

Madalina Deaconu

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Research area

Stochastic analysis and modelling, Probabilistic numerical methods, Rupture phenomena: detection and simulation, Spatio-temporal stochastic models and data analysis.

Ongoing position and main responsibilities

1998- Researcher at Inria Centre at Université de Lorraine

2020- Leader of the project-team PASTA at Inria Centre at Université de Lorraine, since December 2020

<https://team.inria.fr/pasta/>

2022- Deputy Head of Science (Déléguée Scientifique Adjointe), Inria Centre at Université de Lorraine and Inria branch at Strasbourg, since January 2022

<https://www.inria.fr/fr/centre-inria-universite-lorraine>

Education

2008 Habilitation à diriger des recherches (HDR), Henri Poincaré University, Nancy

1997 PhD in Applied Mathematics, Henri Poincaré University, Nancy

1994 Master 2 Degree (First Class) in Applied Mathematics, Henri Poincaré University, Nancy

1993 BSc (First Class) in Mathematics, University of Craiova, Romania

Responsibilities

- Head of the *Fédération Charles Hermite* (Research Federation) of the Lorraine University and CNRS, January 2018 - December 2022.
- Member of the *Commission d'Évaluation, Inria*, since January 2021 (*Jury Promotion CRHC/CRHC8, Jury Prime recherche individuelle chercheurs, Teams' evaluation, Jury Concours Chercheurs Inria CRCN and ISFP 2022: Nancy and Paris, 2023: Bordeaux and Saclay, 2024: Paris and Saclay*).
- Deputy Head of the *Jury Concours Chercheurs Inria CRCN and ISFP*, Inria Nancy - Grand Est, 2022.
- Member of *Bureau du Comité des Projets*, Inria Centre at Université de Lorraine (Decisional sub-group of research teams' leaders and heads of Research Laboratories), since 2011.
- Member of *Comité des Projets*, Inria Centre at Université de Lorraine, since 2005.
- Member of the *CDT - Commission du Développement Technologique*, Inria Centre at Université de Lorraine, 2009-2012 and since January 2022.
- Leader of the *research team TOSCA-NGE Post*, Inria Nancy, January 2019 - November 2020.
- Deputy Leader of the *project-team TOSCA*, Inria Nancy, 2005-2018.
- Member of the *Bureau and the Conseil of the Pôle Automatique, Mathématiques, Informatique et leurs Interactions (AM2I) of the Lorraine University*, January 2018 - December 2022.
- Member of the *Conseil du Laboratoire of the Institute Élie Cartan of Lorraine*, 2001-2010 and January 2018 - December 2022.
- Member of *Groupe de Travail Actions Incitatives* of COST Inria, 2011–2013.
- Member of *Groupe de Travail Accueil des chercheurs* of the Inria Nancy - Grand Est, 2013–2014.
- Member of *Groupe de Travail Relations Internationales du COST*, Inria, 2004-2007.
- Member of the *Commission locale pour les Postes d'accueils*, Inria Lorraine, 2001-2006.

Management of research projects and industrial partnerships (since 2010)

- Le Foyer (Main Luxembourg Insurance Company), University of Luxembourg and TOSCA-NGE research team (2018-2022). Research on the recommendation systems in insurance framework. I was supervising, with R. State (University of Luxembourg) the PhD thesis of L. Lesage. I was the coordinator of this project for Inria Nancy.
- SME Venathec (Nancy) and TOSCA and Multispeech research project-teams from Inria Nancy (2014-2018). Research on the acoustic control of wind farms. I supervised, with E. Vincent, the PhD thesis of B. Dumortier on this topic.

- SME Alphability and TOSCA project-team (2012-2016). Research on risk measures and rare events in finance. I was the coordinator of this project.
- Gaz de France/Electrabel (2010-2011). Collaboration between TOSCA project-team and the team R&D Economic studies, Prices and Markets Modelling and Advanced Studies of Gaz de France/Electrabel, on the hedging of the production for a power plant. I was one of the coordinators of this project.
- Gaz de France (2010) and the TOSCA project-team in Nancy, on Monte Carlo methods for predicting failures of gas pipes. I was one of the coordinators of this project.

