

Curriculum Vitae – Oana Lupascu-Stamate

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Date of birth: 14th December 1986

Marital status: Married, 1 daughter (2021)

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Research Interests: finite and infinite dimensional stochastic analysis with applications to stochastic fragmentation equations; mathematical modeling of the rupture phenomena, numerical approaches.

Education

Habilitation in Mathematics (2020): *Stochastic numerical approach for branching-fragmentation processes*, Gheorghe Mihoc-Caius Iacob Institute of Mathematical Statistics and Applied Mathematics of the Romanian Academy

Ph.D. in Mathematics (September 2010 - November 2013) *Probabilistic and deterministic models for fracture type phenomena*, in the frame of a cotutelle agreement between Paris 13 University, France, and the Simion Stoilow Institute of Mathematics of the Romanian Academy (IMAR) in Bucharest, Romania; under the joint supervision of Prof. Dr. Ioan R. Ionescu (Paris 13 University) and Prof. Dr. Lucian Beznea (Simion Stoilow Institute of Mathematics of the Romanian Academy).

M.Sc. in Mathematics at Școala Normală Superioară București, 2011–2013.

M.Sc. in Applied Mathematics at the Faculty of Mathematics and Informatics, University of Pitești, Romania, 2011–2013.

B.Sc. in Mathematics at University of Pitești, Romania, 2008–2011.

Awards

- *Prize of The Romanian Mathematical Society*, offered to a young Romanian mathematician, June 2019.
- *Prize of The Romanian Society of Probability and Statistics*, offered to a young Romanian mathematician, May 2019.

- *Dimitrie Pompeiu* prize of the Romanian Academy, December 2017.

Professional positions

- Current position, since January 2021: C.S.II (Research position) at Gheorghe Mihoc–Caius Iacob Institute of Mathematical Statistics and Applied Mathematics of the Romanian Academy, Bucharest, Romania
- September 2017 - December 2020 : C.S.III (Research position) at Gheorghe Mihoc–Caius Iacob Institute of Mathematical Statistics and Applied Mathematics of the Romanian Academy, Bucharest, Romania
- April 2014–August 2017: Junior research position at Gheorghe Mihoc–Caius Iacob Institute of Mathematical Statistics and Applied Mathematics of the Romanian Academy, Bucharest, Romania
- December 2013–April 2015: Postdoctoral research position at INRIA Nancy, France (member of the Tosca team, with an INRIA fellowship)
- October 2011–April 2014: Assistant Professor at Politehnica University of Bucharest, Department of Mathematics

Teaching activities

- Lectures on stochastic differential equations (master M2), University of Bucharest, 2019-2020.
- Lectures in Méthodes stochastiques et numériques pour des processus de fragmentation et coagulation I, (10 hours) at the Regional Romanian-French Summer School in Applied Mathematics, Sinaia, July 2019.
- Seminars on Brownian motion and Levy processes (master M1), University of Bucharest, 2017-2018.
- Seminars on real analysis (license L1), University of Lorraine, Nancy, France, 2014.
- Seminars on probability (license L1), University of Lorraine, Nancy, France, 2014.
- Seminars on rigid solid mechanics (license L2), University Paris 13, France, 2013.
- Seminars on linear algebra and geometry (license L1), real analysis (license L1), probability and statistics (license L2), Politehnica University of Bucharest, 2010-2012.

Publications

- O. Lupaşcu-Stamate, V. Stanciulescu, Numerical solution to the Neumann problem in a Lipschitz domain, based on random walks, accepted for publication in *Proceedings of the Romanian Academy, Series A: Mathematics, Physics, Technical Sciences, Information Science*, 2024.
- L. Beznea, I.R. Ionescu, O. Lupaşcu-Stamate, Random multiple-fragmentation and flow of particles on a surface, *Journal of Evolution Equations* **21**(4), 2021, 1-25
- L. Beznea, M. Deaconu, O. Lupaşcu-Stamate, Scaling property for fragmentation processes related to avalanches. In: *Applications of Mathematics and Informatics in Natural Sciences and Engineering, Springer Proceedings in Mathematics & Statistics* 334 (2020),
- L. Beznea, A-M. Boeangiu, O. Lupaşcu-Stamate, h-transform of Doob and nonlocal branching processes, *Anal. Math. Phys.* **10** (2020), no 4, 47.
- L. Beznea, O. Lupaşcu-Stamate, C. Vrabie, Stochastic solutions to evolution equations of non-local branching processes, *Nonlinear Analysis* **200** (2020), 112021, 18 pp.
- I. R. Ionescu, O. Lupaşcu-Stamate, Boundary variation method for the generalized Cheeger problem, *Applied Numerical Mathematics* **140** (2019) 199-214.
- O. Lupaşcu-Stamate, C.-A Tudor, Rosenblatt Laplace motion, *Mediterr. J. Math.*, (2019) <https://doi.org/10.1007/s00009-018-1290-x>
- L. Beznea, M. Deaconu, and O. Lupaşcu-Stamate, Numerical approach for stochastic differential equations of fragmentation; application to avalanches, *Mathematics and Computers in Simulation*, **160** (2019) 111-125.
- O. Lupaşcu and V. Stănciulescu, Numerical Solution for the Non-linear Dirichlet Problem of a Branching Process, *Complex Anal. Oper. Theory* **11** (2017), 1895–1904.
- L. Beznea, M. Deaconu, and O. Lupaşcu, Stochastic equation of fragmentation and branching processes related to avalanches, *Journal of Statistical Physics* **162** (2016), 824–841.
- L. Beznea and O. Lupaşcu, Measure-valued discrete branching Markov processes. *Trans. Amer. Math. Soc.* **368** (2016), no. 7, 5153–5176.
- I. R. Ionescu and O. Lupaşcu, Modeling shallow avalanche onset over complex basal topography, *Advances in Computational Math.* **42** (2016), 5–26.
- I. R. Ionescu and O. Lupaşcu, Onset of a dense avalanche on a plane slope, *Proc. Romanian Academy-Series A* **16** (2015), 405–412 .
- L. Beznea, M. Deaconu, and O. Lupaşcu Branching processes for the fragmentation equation, *Stochastic Processes and their Applications* **125** (2015), 1861–1885.

