathematics of the University of Padua, 26 Oct 2001.
30. Invited presentation (Prof. Fusai) of the work “The new generation of interest-rate derivatives models: The LIBOR and Swap market models” at the “WORKSHOP ON INTEREST RATE MODELLING: RECENT ISSUES”, Novara, Dept. of Economic Sciences and Quantitative Methods of the “Università del Piemonte Orientale”, 20 Dec 2001.
31. Presentation of the work “Different covariance parameterizations of the Libor market model and joint caps/swaptions calibration” at the conference “Quantitative Methods in Finance”, Sydney, Dec 2001.
32. Invited presentation of “Volatility-Smile Modelling with Mixture-Diffusion Stochastic Differential Equations” at the Hitotsubashi University, Tokyo, 19-20 March 2002.
33. Invited presentation of “The new generation of interest-rate derivatives models: The LIBOR and Swap market models” at the plenary session of the “30-th Euro Working Group for Financial Modelling”, Capri, 2-4 May 2002.
34. Invited presentation for students of the “Università G. D’Annunzio” of Chieti, as part of the day “Invito alla finanza matematica”: “The volatility smile and diffusion mixture dynamics”, Chieti, 6-7 June 2002.
35. Presentation of “LIBOR-dynamics calibration to market volatilities and swap-rate distributional distance from the lognormal family” at the “Second World Congress” of the “Bachelier Finance Society”, Crete, 12-15 June 2002.
36. 2002: Eight hours lecture (4 + 4) “Interest rate models: theory and practice” for the FINARM Master students of the Milano-Bicocca University, 4 - 9 July 2002.
37. Invited presentation of “Moment-matching and multivariate diffusion mixture dynamics for basket-options valuation” at the seminar series “Petit déjeuner de la finance” of the “Ecole Polytechnique”, Paris, 25 Sept 2002.
38. Invited presentation of “Volatility-Smile Modelling with Mixture-Diffusion Stochastic Differential Equations” at the conference “Quantitative Finance”, Risk Magazine, London, 25-26 Nov 2002.
39. Invited presentation of “Volatility-Smile Modelling with Mixture-Diffusion Stochastic Differential Equations” at the “Winter School in Mathematical Finance” (Kasteel Oud Poelgeest, Oestgeest, Amsterdam, 16-18 Dec 2002);
40. Invited presentation of “A two-dimensional shifted square-root diffusion model for credit derivatives with calibration to credit default swaps” at the “Università della Svizzera Italiana”, Lugano, 15 Jan 2003.

41. 2003: Four hours lecture (2 + 2) “How modeling is born and evolves: Interest rate modeling”, at the post-university school “Scuola Avanzata di Formazione Integrata” of the Institute of Advanced Studies in Pavia, 4 - 5 Feb 2003.
42. Invited presentation of “A two-dimensional CIR++ shifted diffusion model with automatic calibration to credit default swaps and interest rate derivatives data” at the “6-th Columbia=JAFEE International Conference”, Tokyo, 15-16 March 2003.
43. Invited presentation of “A two-dimensional shifted square-root diffusion model for credit derivatives: Calibration, pricing and the impact of correlation” at the conference “Risk Europe 2003”, Risk Magazine, Paris, 8-9 April 2003.
44. Invited presentation of “Introduction to the mixture dynamics for volatility-smile modelling” and “Modelling the smile in the LIBOR market model” at the congress “Risk Italia”, Risk Magazine, Milan, 14-15 March 2003.
45. 2003: Sixteen hours lecture (4×4) “Interest rate models: theory and practice” for the FINARM Master students of the Milano-Bicocca University, 25-26 June and 1-2 July 2003.
46. Invited seminar (Prof. Carol Alexander) at the ISMA Center of Reading: Calibration of Credit Default Swaps and Valuation of Related Derivatives with a Tractable Intensity Model, 29 Oct 2003.
47. Invited seminar “Frontiere della ricerca” (research frontiers) for ASSIOM, 19 Nov 2003, Milan.
48. Invited presentation of “Candidate Market Models and the Calibrated CIR++ Stochastic Intensity Model for Credit Default Swap Options and Callable Floaters” at the 4-th ICS conference on Financial Engineering and Statistical Finance, Hitotsubashi University, Tokyo, 18-19 March 2004.
49. Invited presentation at the ASSIOM day “Il Merito Creditizio e La Valutazione della Probabilità di Default delle Società” of the work “Derivati Sul Credito: Calibrazione e Valutazione con Modelli Strutturali e a Intensità”, Milan, 19 May 2004
50. 2004: Invited two hours lecture (Prof. Corielli) “Interest rate models calibration to market data: The LIBOR MODEL” at the Bocconi Master for Quantitative Finance, May 26, 2004.
51. 2004: Invited three hours lecture (Prof. Szego) “Candidate Market Models and the Calibrated CIR++ Stochastic Intensity Model for Credit Default Swap Options and Callable Floaters”, at the “Summer School in Risk Measurement and Control”, La Sapienza University, Rome, 9 June 2004.
52. 2004: Sixteen hours lecture (4×4) “Interest rate models: theory and practice” for the FINARM Master students of the Milano-Bicocca University, June/July 2004.
53. Presentation (by coauthors Morini and Cousot) of “An empirically efficient cascade calibration of the LIBOR Market Model based only on directly quoted swaption data” and “A comparison between the SSRD model and a market model for CDS options pricing”

- at the “BACHELIER FINANCE SOCIETY Third World Congress”, Chicago, 21-24 July 2004.
54. Invited seminar (Prof. Ortu) at the Bocconi University of Milan, Institute of Quantitative Methods, 19 Oct 2004, “Credit Default Swap Calibration and Derivatives pricing with tractable Stochastic Intensity, Structural and Market Models”
 55. Invited presentation of “CREDIT DEFAULT SWAP CALIBRATION WITH A TRACTABLE STRUCTURAL MODEL” at “The 2nd IASTED International Conference on FINANCIAL ENGINEERING AND APPLICATIONS”, FEA 2004, November 8-10, 2004, Massachusetts Institute of Technology (MIT), Cambridge, MA, USA
 56. 2005: Invited four hours lecture “Stochastic Dynamical Models for interest rate and credit derivatives and Volatility smile, with calibration to market data” at the Master “Corso di alta formazione in Finanza matematica”, 16 Feb 2005, University of Bologna.
 57. Invited seminar (Prof. Pistone) at the Dept. of Mathematics of the “Politecnico di Torino”, “Tractable first-passage-time diffusion models for hybrid products with exact calibration to credit default swaps”, 30 April 2005.
 58. 2005: Invited three hours lecture (Prof. Szego) “Credit Default Swap Calibration and Hybrid products Valuation with new tractable First Passage Structural Models”, at the “Summer School in Risk Measurement and Control”, La Sapienza University, Rome, 13 June 2005.
 59. 2005: Sixteen hours lecture (4×4) “Interest rate *and Credit Derivatives* models: theory and practice” for the FINARM Master students of the Milano-Bicocca University, June/July 2005.
 60. Invited talks “CDS Calibration and counterparty risk pricing with tractable structural models” and “Constant Maturity Credit Default Swap pricing with Market models” at the Summer School in Financial Derivatives, Institute of Mathematical Sciences, Imperial College, London, 22 May 2006.
 61. Invited talk (Prof. Miller, Institute for Numerical Computation and Analysis) “Risk neutral valuation of counterparty risk in risk neutral and equity payoffs”, at the “Numerical Methods for Finance Conference” held in Dublin, June 7-9, 2006.
 62. Invited lecture (Prof. Szego and D’Ecclesia) “Risk Neutral Pricing of Counterparty Risk”, at the “Summer School in Risk Measurement and Control”, La Sapienza University, Rome, 20 June 2006.
 63. Invited seminar (Marco Avellaneda and Peter Carr) “Risk Neutral Valuation Under Counterparty Risk” at Courant Institute, NY University, Oct 19, 2006.
 64. Invited Seminar (Tomasz Bielecki) “Consistent Calibration of CDO tranches with the Generalized-Poisson Loss Dynamical model”, Illinois Institute of Technology, Chicago, October 23, 2006.
 65. Invited Seminar (Roger Lee and Per Mykland) “Consistent Calibration of CDO tranches with the Generalized-Poisson Loss Dynamical model”, University of Chicago, Dept. of Mathematics, October 26, 2006.