Conferences organized (main)

- Journée Inria Inrae 5-6, July, 2023
- Forum Fédération Charles Hermite - Entreprises, head of the Organizing Committee. Two Editions: January 23th, 2020 and April 6th, 2022, between 80 and 130 participants from the academia and industrial field.
<http://www.fr-hermite.univ-lorraine.fr/>
- Minisymposium *Numerical Methods for SDEs with Boundary Issues*, co-organized with F. Bernal (Univ. Carlos III de Madrid), MCM 2021, 16-20 August 2021, Mannheim. <https://www.uni-mannheim.de/mcm-2021/>
- Invited minisymposium *Stochastic analysis*, co-organized with M. Arnaudon (University of Bordeaux) and I. Câmpean (IMAR Bucharest), in the 14e Colloque Franco-Roumain de mathématiques appliquées, 27-31 August 2018, Bordeaux.
- Special session *First passage times of diffusions*, co-organized with S. Herrmann (University of Dijon), Conference Stochastic Processes and Applications, 11-15 June 2018, Gothenburg, Sweden.
- Minisymposium at CANUM 2016, on *A panorama of recent progress in probabilistic numerical methods*, 9–13 May 2016, Obernai.
- Workshop *Avalanches and rupture phenomena*, 3-4 February 2015, Nancy.
- Workshop *Hitting times and exit problems in stochastic models*, co-organized with S. Herrmann (University of Dijon), 27–29 November 2013, Dijon.
<http://herrmann.perso.math.cnrs.fr/hitting-exit-2013.htm>
- Organization, with G. Pagès (University Paris 6), of a special session at XI^{ème} Colloque Franco-Roumain de Mathématiques Appliquées, on *Numerical probabilities*, 24-30 August 2012, Bucharest.
- Invited session at CANUM 2008, on *Hybrid methods*, 26-30 May 2008, Saint Jean de Monts.
- Co-responsible with A. Lejay, of the Organizing Committee of *Journées du Groupe MAS (Modélisation Aléatoire et Statistique)* of SMAI, 6-8 September 2004, Nancy (150 participants).
- International conference MC2QMC 2004, 7-10 June 2004, Juan-les-Pins.
- International conference Monte Carlo 2000, 3-5 July 2000, Monaco.

Students supervision

- PhD of Julia Budzinski, with Sara Mazzonetto (Lorraine University), Inria Nancy funding, started November 2023.
- PhD of Valentin Ioan Constantinescu, with Lucian Beznea (co-tutoring - Romanian Academy of Science and Lorraine University), Romanian and French Institute in Bucharest funding, started November 2023.
- PhD of Christophe Reype, with R. Stoica (Lorraine University), on the probabilistic approach and a new algorithm for the analysis of geological fluids, started 2019, LUE (Lorraine Université d'Excellence) funding. Defense: 14th December 2022, [62].
- PhD of Laurent Lesage, with R. State (University of Luxembourg), on insurance recommendation systems, started 2018, Le Foyer funding. Defense: 26th April 2022, [61].
- PhD of Baldwin Dumortier, with E. Vincent (Inria Nancy), on acoustic control of wind farms (2014-2018), Venathec funding, [60].
- PhD of Khaled Salhi, with A. Lejay (Inria Nancy), on risk measures and portfolio optimization (2013-2016), research grant, [63].
- PhD of Paul Charton (2010-2014) on the prices fixation on renewable energies markets, research grant.
- PhD of Numa Lescot (25%, 2009-2012) in a collaboration with Natixis, Natixis funding.
- PhD of Sébastien Chaumont (25%, 1999-2002), on stochastic control problems, Inria funding.
- Postdoctoral fellowship of Oana Lupaşcu (2014-2015), Inria funding.

- Postdoctoral fellowship of Samih Zein (2008-2009), Inria funding.
- Since 2003 supervision of about 75 students in Master 1 and Master 2 Research internships, from École Polytechnique in Paris, École Polytechnique of Tunisia, Lorraine University, ENS Cachan and École des Mines in Nancy. The subjects are mainly in mathematical finance, stochastic calculus and numerical probabilistic methods.