66. Invited speaker at the "Mathematics Day" at the University of Padua, March 23, 2007. "Mathematics in Finance and Filtering: The Triumph of Stochastic Differential Equations".
67. Invited speaker "Default Correlation, Cluster Dynamics and Single Names: The GPCL Dynamical Loss Model", 2007 C.R.E.D.I.T. conference, Venice, Sept 27-28 2007.
68. **Invited speaker "Default Correlation, Cluster Dynamics and Single Names: The GPCL Dynamical Loss Model", Credit Conference, Stevanovich Center, University of Chicago, Oct 19-20 2007.**
69. **Invited seminar (Emanuel Derman and Rama Cont), "Interest Rate Models: paradigm shifts in recent years", Columbia University, New York, Nov 5, 2007.**
70. Invited speaker "Default Correlation, Cluster Dynamics and Single Names: The GPCL Dynamical Loss Model", The 14th Annual Center for Applied Probability Workshop on Derivative Securities and Risk Management, Columbia University, Nov 9, 2007.
71. 2007: Invited Seminar "Interest Rate Models: paradigm shifts in the last thirty years", University of Venice, Dec 20, 2007.
72. 2008: Invited speaker, **"Credit Index Options: the no-armageddon pricing measure and the role of correlation after the subprime crisis", Second Princeton Credit Risk Conference: The Mathematics of Defaultable Securities, May 23-24, 2008; University of Princeton, NJ**
73. 2009: Invited seminar, "Credit Index Options: the no-armageddon pricing measure and the role of correlation after the subprime crisis", Dept. of Mathematics, King's College, London, 20 Jan 2009.
74. 2009. Invited plenary lecture, "Credit index options: the no-armageddon pricing measure and the credit crisis", AFMathConf 2009, Actuarial and Financial Mathematics Conference 2009, February 8, Brussels.
75. 2009: Invited seminar, "Counterparty Risk with Stochastic Dynamical Models: Impact of Volatilities and Correlations", Dept. of Mathematics, Imperial College, London, 11 Feb 2009.
76. 2009: Invited talk, "Crisis times five: Politics, Regulation, Products, Data, Models?" CCFEA - Univ. of Essex, February 25, 2009.
77. 2009: Invited speaker, "Credit derivatives pre- and in crisis: dynamical models implying armageddon scenarios and extreme losses", Conference on Numerical Methods in Finance, CERMICS, ENPC, Paris, April 17, 2009.
78. 2009. Invited speaker. "Credit derivatives pre- and in crisis: dynamical models implying armageddon scenarios and extreme losses", Derivatives Technology Foundation Symposium, Amsterdam, June 11, 2009.
79. 2009. Invited seminar. "Counterparty risk valuation under dynamical models in the presence of wrong way risk". Cass Business School, Nov 19, 2009, London.

80. 2010. Invited speaker at the EUROPLACE Annual Conference, Paris, March 25-26, 2010: “Credit derivatives pre- and in crisis: The importance of properly accounting for extreme scenarios in valuation”.
81. 2010. Panelist in the panel “Challenges of complex products ” at the third annual conference of the Cass-Capco Institute Paper Series on Risk, April 19th, 2010, London.
82. 2010. Invited presentation: “Liquidity’s Lessons: Interpreting Relationships between CDS and Bond Markets”, 2010 Spring General Meeting of the International Association of Credit Portfolio Managers, IACPM, London, May 6th, 2010.
83. 2010. Invited speaker at the Milan Polytechnic Business School, for the event “Le sfide della Crisi per la Finanza Quantitativa”, presenting the talk “Modelli di Credito prima e durante la crisi: Fatti e miti sulla matematica nel caso dei CDO”, June 16, 2010
84. 2010. Invited lecture at the Summer School in Risk Measurement and Control, Rome, July 5–9, 2010. Credit Models pre- and in-Crisis: Past and future roles of Mathematics in Credit Pricing Models.
85. 2010. Invited speaker at the 4th Risk Management Institute Conference, University of Singapore, Singapore, July 15-17, 2010. ”Credit Models pre- and in- Crisis: The importance of including stress scenarios into valuation”
86. 2010. Invited speaker at the C.R.E.D.I.T. conference 2010, “Credit Models pre- and in-Crisis: Impact of Default Clusters and Extreme Events on Valuation”, Sept 30 - Oct 1, 2010, Venice.
87. 2010. Invited speaker at the INAUGURAL MEETING of the SCOTTISH FINANCIAL RISK ACADEMY, Edinburgh, Nov 4, 2010: “Credit Models Pre- and In-Crisis: Extreme Scenarios and Systemic Risk in Valuation”.
88. 2010. Invited Speaker at the Panel “BASEL III AGREEMENT: Methodological challenges”, moderated by Bloomberg journalist Simon Clarke, Bloomberg, London, Nov 26 2011.
89. 2011. Invited Seminar at Brunel University, 12 Jan 2011. Credit Models and the Crisis: The importance of extreme scenarios and systemic risk for valuation.
90. 2011, 5 February. Invited Speaker at the Panel “Market Psychology, Methodology and Basel III”, Imperial Finance Society, London.
91. **2011, 25 Feb. Invited Seminar at the Dept. of Mathematics and the Man Institute at the Univ. of Oxford.** Credit Models and the Crisis: The importance of extreme scenarios and systemic risk for valuation.
92. 2011, 18 March. **Randomness and the Future. Stochastic Differential Equations in finance. Invited talk at the Italian Festival of Science and Arts “Infinitamente”, Verona, Italy.**
93. 2011, 31 March. Invited Discussant for Paul Embrechts at the day “Extreme Weather Events: Risk Management and Modelling Implications”, Imperial Risk Management Laboratory and the Grantham Institute for Climate Change, London.

94. 2011, Plenary speaker at the RiskLab 2011 Conference, Madrid, May 12, "Credit Models and the Crisis: The importance of systemic risk and extreme scenarios in valuation"
95. 2011. Invited speaker at the "Computational Finance and Derivatives, Frontiers of Finance", Warwick Finance Research Institute, Warwick Business School. July 7. Arbitrage free Credit Valuation Adjustment: Impact of closeout conventions, first to default risk, collateral modelling and dynamics.
96. 2011. Invited at a **Dinner at the Royal Society, London**, Oct 27, organized by Terry Lyons (Oxford), for a discussion on the future of Risk Management and of methodology in the Financial Industry, with executives and officials from Morgan Stanley, Nomura, Barcap, JP Morgan, Lloyds TSB, FSA, HM Treasury, Bank of England.
97. 2011. Invited Seminar at City's University, Dept. of Economics, London, Nov 2, "Credit Models and the Crisis: The importance of extreme scenarios and systemic risk in valuation".
98. 2012. Invited Seminar at Imperial College, Dept. of Mathematics, London, February 22. Advanced arbitrage-free valuation of counterparty credit risk.
99. 2012. Invited Seminar at Milan Politecnico, Prof. Barucci, "Advanced counterparty risk pricing and restructuring: CVA, DVA, Closeout, Netting, Collateral, Basel III, systemic risk and Margin Lending". March 29.
100. 2012. Invited speech at the celebration of the International Center for Mathematical Sciences (ICMS), Edinburgh, "Randomness and the future: Mathematics and Stochastic Differential Equations in Finance", 21th Anniversary Speech.
101. 2012. Invited talk at the conference Counterparty Risk Frontiers: Collateral damages, Paris, 4 May 2012 (LES RENCONTRES DES CHAIRES FBF). "Next Generation CVA: From Funding Liquidity to Margin Lending".
102. 2012. Aarhus University short PhD Course, 8 + 8 hours. May 24-25, 2012. Credit Modeling and Counterparty Risk Pricing and Restructuring.
103. **2012. Invited talk at Data Assimilation Workshop, 24-28 Sept 2012, Oxford University. "The Mixture Projection Stochastic Filter in L2 Metrics".**
104. 2013, 23 Jan, Cass Business school conference, invited speaker on Funding Costs valuation.
105. **2013, 28 Mar, Invited lecture at the Newton Institute, Cambridge: Counterparty credit risk, collateral and funding – next generation valuation models under interconnected risks.**
106. **2013, 25 Apr: Cass Business School: Chair and main organizer of the Cass-Capco conference 2013 on Risk in Finance, London**
107. **2013, 28-31 May: Plenary speaker at the 30th French Finance Association conference, Lyon (with Nobel Laureate Robert Engle). Counterparty Credit Risk, Collateral and Funding: The new theory of valuation.**

108. 2013, 3-4 June: Invited speaker at the 1st UK Conference on Mathematical Finance, held at King's College London. Optimal trade execution for displaced diffusions.
109. **2013, 10-13 June: Warsaw, plenary speaker at the 2013 AMAMEF conference, Banach center. Credit risk and funding costs with non-linear Feynman Kac methods.**
110. 2013, 18-21 June: Invited lecture on counterparty credit risk and funding costs at the Barcelona Summer School in Financial Engineering.
111. 2013, 9-11 Sept, Technical University of Munich. Invited speaker at the Conference "Risk Management Reloaded". Liquidity inclusive risk measures.
112. **2013, Oct 16, Pisa, Scuola Normale Superiore, invited special lecture for "Colloqui della classe di Scienze".** Nonlinear valuation.
113. 2013, 24 Oct: Zicklin Business School, Baruch College, NY. Chair and academic organizer of the Zicklin-Capco conference 2013 on Applied Finance.
114. 2013, Oct 30-31. ESRC Seminar, Manchester. Invited Talk. Crisis Challenges: From inadequate dependence modeling in CDO's to Credit- Collateral- and Funding-risk inclusive global valuation
115. 2013, Nov 14. Invited seminar at the University of Sussex, Falmer. The ongoing (r)evolution in nancial modeling and the possible end of Platonic pricing: A stochastic analysis approach to credit and funding liquidity risk. MASS Seminar.
116. **2014, Jan 29. Public Lecture at Imperial College (more than 200 attendees). Randomness, Dynamics and Risk.**
117. 2014, Feb 27, London. Inaugural Workshop of the CFM-Imperial Institute of Quantitative Finance. Funding, credit, collateral and hedging: nonlinearities and platonic pricing.
118. **2014, March 14-16, Shanghai. Plenary speaker at the 2014 International Conference on Financial Engineering and Innovation (2014ICFE), Tongji University. Nonlinear pricing operators, relativity of pricing measures and payout risk: The end of platonic valuation?**
119. 2014, March 15, Suzhou. Invited talk at the University of Soochow. Evolution of Valuation: From Black and Scholes to Nonlinear pricing under credit and funding costs.
120. 2014, 29 Oct: Zicklin Business School, Baruch College, NY. Chair and academic organizer of the Zicklin-Capco conference 2014 on Applied Finance.
121. **2014, Oct 31. Invited seminar (Matheus Grasselli) at the Fields Institute, Toronto. Nonlinear valuation under credit gap risk, collateral margins, funding costs and multiple curves.**
122. 2015, 26-28 Jan. Invited course at the 14-th Winter School in Mathematical Finance, De Werelt, Lunteren, The Netherlands. Nonlinear valuation under credit gap risk, initial and variation margins, funding costs and multiple curves.

123. 2015, 29 Jan. Invited talk at the London Mathematical Finance Seminar (co-organized by UCL, King's College London, London School of Economics). Nonlinear valuation under credit gap risk, collateral margins, funding costs and multiple curves.
124. 2015, 20 Feb. Invited Colloquium at the Dept. of Mathematics, University of Liverpool. Challenges in stochastics and finance: the case of dependence dynamics in credit modelling.
125. 2015, March 6. Talk at the Imperial-ETH workshop, Imperial College London. Multivariate lack of memory for default times: EV Copulas and a new Marshall Olkin characterisation.
126. **2015, 30 March. Plenary talk at the conference Challenges in Derivatives Markets: Fixed income modeling, valuation adjustments, risk management, and regulation, Munich, TUM. Nonlinear valuation under credit gap risk, collateral margins, funding costs and multiple curves.**
127. 2015, 10 June. Cass Business School: Chair and main organizer of the Cass-Capco conference 2015 on Risk in Finance, London.
128. 2015, Sep 21-25. Presentation at the workshop Computational information geometry for image and signal processing, ICMS, Edinburgh. Stochastic nonlinear filtering via Hellinger or L2 projection on exponential or mixture statistical manifolds.
129. 2015, 28 Oct, Paris. Presentation at the conference Geometric Science of Information 2015 (GSI2015), Ecole Polytechnique. Stochastic PDE projection on manifolds: Assumed-Density and Galerkin Filters.
130. **2015, 26 Nov. Invited seminar at the University of Oxford (Prof. Xun Yu Zhou). Nonlinear valuation under credit gap risk, collateral margins, funding costs and multiple curves.**
131. 2016, 8 Jan. Imperial College Workshop on Stochastic Differential Geometry and Rough Paths. Stochastic PDE projection on manifolds with applications to filtering.
132. 2016, 14 March. Quantitative Finance Seminar at Imperial College London. Nonlinear valuation under credit gap risk, initial and variation margins, funding costs and multiple curves.
133. 2016, 8 April. Invited talk at the Bachelier Seminar, Institut Henry Poincaré, Paris. Characterization of the Marshall-Olkin law via Markovian indicators: iterated default simulation.
134. 2016, 13 April. Invited talk at Quant Summit Europe, London. Multi-Currency Credit Default Swaps: Quanto effects and FX devaluation jumps.
135. **2016, April 21, London School of Economics Risk and Stochastics Conference (hosted by Winton Capital, London). Invited talk: Coordinate Free Stochastic Differential Equations as 2-jets**
136. 2016, June 7: Invited two hours lecture (Prof. D'Ecclesia) "Nonlinear valuation with trading costs: credit risk, collateral, funding liquidity & capital", at the "Summer School in Risk Measurement and Control", LUISS University, Rome.