Expertise

- Member of the *Scientific Committee of the XVI edition of the French-Romanian Conference on Applied Mathematics*, August 26-30, 2024, Bucharest.
- Member of the *Scientific Committee, 21st INFORMS Applied Probability Conference*, June 28-30, 2023, Nancy.
- Member of the *Scientific Committee GdR CNRS MathGeoPhy of INSMI, CNRS*, since January 2022. This is a large research group centred on Mathematics and their interactions with Geophysics.
- Member of *Jury Concours Chercheurs Inria CRCN and ISFP Centre Inria Bordeaux*, 2023.
- Member of *Jury Concours Chercheurs Inria CRCN and ISFP Centre Inria Saclay*, 2023.
- Expert for *The Executive Agency for Higher Education, Research, Development and Innovation Funding*, Romania, since 2013.
- Editorial and scientific committee of the Proceedings *CFR 2012 (XI^{ème} Colloque Franco-Roumain de Mathématiques Appliquées*, 2012).
- Member of the *Scientific Committee 2^{ème} Congrès National de Mathématiques Appliquées et Industrielles, SMAI* 2005.
- Reviewer for international journals: *Stochastic Processes and Applications*, *The Annals of Applied Probability*, *Journal of Computational Physics*, *Physica D*, *SIAM Journal on Numerical Analysis (SINUM)*, *SIAM Journal on Scientific Computing (SISC)*, *Journal of Statistical Physics*, *Potential Analysis*, *Statistics and Computing*, *Mathematics and Computers in Simulation*, etc.
- Permanent reviewer for *Mathematical Reviews* (6 reviews yearly).
- Member of *MAS Group* in SMAI.
- Member of the *Commission de spécialistes 25/26* of the University Henri Poincaré, 2001-2008.
- Member of the *Comité de sélection*, position Assistant professor Section 26, Lorraine University, 2012 and 2021, Dijon University, 2015, Bordeaux University, 2015, Avignon University, 2021, Chambéry University, 2021.
- Member of *Jury d'admissibilité Chargée de Recherche* of Inria Nancy - Grand Est, 2002-2009, 2014 and 2016-2019.
- Member of PhDs Committees : 6.

Conferences and visits abroad

Plenary talk

- *14th International Conference on Monte Carlo Methods and Applications - MCM23*, June 26-30, 2023, Paris.
<https://mcm2023.sciencesconf.org/>
- Invited lectures: 3 (Chile, Romania)
- Conferences: 35
- Invited visits abroad: Lawrence Berkley National Laboratory USA, University of Torino (2), Indiana University USA, Institute of Mathematics of the Romanian Academy (each year one week since 2011), Politecnico de Milano Italy, EPFL Switzerland, University of Concepcion Chile

Invited lecture (recent)

- *Stochastic methods and numerical aspects for fragmentation and coagulation processes* (10h), Summer School of Applied Mathematics, 1-9 July 2019, Sinaia, Romania.

Main conferences and seminars (invited speaker), since 2010

- Special Session *Stochastic Dynamics and Potential*, in *The Tenth Congress of Romanian Mathematicians*, June 30-July 5, 2023, Pitești.
<http://www.imar.ro/~congmatro10/>
- Plenary talk , *The 23rd Conference of the Romanian Society of Probability and Statistics*, Novembre 18-19, 2022, IMAR Bucharest.

- *École du GdR CNRS MathGeoPhy*, October 26-28, 2022, Institut Henri Poincaré, Paris. Overview talk on *Stochastic modelling of rupture phenomena in geophysics*.
<https://ecolemathgeophy.sciencesconf.org/>
- *Session Deterministic and stochastic coagulation-fragmentation models*, Portuguese Mathematical Society Annual Conference (ENSPM21), July 12-16, 2021 (online).
- *Second Italian Meeting on Probability and Mathematical Statistics*, June 17-20, 2019, Vietri Sul Mare.
- *Conference Potential and Probability*, January 24-25, 2019, IMAR Bucarest.
- *Stochastic analysis and related topics*, May 6-9, 2019, Centre Francophone in Mathematics of Bucarest and IMAR Bucarest. <https://sites.google.com/site/analysestochastique/>
- *Workshop in Stochastics and PDEs*, September 14-15, 2018, IMAR Bucharest. <http://www.imar.ro/~imar/2018/Conferinta/Afis-EDP.pdf>
- *The 21th Conference of the Romanian Society of Probability and Statistics*, April 13-14, 2018, The Romanian Society of Probability and Statistics. <http://spsr.csm.ro/spsr2018>
- *Forum de jeunes mathématicien.ne.s*, November 22-24, 2017, Nancy.
- *SIAM Conference on Control and its Applications*, July 10-12, 2017, Pittsburgh.
- *XIII-ième Colloque Franco-Roumain de Mathématiques Appliquées*, August 24-29, 2016, Iași, Romania.
- ILAC Luxembourg, 10 March, 2016.
- *The Eighth Congress of Romanian Mathematicians*, 26 June - 1 July 2015, Iași, Roumania.
- *Rencontre EDP/Probas*, Lecture of 2 hours on *Coagulation and Fragmentation models*, 6 March 2015, Institut Henri Poincaré, Paris.
- *Workshop: Modélisation et simulation numérique*, 28 November 2014, Nancy.
- *Joint International Meeting of the AMS and the Romanian Mathematical Society*, June 27-30, 2013, Alba Iulia, Romania.
- *Workshop Sequential Monte Carlo methods and Efficient simulation in Finance*, École Polytechnique, 10 October 2012, Paris.
- École Polytechnique Fédérale de Lausanne, 11 July 2012, Lausanne.
- Simion Stoilow Institute of Mathematics of the Romanian Academy, December 13-14, 2011, Bucharest.
- *International Conference on Stochastic Analysis and Applications*, October 10-14, 2011, Hammamet.
- *The Seventh Congress of Romanian Mathematicians*, 9 June - 5 July 2011, Brașov, Romania.
- *PDE/Applied Math Seminar*, Indiana University, 19 November 2010, Bloomington.