137. 2016, October 10. Invited Probability seminar at Scuola Normale Superiore di Pisa: “Intrinsic stochastic differential equations as jets: theory and applications”.
138. 2016, October 21, Budapest: Invited plenary lecture at the conference on Financial Risk Management organized by Eötvös Loránd University and Morgan Stanley. “The Science & Art of Valuation Adjustments: Nonlinear valuation under margins, funding costs, gap default closeout, multiple curves & capital”.
139. 2016, 9 December, Louvain La Neuve. Invited seminar at CORE, UCL. Multi Currency Credit Default Swaps: Quanto effects and FX devaluation jumps.
140. 2017, 17 March, University of Strasbourg/CRNS, IRMA, invited seminar: “The Science & Art of Valuation Adjustments: Nonlinear valuation under margins, funding costs, gap default closeout, multiple curves & capital”.
141. 2017, 17 March, University of Strasbourg/CRNS, IRMA, invited seminar: “Intrinsic stochastic differential equations as jets”.
142. 2017, 6 April, **Technical University of Munich and KPMG, plenary talk at the conference on Innovations in Insurance, Risk & Asset Management: “Consistent iterated simulation of MV defaults: Markovian indicators characterization and Marshall Olkin law”**
143. 2017, 26 April, invited seminar at Università LUISS Guido Carli, Rome: “The science and art of valuation adjustments”, Prof. Giorgio Di Giorgio.
144. 2017, 27 April, invited seminar at Università LUISS Guido Carli, Rome: “Intrinsic SDEs as jets: theory and applications”, Prof. Fausto Gozzi.
145. 2017, 28 April. Plenary talk at the workshop “Quantitative Finance at Work”, Università di Roma Tor Vergata, Prof. Stefano Herzel.
146. 2017, May 25, **invited talk and panel at the 2017 Oxford-Princeton workshop, “Evolution of the Quant Profession: Nonlinear valuation under margining, gap default closeout, funding costs, multiple curves and capital”**, May 25-26, Oxford, UK.
147. 2017, June 15. Invited talk at the 3rd Symposium on Quantitative Finance and Risk Analysis (QFRA 2017), Corfu, Greece, “Nonlinear valuation under credit, collateral, funding and valuation adjustments”.
148. 2017, Sept 21. Invited talk at the London-Paris Bachelier Workshop on Mathematical Finance, 4th Edition, 21 and 22 September 2017, “An indifference approach to cost of capital constraints: KVA and beyond”.
149. 2017, Nov 7, Paris. Presentation at the conference Geometric Science of Information 2015 (GSI2015), Ecole Polytechnique. Stochastic PDE projection on manifolds: Assumed-Density and Galerkin Filters.
150. 2017, Nov 29. **Invited seminar at Columbia University, NY, Statistics, ”Optimizing S-shaped utility and risk management: ineffectiveness of VaR and ES constraints”**.

151. 2017, Nov 29. **Invited seminar at Columbia University, NY, IEOR, Financial Engineering Seminar, “The science and art of nonlinear valuation: from risk neutral to indifference XVAs.”**
152. 2017, Dec 1. **Invited seminar at NYU, Tandon School of Engineering. “Assessing sovereign default probabilities via market implied quantities and historical data”.**
153. 2017, Dec 11. Invited talk, the CFM-Imperial Market Microstructure conference, London, JPMorgan. “Static vs adapted optimal execution in some benchmark trading models”.
154. 2018, March 1. Invited talk at Quant2018, Venice: “The evolution of valuation and of the quant profession”.
155. 2018, June 8: Invited two hours lecture (Prof. D’Ecclesia) “Unintended consequences of regulation: Rogue traders vs VaR and expected shortfall”, at the “Summer School in Risk Measurement and Control”, LUISS University, Rome, 4-9 June 2018.
156. 2018, Dec 4-5, Jerusalem, Hebrew University: **Invited speaker at the conference “Options: 45 Years after the publication of the Black–Scholes–Merton Model”, including Nobel laureates Merton and Scholes** among the invited speakers,
157. 2019, March 31. The mathematics of the several trillion market of financial derivatives: now and then. Invited talk, Cumberland Lodge, Windsor Park.
158. 2020, Jan 15 2020. Invited talk by Prof. Jourdain. Unintended consequences of regulation: Rogue traders vs VaR and expected shortfall. Advances in Financial Mathematics, Paris, Jan 2020
159. 2021, May 5. Invited talk at the conference Beyond the Boundaries, University of Leeds. Static vs adaptive optimal trading and good execution.
160. **2021, May 28, The Evolution of Valuation & related challenges Nonlinear effects, Machine Learning and Interpretability. Plenary speaker at the EURO WORKING GROUP FOR COMMODITIES AND FINANCIAL MODELLING, 63rd MEETING, and XVIII INTERN. CONFERENCE ON FINANCE AND BANKING, FI BA 2021, Bucharest, 28 May 2021**
161. 2022, June 10. The Evolution of Valuation & related challenges Nonlinearity, Learning and Interpretability. Invited talk at the 4th INTERN. CONFERENCE ON COMPUTATIONAL FINANCE, Wuppertal University, 10 June 2022
162. 2022, July 6. Optimal projection filters: History and Recent Developments. Invited seminar for the Stochastic Control series by Prof. Zheng, Imperial College.

Attachment D: Lectures for Regulators, Central Banks, Industry and non-academic Institutions

1. 2002: Six hours lecture (3 + 3) “The new generation of interest rate derivatives models: Calibration of the LIBOR model to market data” and “Volatility smile modelling with the density mixture dynamics: Introduction and Calibration” at the ABI association (“Associazione Bancaria Italiana”), “Corsi del Piano Formativo in Risk Management”, 12 Dec 2002.
2. 2003: Invited lecture at the course “INTEREST RATE MODELLING: Practical calibration and implementation techniques”, Risk Magazine Training Courses, London, 19-20 May 2003.
3. 2003: Three hour lecture “The new generation of interest rate derivatives models: Calibration of the LIBOR model to market data” at the ABI association, “Corsi del Piano Formativo in Risk Management”, 22-23 October 2003.
4. 2003: Sixteen hours (8 + 8) two-days course on “BGM and LIBOR Market Models: Latest Developments and Applications for Enhanced Exotics Pricing”, Marcus Evans Financial Training, London, 27-28 Oct 2003.
5. 2004: Sixteen hours (8 + 8) two-days course on “BGM and LIBOR Market Models: Latest Developments and Applications for Enhanced Exotics Pricing”, Marcus Evans Financial Training, London, 5-6 Apr 2004.
6. 2004: Round table discussion and Invited presentation “CDS calibration and related option pricing: Tractable intensity model and Market models” at the “WBS (World Business Strategy): The Inaugural Fixed Income Conference”, Prague, Czech Republic, 15 -17 Sept 2004
7. 2004: Invited presentation of “New Research In Pricing Credit Default Swaps: The CDS-calibrated SSRD Model and Candidate Market Models for CDS Options” at the 11th Annual Risk Management Forum “New Horizons and Advances In Risk Management, Measurement, Modelling and Capital Allocation” 7-10 Dec 2004, Geneve.
8. 2004: Sixteen hours (8 + 8) two-days course on “BGM and LIBOR Market Models: Latest Developments and Applications for Enhanced Exotics Pricing”, Marcus Evans Financial Training, London, 25-26 Nov 2004.
9. 2005: Invited presentation of “Credit Default Swap Calibration and Equity Swap Valuation under Counterparty Risk with tractable First Passage Structural Models” at the “Equity / Credit Hybrid Products Workshop”, WBS, London, 14-15 March 2005.
10. 2005: Twenty-four hours (8 + 8 + 8) three-days course on “BGM and LIBOR Market Models: Latest Developments and Applications for Enhanced Exotics Pricing”, Marcus Evans Financial Training, London, 13-15 Apr 2005.
11. 2005: Sixteen hours (8 + 8) two-days course on “Advanced Credit Derivatives Models”, Marcus Evans Financial Training, London, 19-20 May 2005.

12. 2005: Invited talk at “ICBI: Global Derivatives and Risk Management 2005”, Paris, 23-25 May 2005. “New Advances In Hybrid Products Pricing. An Extended Black-Cox Type Structural Model Calibrated Exactly To Credit Default Swaps For Hybrid Products Valuation”.
13. 2005: Round Table and Invited presentation “Hybrid Credit/Equity products and Counterparty Risk pricing: Enriching Structural Models Calibration to CDS” and “The uncertain volatility/default barrier first passage time model and its calibration to credit default swaps data” at the second Fixed Income Conference, Prague, 14 -16 Sept 2005.
14. 2005: Invited presentation (Prof. Alan White, head of the scientific committee) of “Credit Default Swap Calibration and Counterparty Risk Pricing with Tractable First Passage Structural Models ” at the Credit Conference “Counterparty Credit Risk”, GRETA Consulting, Venice 22-23 Sept. 2005.
15. 2005: Invited presentation of “Constant maturity credit default swap pricing with market models” at the “Credit Risk Summit Europe”, Risk Magazine, London, 3-5 Oct 2005.
16. 2005: Twenty-four hours (8 + 8 + 8) three-days course on “BGM and LIBOR Market Models: Latest Developments and Applications for Enhanced Exotics Pricing”, Marcus Evans Financial Training, Milan, 2-5 nov 2005.
17. 2005: Invited presentation of “Credit Default Swap Calibration and Equity Swap Valuation with a time varying Black-Cox type Structural Model” at “Equity / Credit Hybrid Products Workshop”, WBS, London, 17-18 Nov 2005.
18. Sixteen hours (8 + 8) two-days course on “Advanced Credit Derivatives Models”, Marcus Evans Financial Training, Milan, 16-17 Feb 2006.
19. Invited lecture (PierPaolo Montana) at the Bank of Italy on “Valuation and Risk Management of Credit Derivatives”, Rome, Feb 22, 2006.
20. Invited presentation of “Risk Neutral pricing of Counterparty Risk” at “Equity / Credit Hybrid Products Workshop”, WBS, Lonon, 6-7 Apr 2006.
21. Twenty-four hours (8 + 8 + 8) three-days course on “BGM and LIBOR Market Models: Latest Developments and Applications for Enhanced Exotics Pricing”, Marcus Evans Financial Training, Milan, 3-5 May 2006.
22. Invited talk at “ICBI: Global Derivatives and Risk Management 2006”, Paris, 9-11 May 2006. “Risk Neutral Valuation under Counterparty Risk”.
23. 2006: Invited presentation “Consistent Calibration of CDO tranches with the GPL dynamical model”, Third Fixed Income Conference, WBS, Amsterdam, 20 -22 Sept 2006.
24. 2006: Invited presentation (Alex Lipton and Andrew Rennie), “Consistent Calibration of CDO tranches with the GPL dynamical model” at “Credit Correlation: Life after Copulas”, Sept. 30 2006, Merrill Lynch, London.
25. Sixteen hours (8 + 8) two-days course on “Credit Derivatives Pricing Models”, Concentric, Borsa Italiana (Italian Stock Exchange), Milan, October 9-10, 2006.

26. Seminar “Risk Neutral Valuation Under Counterparty Risk” at Citigroup Fixed Income Seminar, NY, Oct 17, 2006.
27. Seminar “Risk Neutral Valuation Under Counterparty Risk” at Lehman Brothers, NY, Oct 17, 2006.
28. Seminar “LIBOR Market Model: Calibration, Diagnostics and Approximations” at Bloomberg, NY, Oct 18, 2006.
29. Invited Seminar “Consistent Calibration of CDO tranches with the GPL dynamical model” at the Credit Risk Summit, Standard and Poors and Finance Concepts, NY, October 20, 2006.
30. Invited seminar “Credit Derivatives Products and Models: An Overview”, Quantitative Risk Management, Chicago, Oct 24, 2006.
31. Four hours lecture “Credit Derivatives and Market Models”, London Financial Studies, London, Nov 24, 2006.
32. One day course for World Business Strategies, ”Credit Correlation: Interpolation, extrapolation and dynamics”. London, March 29, 2007.
33. Invited speaker, with two Nobel prizes (Merton and Phelps) at the Third Conference of the Brazilian Mercantile and Futures Exchange, ”Interest Rate Models: paradigm shifts in recent years”, Campos de Jordao, August 22-26, 2007.
34. One day course for World Business Strategies, ”Credit Correlation: Interpolation, extrapolation and dynamics”. London, September 19, 2007.
35. 2007: Invited presentation “Counterparty Risk and Contingent CDS pricing under correlation between default and interest rates”, Fourth Fixed Income Conference, WBS, Amsterdam, 20 -22 Sept 2007.
36. 2007: Invited presentation “Counterparty Risk and Contingent CDS pricing under correlation between default and interest rates”, second Fitch Academic Advisory Board meeting, London, 11 -12 Oct 2007.
37. 2008: Invited presentation “Default Correlation, Cluster Dynamics and Single Names: the GPCL Dynamical loss model”, BundesBank, Frankfurt, Feb 4, 2008.
38. 2008: Invited presentation “Interest Rate Models: paradigm shifts in the last thirty years”, European Central Bank, Frankfurt, Feb 6, 2008.
39. 2008: Two hours lecture on CDS, CDS Options, CMCDS and Contingent CDS pricing with intensity and structural credit models. Incisive Media, Risk Magazine Training Course ”Credit risk modeling for tomorrow’s market”, London, March 10.
40. 2008: Two hours lecture on Risk neutral valuation of counterparty risk and Contingent CDS as hedging instruments. Incisive Media, Risk Magazine Training Course ”Counterparty Credit Risk Management in OTC Derivatives”, London, April 22.

41. 2008: Two hours lecture on Risk neutral valuation of hybrid interest-rate credit derivatives including counterparty risk and Contingent CDS. Incisive Media, Risk Magazine Training Course “Practical Calibration and Implementation Techniques for Interest Rate Modelling”, London, June 10.
42. 2008: Invited presentation “Counterparty Risk with Stochastic Dynamical Models: Impact of Volatilities and Correlations”, Fifth Fixed Income Conference, WBS, Budapest, 26 Sept 2008.
43. 2009: Invited lecture “Counterparty Risk with Stochastic Dynamical Models: Impact of Volatilities and Correlations ”, Incisive Media, Risk Magazine Training Course “Interest Rate Modeling in a low rate environment”, May 12, 2009, London.
44. 2009: Invited lecture “PRICING OF INFLATION-INDEXED DERIVATIVES”, Incisive Media, Risk Magazine Training Course “Interest Rate Modeling in a low rate environment”, May 12, 2009, London.
45. 2009. Sixteen hours (8 + 8) two-days course on “Credit Derivatives: Products and Models”, Concentric, Milan, June 18-19, 2009.
46. 2009: Invited plenary lecture “Bilateral counterparty risk valuation with hybrid models across classes: impacts of volatilities and correlations”, Quant Congress Europe 2009, Incisive Media, Risk Magazine Conference, Nov 4, 2009, London.
47. 2010. Invited lecture on Counterparty Risk valuation and wrong way risk at the “Counterparty Credit Risk: Credit Valuation Adjustment, Stress Testing & Modelling” Workshop, WBS, London, 22nd - 24th March 2010
48. 2010. Invited speaker at the 6th Fixed Income Conference, WBS, Madrid, Sept. 23-24, 2010. “Credit Models and the Crisis or: How I learned to stop worrying and love the CVA and CDOs”
49. 2010. Panel Moderator at the 6th Fixed Income Conference, WBS, Madrid, Sept. 23-24, 2010. Panel: “Credit Models and the Crisis: CVA, CDOs, FX Effects, Liquidity and Hybrid Models”.
50. 2010. Sixteen hours (8 + 8) two-days course on “Credit Default and Counterparty Risk Models for Valuation and Risk Management”, Concentric, Milan, October 4-5, 2010.
51. 2010. Invited (plenary) speaker at Credit Risk Summit 2010, Incisive Media, London. “A survey of liquidity modelling in the CDS market”. October 14, 2010, London.
52. 2010. 1-day training course (8 hours) at the Credit Risk Summit 2010: “Credit Models and Counterparty Risk Valuation in Crisis ”, October 15, 2010, London.
53. 2010. Invited (plenary) speaker at the Quant Congress, London: “Credit models pre- and in- crisis: the importance of extreme scenarios in valuation”. November 9, 2010, London.
54. 2010. Quant Congress London: Champagne Roundtable Speaker, Credit Models table, Nov 10, 2010, London.