Recent teaching activities (recent)

- Lectures on *SDE: numerical approach* in Master 2 at École des Mines in Nancy (2015-2017, 2020-2021).
- Lectures on *Random variables simulation* at École des Mines in Nancy (2011-2016 and 2017-2024).
- Lectures on *Stochastic Modelling* on Master 2 of Mathematics IMSD, Lorraine University (2009-2024).
- Lectures on *Monte Carlo Simulation* at Faculté de Gestion et Économie, Nancy (2013-2020 and 2021-2024).

Publications

- The complete list of my publications is available on <https://iecl.univ-lorraine.fr/membre-iecl/deaconu-madalina/>

Papers

- [1] M. Deaconu et S. Herrmann, *Strong approximation of particular one-dimensional diffusions*, Discrete and Continuous Dynamical Systems Series B **29**:4 (2024), HAL <https://hal.inria.fr/hal-02799638>.
- [2] M. Deaconu et A. Lejay, *Probabilistic representations of fragmentation equations*, Probability Surveys **20** (2023), 226-290, HAL <https://hal.inria.fr/hal-03483448>.
- [3] M. Deaconu et S. Herrmann, *Strong approximation of Bessel processes*, Methodology and Computing in Applied Probability **25**:1 (2023), 11, HAL <https://hal.inria.fr/hal-03244538>.
- [4] L. Lesage, M. Deaconu, A. Lejay, J. Meira, G. Nichil et R. State, *Hawkes processes framework with a Gamma density as excitation function: application to natural disasters for insurance*, Methodology and Computing and Applied Probability **24** (2022), 2509-2537, HAL <https://hal.archives-ouvertes.fr/hal-03040090>.