55. 2011. One Day training course for Marcus Evans. Counterparty Risk Valuation: Bilateral CVA, Netting, Collateral and Wrong Way Risk. London, 26 Jan 2011.
56. 2011. Invited Speaker at the 2nd Annual Marcus Evans CVA Conference held in London on Jan 28, 2010. "Arbitrage-free valuation of Counterparty Risk across asset classes: interest rates, commodities and credit"
57. 2011. Invited speaker at the Global Derivatives 2011 Conference, Paris, April 14. Liquidity Modelling For Credit Default Swaps and Bonds.
58. 2011. One day Full Day Training Masterclass "Counterparty Valuation Adjustment (CVA) and Credit Models In Crisis" at the Global Derivatives 2011 Conference, Paris, April 15.
59. 2011. Two days training course for World Business Strategies in Frankfurt, "Credit Modelling and Counterparty Valuation Adjustment after the Credit Crunch", June 9-10.
60. 2011. Invited Speaker at the 2011 WBS Fixed Income Conference, Berlin, "Second Generation Credit Valuation Adjustment", October 6.
61. 2011. CVA and Securitization Panel Moderator at the 2011 WBS Fixed Income Conference, Berlin, October 7.
62. 2011. Quant Congress Europe, One day training course on "CVA and Counterparty Risk: New challenges", Nov 7.
63. 2011. Quant Congress Europe, Plenary Talk. "New Generation CVA", Nov 8.
64. 2011. Invited at an industry dinner on CVA organized by SunGard at the Royal Stock Exchange, London, Nov 9, together with Executives from BNP Paribas, Royal Bank of Scotland, Barcap, UBS, Nomura, Unicredit, Commerzbank, WestLB.
65. 2011. Invited at an industry dinner organized by NumeriX, Chicago, Nov 15, together with Executives from Morgan Stanley, NumeriX, Bloomberg.
66. 2011. Invited Speaker at the Inaugural Global Derivatives USA Conference, Chicago, Nov 15, "New Generation CVA: Closeout, First to Default Risk, Collateral, Re-hypothecation and Funding".
67. 2012. Invited Seminar at UniCredit Bank, London: Second Generation Valuation Adjustments, January 12, 2012.
68. 2012. Invited plenary talk at the Risk Annual Summit, London, March 22. Second Generation CVA Modelling.
69. 2012. Invited moderator for the roundtable at the WBS-CVA Conference, March 22: Implementation, Trading, Liquidity, Modeling and Funding.
70. 2012. One day training course at the WBS-CVA Conference: New Generation Counterparty Risk modeling, March 21–23.
71. 2012. Invited talk at Global Derivatives, ICBI, Barcelona. Restructuring Counterparty Credit Risk. April 19.

72. 2012. Invited Chair at Infoline Conference Panel, London, May 15-18 2012. "Valuation of Financial Instruments: Counterparty Credit Risk".
73. 2012. Two days training course, 8+8 hours, Concentric 2012: 17-18 May 2012, Milan. Counterparty Credit Risk and CVA Pricing: a risk neutral evaluation framework.
74. 2012. Invited one day training course, Risk Minds USA Conference, June 8, 2012, Boston. "Innovations in CVA Modeling".
75. 2012. Two-days training course for the Professional Risk Management Association, PRMIA, June 21-22, 2012, Munich. "CVA: Credit Models and Advanced Counterparty Risk Pricing and Restructuring".
76. 2012. Invited talk at Marcus Evans, 2nd Conference on Derivatives Funding and Valuation. "Closeout and Restructuring in Counterparty Risk with Funding". London, Sept 18.
77. 2012. Plenary talk at the 2013 Quant Congress Europe, "A critique of funding and counterparty risk valuation: new challenges", London, Oct 9, 2012.
78. 2012. Invited plenary talk at the "OIS Discounting" Infoline conference, London, "Overcoming the Challenge of Funding and the Interaction with Valuation", London, 24 Oct.
79. 2013, 10-11 Jan, Invited seminar at Natixis Bank on Counterparty Credit Risk, Collateral and Funding, Paris.
80. **2013, 31 Jan, Invited Seminar on Liquidity Risk at the Bank of England, Liquidity adjusted risk measure with random holding period**
81. 2013, 7-8 Feb, CVA trading panel at Marcus Evans CVA conference, London
82. 2013, 21 Feb, CVA Collateral and Funding Panel, Bloomberg, London.
83. 2013, 20 March: The 2nd CVA Conference: The FVA Debate, Capital Charges, Computation, CCR & Regulations. London
84. 2013, 15-19 Apr: Global Derivatives, Amsterdam. Invited talk on Consistent modeling of Funding Costs, Credit and Collateral.
85. 2013, 15-19 Apr: Global Derivatives, Amsterdam. 1 day training course on CVA, DVA, FVA and beyond: towards consistent global valuation.
86. 2013, 14-15 May: Infoline conference, Valuation of financial instruments, London. Plenary talk on "Credit Collateral and Funding: A consistent non-separable approach".
87. 2013, 7-8 Nov: Two days internal training course at Cassa Depositi e Prestiti, Roma. Counterparty Credit Risk, Collateral and Funding Costs Modeling: CVA DVA FVA and beyond.
88. 2013, 21 Nov: Invited talk at the Global Association of Risk Professionals (GARP), London. Liquidity Adjusted Risk Measures with Random Holding Period.

89. 2013, 5 Dec: Risk Minds International, Amsterdam. Invited talk. Funding, Credit, Collateral and Multiple Curves: How To Price These Interconnected Risks Into Your Risk Management Processes.
90. 2014, 13 Feb: Invited talk (M. Dempster) at the HPC event New Thinking in Finance, London. Nonlinear Valuation: Funding Costs, Margining and Gap Credit Risk.
91. 2014, 21 Feb: 1 day internal training course for Deka Bank, Frankfurt. Counterparty Credit Risk, Collateral and Funding Costs Modelin:g CVA DVA FVA and beyond.
92. 2014, 13-14 March. Invited talk at the 3rd Interest Rate Conference, World Business Strategies, London. Interest-Rate Modelling in Collateralized Markets: Multiple Curves, Credit-liquidity Effects, Residual CVA, Funding and CCPs.
93. 2014, March 26-28. Imperial BS/PRMIA Executive education program. 1 day lecture on CREDIT RISK MANAGEMENT: COUNTERPARTY CREDIT AND FUNDING RISK.
94. 2014, 2 April. Plenary talk, Quant Congress Europe. Nonlinear and claim-dependent valuation measures: CCPs, CSA, funding, credit, collateral and multiple curves.
95. 2014, May 8. London, QuantHub Webinar. Nonlinear and claim-dependent valuation measures: CCPs, CSA, funding, credit, collateral and multiple curves.
96. 2014, 14 May. Invited talk at Global Derivatives 2014, Amsterdam. Interest rate modeling in collateralized markets: NVA, multiple curves, credit liquidity effects and CCPs.
97. 2014, Nov 5 and 12. ICBS Executive education, London, Brevan Howard Training Programme (Financial Markets). Internal course on Credit Derivatives and Credit Risk.
98. 2014, Dec 4-5. Internal training course at Natixis, Paris. Funding Costs Modeling and Valuation Adjustments: CVA, DVA, FCA, FBA, LVA, DVAF, CVAF, NVA, KVA.
99. 2014, Dec 11. Invited talk at Risk Minds, Amsterdam. Nonlinear Valuation under Initial/Variation Margins and Default Closeout.
100. **2014. Dec 11. Risk Minds 2014, Amsterdam. Chair of a Panel on Model Risk with Jon Danielsson (LSE), Emanuel Derman (Columbia) and Nassim Taleb (NYU Poly).**
101. 2015, March 25-26. Imperial BS/PRMIA Executive education program. 1 day lecture on CREDIT RISK MANAGEMENT: COUNTERPARTY CREDIT AND FUNDING RISK.
102. 2015. April 15. Plenary talk at Quant Congress Europe 2015. Local vs Terminal Statistical Dependence in default risk simulation: EV Copulas and a new Marshall Olkin characterisation.
103. 2015, June 10, Edinburgh. 1 day training course for the Scottish Financial Risk Academy. Valuation of nancial products under credit risk, collateral margins and funding costs: From CSA to CCPs
104. 2015, 12 Aug, London. Nomura internal seminar (Eduardo Epperlein). Dont destroy correlation one step at a time: Saving correlations in multi-step default simulation.

105. **2015, 4 Nov, London. Invited presentation at the European Banking Authority in front representatives of all the EU and Iceland central banks. Developments on CVA: Academic perspective.**
106. 2015, 9 Nov, Milan. 1 day training course for Concentric. Valuation of financial products under credit risk, collateral margins and funding costs: From CSA to CCPs.
107. 2015, 19-20 Nov, Louvain La Neuve. 1 day training course for advanced quantitative analysts and doctoral students (45 participants). Co-organize by UCL, Louvain La Neuve. Nonlinear valuation and XVA under credit risk, collateral margins and Funding Costs.
108. 2015, 9 Dec, Risk Minds 2015, Amsterdam. Invited talk. Correlation In MultiPeriod Default Risk
109. **2016, 11 May. 1 Day training course for the European Stability Mechanism, Luxembourg. Valuation of financial products under credit risk, collateral margins and funding costs: From CSA to CCPs.**
110. **2016, 12 May. European Stability Mechanism invited seminar, "Assessing Euro exit probabilities via market implied quantities and historical data".**
111. 2016, 30 June. Imperial BS Executive education program, five hours lecture on CREDIT RISK MANAGEMENT: COUNTERPARTY CREDIT AND FUNDING RISK.
112. 2016, 6 Dec: Risk Minds International, Amsterdam. Invited talk. The Cepix Euro-Exit probability index: methodology and history.
113. 2017, 16 February. Stand "the future of futures trading" at the Imperial College Fringe Festival, explaining derivatives market, valuation and risk to the public.
114. 2017, 1-2 March. Imperial BS Executive education program, five hours lecture on CREDIT RISK MANAGEMENT: COUNTERPARTY CREDIT AND FUNDING RISK.
115. 2017: **Plenary talk at Global Derivatives 2017**, "The science and art of valuation", May 11. **Hall of fame** talk "Assessing Euro Exit Probabilities Via Market Implied Quantities & Historical Data", May 10, and FX and commodities stream talk "FX Devaluation Jumps For CDS In Multiple Currencies". **Chair of the panel** "What is the future for quantitative finance?" on May 11.
116. **2017, Oct 24-25. 2 Days training course for the European Stability Mechanism, Luxembourg. Valuation of financial products under credit risk, collateral margins, funding and capital costs: From CSA to CCPs.**
117. 2018, March 22. Imperial BS Executive education program, five hours lecture on CREDIT RISK MANAGEMENT: COUNTERPARTY CREDIT AND FUNDING RISK.
118. 2018, May 16: Invited talk at Quant Minds 2018, Lisbon, "risk measures for rogue traders".
119. 2018, May 17: Invited talk at Quant Minds 2018, Lisbon, "cost of capital: an indifference target-performance approach".

120. 2018, June 27: Invited seminar at The Thalesians, London: “Rogue traders vs Value at Risk and Expected Shortfall”.
121. 2018, Sept 17. Imperial BS Executive education program, five hours lecture on CREDIT RISK MANAGEMENT: COUNTERPARTY CREDIT AND FUNDING RISK.
122. 2018, Dec. 5: Risk Minds International, Amsterdam. Invited talk. An indifference approach to Capital Valuation Adjustments.
123. 2019, Jan. Deep Learning: Interpretability? IHS Markit Advisory Board, London.
124. 2019, Feb 22. Deep Learning: Interpretability? Quant Congress Venice, Invited speaker.
125. 2019, Feb. 15. Macquarie academic advisory board. A normal mixture / expected shortfall approach to alternative risk premia.
126. 2019, May 16. Invited talk at Quant Minds. Static vs adaptive optimal trading with liquidity signals. Vienna.
127. 2019, May 21. Invited as part of the Panel at Quant Minds on Machine Learning in Finance, Vienna.
128. 2019, Sept. 25. Quantitative Investing: where we came from, where we are going, and why you probably won't be replaced by a machine. Invited talk, Institutional Investors, London.
129. 2019, Oct 10. Dependence modeling: Lessons from credit risk and dynamic copula Bayesian networks. IHS Markit Academic Advisory Board Meeting, London.
130. 2020, March 13. Macquarie academic advisory board. An introduction to optimal execution.

Attachment E: Editor roles

- **(2017-current) Editorial Board** of “Information Geometry”, Springer Verlag.
- **(2014-current) Editorial Board** of “Mathematics of Control, Signals and Systems”, Springer Verlag.
- **(2014-current) Editorial Board** of “International Journal of Financial Engineering”, World Scientific.
- **(2012-current) Editorial Board** of “Applied Mathematical Finance”, Routledge.
- **(2012-current) Editorial Board** of “Global Credit Review”, World Scientific.
- **(2007-2017) Managing Editor** of the “International Journal of Theoretical and Applied Finance”, World Scientific.
- **(2012-2015) Editor in Chief** of the “Journal of Financial Transformation”, Capco.
- **(2016-2017) Editor in Chief** of the “Journal of Financial Perspectives”, EY.