- [5] R. S. Stoica, M. Deaconu, A. Philippe et L. Hurtado, *Shadow Simulated Annealing: a new algorithm for approximate Bayesian inference of Gibbs point processes*, *Spatial Statistics* **43** (2021), HAL <https://hal.archives-ouvertes.fr/hal-02183506>.
- [6] L. Lesage, M. Deaconu, A. Lejay, J.A. Meira, G. Nichil et R. State, *A Recommendation System For Car Insurance*, *European Actuarial Journal*, Springer **10** (2020), 377-398, HAL <https://hal.archives-ouvertes.fr/hal-02420954>.
- [7] L. Beznea, M. Deaconu et O. Lupaşcu, *Numerical approach for stochastic differential equations of fragmentation; application to avalanches*, *Mathematics and Computers in Simulation* **160** (2019), 111-125, HAL <https://hal.inria.fr/hal-01667319>.
- [8] M. Deaconu et S. Herrmann, *Initial-boundary value problem for the heat equation - A stochastic algorithm*, *The Annals of Applied Probability* **28**:3 (2018), 1943-1976, HAL <https://hal.inria.fr/hal-01380365v1>.
- [9] M. Deaconu, A. Lejay et K. Salhi, *CVaR minimization for hedging under exponential-Lévy models*, *Journal of Computational and Applied Mathematics* **326** (2017), 171-182, HAL <https://hal.archives-ouvertes.fr/hal-00933198>.
- [10] M. Deaconu et S. Herrmann, *Simulation of hitting times for Bessel processes with non integer dimension*, *Bernoulli* **23** (2017), 3744-3771, HAL <https://hal.archives-ouvertes.fr/hal-00933198>.
- [11] M. Deaconu, S. Herrmann et S. Maire, *The walk on moving spheres: a new tool for simulating Brownian motion's exit time from a domain*, *Mathematics and Computers in Simulation* **135** (2017), 28-38, HAL <https://hal.archives-ouvertes.fr/hal-00931816>.
- [12] K. Salhi, M. Deaconu, A. Lejay, N. Champagnat et N. Navet, *Regime switching model for financial data: Empirical risk analysis*, *Physica A* **461** (2016), 148-157, HAL <https://hal.inria.fr/hal-01095299>.
- [13] L. Beznea, M. Deaconu et O. Lupaşcu, *Stochastic equation of fragmentation and branching processes related to avalanches*, *Journal of Statistical Physics* **162** (2016), 824-841, HAL <https://hal.inria.fr/hal-01216137>.
- [14] L. Beznea, M. Deaconu et O. Lupaşcu, *Branching processes for the fragmentation equation*, *Stochastic Processes and their Applications* **125** (2015), 1861-1885, doi 10.1016/j.spa.2014.11.016, HAL <https://hal.inria.fr/hal-00948876>.
- [15] M. Deaconu et S. Herrmann, *Hitting time for Bessel processes—walk on moving spheres algorithm (WoMS)*, *The Annals of Applied Probability* **23**:6 (2013), 2259–2289.
- [16] S. Zein, A. Lejay et M. Deaconu, *An efficient algorithm to simulate a Brownian motion over irregular domains*, *Communications in Computational Physics* **8**:4 (2010), 901–916, HAL [inria-00444056](https://hal.inria.fr/hal-00444056).
- [17] M. Deaconu et A. Lejay, *Simulation of diffusions by means of importance sampling paradigm*, *The Annals of Applied Probability* **20**:4 (2010), 1389–1424, HAL [inria-00126339](https://hal.inria.fr/hal-00126339).
- [18] M. Deaconu et A. Lejay, *A random walk on rectangles algorithms*, *Methodology and Computing in Applied Probability* **8**:1 (2006), 135–151, HAL [inria-00092424](https://hal.inria.fr/hal-00092424).
- [19] M. Deaconu, N. Fournier et E. Tanré, *Rate of Convergence of a Stochastic Particle System for the Smoluchowski coagulation equation*, *Methodology and Computing in Applied Probability* **5**:5 (2003), 131–158.
- [20] M. Deaconu et N. Fournier, *Probabilistic approach of some discrete and continuous coagulation equations with diffusion*, *Stochastic Processes and Their Applications* **101** (2002), 83–111.
- [21] M. Deaconu, N. Fournier et E. Tanré, *A pure jump Markov process associated with the Smoluchowski's coagulation equation*, *The Annals of Probability* **30**:4 (2002), 1763–1796.
- [22] M. Deaconu et E. Tanré, *A generalization of the connection between the additive and multiplicative solutions for the Smoluchowski's coagulation equation*, *Monte Carlo Methods and Applications* **7**:1-2 (2001), 141–147.
- [23] M. Deaconu et E. Tanré, *Smoluchowski's coagulation equation: probabilistic interpretation of solutions for constant, additive and multiplicative kernels*, *Annali della Scuola Normale Superiore di Pisa, Série IV* **XXIX**:3 (2000), 549–580.

- [24] M. Deaconu, M. Gradinaru et J.R. Roche, *Sojourn time of some reflected Brownian motion in the unit disk*, Probability and Mathematical Statistics **20**:1 (2000), 19–38.
- [25] M. Deaconu et S. Wantz, *Processus non linéaire auto-stabilisant réfléchi*, Bulletin des Sciences Mathématiques **122** (1998), 521–569.
- [26] M. Deaconu et S. Wantz, *Comportement des temps d'atteinte d'une diffusion fortement rentrante*, Séminaire de Probabilités XXXI. Éditeurs: J. Azéma, M. Emery, M. Yor. Lecture Notes in Mathematics **1655** (1997), 168–175.
- [27] M. Deaconu, *Régularité du mouvement brownien itéré*, C.R. Acad. Sci. Paris **323, Série I** (1996), 933–938.
- [28] M. Deaconu et S. Wantz, *Comportement des temps d'atteinte d'une diffusion fortement rentrante*, C.R. Acad. Sci. Paris **322, Série I** (1996), 757–762.