Attachment F: Scientific and organizing committees of conferences

1. 2003: Scientific committee of the IV Italian Workshop of Quantitative Finance, Turin, 30-31 January 2003.
2. 2004: Scientific committee of the V Italian Workshop of Quantitative Finance, Siena, 29-30 January 2004.
3. 2004: Scientific Committee of “The 2nd IASTED International Conference on FINANCIAL ENGINEERING AND APPLICATIONS”, FEA 2004, November 8-10, 2004, Massachusetts Institute of Technology (MIT), Cambridge, MA, USA.
4. 2005: Scientific committee of the VI Italian Workshop of Quantitative Finance, Milan, 27-28 January 2004.
5. 2006: Scientific committee of the VII Italian Workshop of Quantitative Finance, Perugia, 26-27 January 2006.
6. 2006: Scientific Committee of “The 2nd IASTED International Conference on FINANCIAL ENGINEERING AND APPLICATIONS”, FEA 2006, October 9-11, 2006, Massachusetts Institute of Technology (MIT), Cambridge, MA, USA.
7. 2006: Scientific committee of the “Numerical methods for Finance” conference, Institute for Numerical Computation and Analysis, June 7-9, Dublin.
8. 2008: Scientific committee of the “Numerical methods for Finance” conference, Institute for Numerical Computation and Analysis, June 4-6, Dublin.
9. 2009: Scientific committee of the 2nd International Financial Research Forum, “Risk Management and Financial Crisis”, Paris, March 19 -20, 2009.
10. 2009: Scientific committee of the conference “Recent Advancements in the Theory and Practice of Credit Derivatives”, Sept. 28-30, 2009, Nice, France.
11. 2010: Scientific committee of the 2010 C.R.E.D.I.T. Conference, Venice, 29-30 Sept. 2010.
12. 2010: Advisory Board for the Quant Congress Europe 2010, London, November 9-10, 2010.
13. 2011: Advisory Board for the Quant Congress Europe 2011, London.
14. 2011: Scientific Committee of the Annual Italian Workshop in Mathematical Finance, Italy, Universita de L’Aquila.
15. 2012: Advisory Board for the Quant Congress Europe 2012, London
16. 2013: Advisory Board for the Quant Congress Europe 2013, London
17. 2013: Scientific committee of the 2013 C.R.E.D.I.T. Conference, Venice, 26-27 Sept. 2013.
18. 2014: Advisory Board for the Quant Congress Europe 2013, London

19. 2015: Advisory Board for the Quant Congress Europe 2013, London
20. 2015: Co-organizer of the Mathematical Finance stream for the 200th anniversary conference for George Boole, University College Cork, Ireland.
21. 2017: Program Committee of the conference “Geometric Science of Information”, Paris, November 2017.
22. 2018: Advisory Board for the Quant Congress Europe 2018, London
23. 2018: Organizer of the Workshop on Stochastic Analysis, Geometry and Statistics, Imperial College London, 21–22 June 2018.
24. 2018: Organizer of the Institute of Mathematical Statistics - Finance, Insurance, Probability and Statistics (IMS-FIPS) 2018, 10–11 September 2018, London.
25. 2018: Organizing committee of the 80th birthday celebration workshop for Professor Alan Hawkes, Swansea University, Sept. 20–22, 2018.

Attachment G: Supervised UG, MSc and PhD students

- Co-supervision of Marco Salcoacci (Bocconi University, BSc, 1997).
- Co-supervision of Demetrio Maffei (University of Pavia, Internship at Banca Intesa and Master Thesis, 1998).
- Cristina Capitani (1999, Master thesis from University Milano Bicocca with internship in Banca IMI)
- Massimo Morini (2000, MSc Thesis from University of Pavia, Internship in Banca IMI)
- Marco Avogaro (MSc Thesis, Bocconi University, 2006, Internship in Banca IMI).
- While at King's College London, supervision of 5-8 MSc students per year.
- While at Imperial College London, supervision of 4-8 MSc per year (ongoing).

Supervised PhD students and joint publications

1. Aurelien Alfonsi (1998, co-supervision, internship in Banca IMI during PhD at ENPC and Ecole Polytechnique, Paris, 2 publications).
2. Laurent Cousot (1999, co-supervision, internship in Banca IMI during PhD at New York University, 1 joint publication).
3. Eymen Errais (Stanford University, PhD co-supervision, Internship at Banca IMI, 1 publication).
4. Jan Liinev (University of Ghent, cooperation on PhD thesis, 1 publication).
5. Naoufel El-Bachir (2005, co-supervision, internship in Banca IMI during PhD at University of Reading, 1 publication).
6. Massimo Morini, Full PhD supervisor in Banca IMI, graduated on 2003 with University Milano Bicocca; Several joint publications.
7. Abir Sridi (co-supervision from Fitch Ratings, PhD at Sorbonne University in 2010), 1 joint publication.
8. Gabriele Sarais (Full PhD supervisor at Imperial College London, graduated in 2015).
9. David Sloth (co-supervisor at Imperial, visiting PhD student from Aarhus University, 2 publications, 2015).
10. Camilla Pisani (co-supervisor at Imperial, visiting PhD student from Aarhus University, 1 preprint, 2016).
11. Qing Daphne Liu (Full PhD supervisor, first at Kings College London and then at Imperial, Roth Fellowships, graduated in 2016).
12. Nicola Pede (Full PhD supervision, first at Kings College London and then at Imperial, joint publications, graduated in 2018).

13. Cyril Durand (Full PhD supervision at Imperial College London, graduated in 2018).
14. Marco Francischello (Full PhD at Imperial, Roth fellowship, graduated in 2019).
15. Federico Graceffa (Full PhD student, second supervisor, graduated in 2021).
16. Claudio Bellani (Full PhD at Imperial, EPSRC PhD fellowship, graduated in 2021).
17. Emilio Rossi Ferrucci (Full PhD at Imperial, CDT on Computational Finance, graduated in 2022).

Attachment H: Teaching

1. 2022-current. Teaching of the undergraduate year 3 and year 4 (MSCi) course “Stochastic differential equations in financial modeling” for the undergraduate degree in Mathematics at Imperial College London.
2. 2012-current. Teaching of the Core Master Course “Interest Rate Modeling under credit and funding liquidity risk” at the MSc in Mathematics and Finance, Dept. of Mathematics, Imperial College London.
3. 2017. PhD course for the London Graduate School in Mathematical Finance: Nonlinear valuation under credit gap risk, initial and variation margins and funding costs.
4. 2015. PhD course for the London Graduate School in Mathematical Finance: Counterparty Credit Risk, Collateral and Funding Costs with Arbitrage-free Models, Nonlinear Valuation via FBSDEs and Semilinear PDEs.
5. 2013-2015: Teaching of the core MSc course “Financial Engineering” at the MSc in Risk Management and Financial Engineering at the Imperial College Business School.
6. 2013. PhD course for the London Graduate School in Mathematical Finance: Counterparty Credit Risk, Collateral and Funding Costs with Arbitrage-free Models.
7. 2011. PhD course for the London Graduate School in Mathematical Finance: Counterparty Credit Risk and Credit Modeling.
8. 2010. MSc in Financial Mathematics at King’s College London. Two courses: Interest Rate Models (Core course) and Credit Risk Models.
9. (2008-2009) MSc course at Essex University, CCFEA, “CF907-7-SP: Fixed-Income Asset Pricing, Default Risk, and Credit Ratings 2008/09”.
10. (2005-2007) “Professore a contratto” for the CLEFIN fixed income course at the Bocconi University. Master level teaching on interest rate models for Bocconi’s international students of the advanced Laurea. The course covered interest rate modelling, from short rate models to the LIBOR market model, looking also at the market payout structure and at the rigorous change of measure and stochastic processes theory involved.
11. (2002-2006) Teaching of Master courses of Interest rate models and Credit derivatives Models at the FINARM master of the Bicocca University in Milan, at the master of the Bologna University, at advanced courses of the ABI (“Associazione Bancaria Italiana”) association, the Bank of Italy, and at the post-university school “Scuola Avanzata di Formazione Integrata” of the Institute of Advanced Studies in Pavia.
12. (1987-1993) High school teacher of Mathematics, Physics and Computer Science at different high schools during the university studies (1987-1990) and subsequently from January 1991 to August 1993, with a break due to military service.