Proceedings

- [29] C. Reype, R.S. Stoica, D. Gemmerlé, A. Richard et M. Deaconu, *Hug model: parameter estimation via the ABC Shadow algorithm*, RING Meeting, 2023, HAL <https://hal.archives-ouvertes.fr/hal-04163654>.
- [30] R. S. Stoica, M. Deaconu, A. Philippe et L. Hurtado, *Shadow Simulated Annealing a new algorithm for point processes parameter estimation*, METMA X, Proceedings of the 10th International Workshop on Spatio-Temporal Modelling, Lleida (Spain) 1-3 June 2022 (2022), 45-51.
- [31] L. Beznea, M. Deaconu et O. Lupaşcu-Stamate, *Scaling property for branching fragmentation processes related to avalanches*, Applications of Mathematics and Informatics in Natural Sciences and Engineering, AMINSE 2019, Springer Proceedings in Mathematics & Statistics **334** (2020), 37–47, HAL <https://hal.archives-ouvertes.fr/hal-02942710>.
- [32] C. Reype, A. Richard, M. Deaconu et R.S. Stoica, *Bayesian statistical analysis of hydrogeochemical data using point processes: a new tool for source detection in multicomponent fluid mixtures*, RING Meeting 2020, 2020, HAL <https://hal.archives-ouvertes.fr/hal-02933268>.
- [33] B. Dumortier, E. Vincent et M. Deaconu, *Recursive Bayesian estimation of the acoustic noise emitted by wind farms*, 2017 IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP), 2017.
- [34] B. Dumortier, E. Vincent et M. Deaconu, *Acoustic Control of Wind Farms*, EWEA 2015 - European Wind Energy Association, Poster award, 2015, HAL <https://hal.archives-ouvertes.fr/hal-01233730v1>.
- [35] M. Deaconu et A. Lejay, *Simulation of exit times and positions for Brownian motions and Diffusions*, Sixth International Congress on Industrial Applied Mathematics (ICIAM07) and GAMM Annual Meeting, Zurich 2007, PAMM **7**:1 (2008), 1081401–1081402, HAL [inria-00348693](https://hal.inria.fr/hal-00348693).
- [36] M. Deaconu, N. Fournier et E. Tanré, *A pure jump Markov process associated with the Smoluchowski's coagulation equation*, Stochastic Numerics 2001, a Workshop on numerical methods for stochastic differential equations, Feynman-Kac representations and paths integrals, Zurich (2001).

Under revision and submitted papers

- [37] M. Deaconu et O Lupaşcu-Stamate, *Asymptotic behaviour of a one-dimensional avalanche model through a particular stochastic process* (2022), HAL <https://hal.inria.fr/hal-03947249>. Under revision.
- [38] C. Reype, R.S. Stoica, A. Richard et M. Deaconu, *HUG model: an interaction point process for Bayesian detection of multiple sources in groundwaters from hydrochemical data* (2023), HAL <https://hal.inria.fr/hal-03740280>. Under revision in Mathematical Geosciences.
- [39] L. Lesage, M. Deaconu, A. Lejay, J. Meira, G. Nichil et R. State, *A Recommendation System For Insurance Built With A Multivariate Hawkes Process Based On Customers' Life Events* (2021), HAL <https://hal.inria.fr/hal-03483812v1>. Submitted.
- [40] B. Dumortier, E. Vincent et M. Deaconu, *Efficient optimisation of wind power under acoustic constraints* (2018), HAL <https://hal.archives-ouvertes.fr/hal-01233730v1>. Preprint.
- [41] P. Charton, M. Deaconu et A. Lejay, *A stochastic approach for controlling a wind farm with storage unit* (2019). Preprint.

- [42] N. Champagnat, M. Deaconu, A. Lejay, N. Navet et S. Boukherouaa, *An empirical analysis of heavy-tails behavior of financial data: The case for power laws* (2013), HAL <https://hal.inria.fr/hal-00851429v1>. Preprint.

Reports of industrial partnerships

- [43] N. Champagnat, M. Deaconu et A. Lejay, *Méthodes de calcul de la Value-at-Risk et de la Conditional Value-at-Risk*, 2016. Rapport de contrat Alphability - Équipe Tosca Nancy.
- [44] N. Champagnat, M. Chikhaoui, M. Deaconu et A. Lejay, *Gestion de risque de portefeuille : estimation de la VaR et la CVaR*, 2015. Rapport de contrat Alphability - Équipe Tosca Nancy.
- [45] N. Champagnat, M. Deaconu, A. Lejay et A. Bedoui, *Analyse de dépendance d'actifs financiers par la méthode des copules*, 2014. Rapport de contrat Alphability / Équipe Tosca Nancy.
- [46] N. Champagnat, M. Deaconu, A. Lejay et K. Salhi, *Mesure de risque : détection du régime de crise et calcul de la Value-at-Risk*, 2013. Rapport de contrat Alphability / Équipe Tosca Nancy.
- [47] S. Boukherouaa, N. Champagnat, M. Deaconu et A. Lejay, *Mesure de risques : calcul de la Value-at-Risk et application à la gestion de portefeuilles*, 2013. Rapport de contrat Alphability / Équipe Tosca Nancy.
- [48] M. Deaconu, S. Herrmann et A. Lejay, *Sur le problème de la stratégie optimale de couverture d'une centrale électrique*, 2011. Rapport de contrat GDF Suez Louvain la Neuve / Équipe Tosca Nancy.
- [49] M. Deaconu et A. Lejay, *Problème d'éclatement de tuyaux : approches Monte Carlo*, 2010. Rapport de contrat GDF Suez-La Plaine, Saint Denis / Équipe Tosca Nancy.
- [50] A. Bergaoui, M. Deaconu, M.Z. Ghazai, I. Henchiri, S. Herrmann, A. Lejay, V. Reutenauer, D. Talay, E. Tanré et Y. Wang, *Méthodes de réduction de variance originales et de simulation exacte de prix et de grecques en finance*, 2009. Rapport de contrat Calyon / Équipe Tosca.
- [51] M. Bossy, M. Deaconu et E. Tanré, *Rapport de fin de collaboration EDF / Inria sur un modèle d'équilibre de production pour la détermination du prix spot*, 2003. Rapport de contrat EDF / Projet Omega.
- [52] M. Deaconu, *Rapport de fin de collaboration EDF / Inria, Étude de la capacité des centrales électriques*, 2000. Rapport de contrat EDF / Projet Omega.
- [53] M. Bossy, M. Deaconu, J.P. Minier et D. Talay, *Rapport de fin de collaboration EDF / Inria sur la simulation d'écoulements diphasiques turbulents*, 1998. Rapport de contrat EDF / Projet Omega.

Habilitation and PhD thesis

- [54] M. Deaconu, *Processus stochastiques associés aux équations d'évolution linéaires ou non-linéaires et méthodes numériques probabilistes*, Habilitation à diriger des recherches, Université Henri Poincaré, Nancy, 2008. Committee members: J. Bertoin (president), P. Del Moral, E. Gobet, S. Méléard, J. Norris, B. Roynette and D. Talay.
- [55] M. Deaconu, *Processus stochastiques et EDP/Applications des espaces de Besov aux processus stochastiques*, Thèse de doctorat, Université Henri Poincaré, Nancy, 1997. Supervisor: B. Roynette. Committee members: D. Bakry, Z. Ciesielski, M. Dozzi, G. Kerkycharian, P. Vallois and M. Yor (president).

DEA and Master thesis

- [56] M. Deaconu, *Sur trois articles de Bernard Roynette : Mouvement brownien et espaces de Besov, Le temps local brownien dans les espaces de Besov et Grandes déviations du temps local brownien*, Mémoire de DEA, Université Henri Poincaré, Nancy, 1994.
- [57] M. Deaconu, *Markov Chains and Coupling Approach in Probability Theory*, Final Year-Project Report 1992/1993, Faculty of Engineering, Science and Mathematics, Middlesex University, Londres, 1993.

Preprints

- [58] M. Deaconu et A. Kamont, *Approximation by Tensor Product Neural Networks*, 1995. Prépublication de l'Institut Élie Cartan, Nr. 20.
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