- O. Lupaşcu, Subordination in the sense of Bochner of L^p -semigroups and associated Markov processes. *Acta Mathematica Sinica, English Series* **30** (2014), 187–196.
- L. Beznea, O. Lupaşcu, and A.-G. Oprina, A unifying construction for measure-valued continuous and discrete branching processes. In: *Complex Analysis and Potential Theory*, CRM Proceedings and Lecture Notes, vol. **55**, Amer. Math. Soc., Providence, RI, 2012, pp. 47–59.

Preprints

- L. Beznea, I. Cimpean, O. Lupaşcu-Stamate, I. Popescu, A. Zarnescu, From Monte Carlo to neural networks approximations of boundary value problems, preprint 2023, in revision, (<https://arxiv.org/abs/2209.01432>).
- M. Deaconu, O. Lupaşcu-Stamate, Asymptotic behaviour of a one-dimensional avalanche model through a particular stochastic process, in revision, preprint 2023 (<https://inria.hal.science/hal-03947249v1>).
- D. Coculescu, O. Lupaşcu-Stamate, On the fragility of mutual insurance arrangements, submitted, preprint 2021 (https://papers.ssrn.com/sol3/papers.cfm?abstract_id=1189182)

Talks at Conferences

- *Colloque Franco-Roumain de Mathematiques Appliquees*, invited talk in the Special Session "EDP avec coefficients aléatoires, EDP stochastiques", Bucharest, August 2024
- *Statistical Modeling with Applications*, Bucharest, September 2023
- *The Tenth Congress of Roumanian Mathematicians*, Pitesti, Romania, July 2023 Journées de Probabilités, Angers, France, June 2023
- *Potential Analysis Afternoon*, Bucharest, January 2023
- *1er Symposium de la recherche scientifique francophone en Roumanie*, Bucharest, December 2022
- *XV-eme Colloque Franco-Roumain de Mathematiques Appliquees*, Toulouse. France, August 2022
- *Workshop for Young Researchers in Mathematics (11th edition)*, online, May 2022
- *The 28th Conference on Applied and Industrial Mathematics CAIM*, online, September 2021
- *Statistical Modeling with Application*, Bucharest, online workshop, November 2020 (invited talk)

- *Atelier de travail en Stochastique et EDP*, Bucharest, online workshop, October 2020 (invited talk)
- *The 38th "Caius Iacob" Conference on Fluid Mechanics and its Technical Applications*, Bucharest, November 2019
- *The Annual Conference of the Romanian Mathematical Society*, Pitesti, Romania, October 2019 (invited talk)
- *Ergodic Theory and Related Fields*, Bucharest, October 2019 (invited talk)
- *The Ninth Congress of Romanian Mathematicians*, Galati, Romania, June 2019
- *Journées de Probabilités*, Dourdan, France, June 2019
- *The 15th Romanian-Finnish seminar*, Turku, Finland, June 2019
- *Workshop for Young Researchers in Mathematics (9th edition)*, Bucharest, June 2019
- *Stochastic analysis and related topics*, Bucharest, May 2019
- *Atelier de travail en stochastique et EDP*, Bucharest, September 2018.
- *Colloque Franco-Roumain de Mathématiques Appliquées*, invited talk in the Special Session "Analyse stochastique", Bordeaux, August 2018
- *Annual European Rheology Conference*, poster, Sorrento, Italy, April 2018.
- *Joint International Meeting of the German Mathematical Society and the Romanian Mathematical Society*, invited talk in the Special Session "Analysis of finite and infinite dimensional processes", Constanta, September 2017
- *Atelier de travail en stochastique et interferences avec EDP*, Bucharest, September 2017.
- *Happy PDEs days*, Bucharest, December 2016
- *TOSCA Seminar*, La Petite Pierre, France, October 2016
- *Colloque Franco-Roumain de Mathématiques Appliquées*, invited talk in the Special Session "Maths et planète Terre", Iasi, August 2016
- *Stochastic analysis and applications*, Brasov, July 2016, (invited talk).
- *Summer School on Levy Processes*, Lille, France, July 2016
- *The 14th Romanian-Finnish Seminar*, Bucharest, June 2016
- *Current issues in PDEs and stochastics*, Bucharest, June 2016, (invited talk).
- *The 6th Workshop Series on Mathematics*, Pitești, Romania, June 2016, (invited talk)
- *Workshop for Young Researchers in Mathematics - 6th Edition*, Constanta, Romania, May 2016, (invited talk).
- *Colloque Franco-Roumain en Théorie des Probabilités*, Bucharest, November 2015, (invited talk).

- *The 36-th Conference Caius Iacob of Fluid Mechanics and its Technical Applications*, Bucharest, October 2015.
- *The Eighth Congress of Romanian Mathematicians*, invited talk in the Special Session "Probability, Stochastic Analysis, and Mathematical Statistics", Iași, July 2015.
- *Le Congres de la Societe de Mathematiques Appliquees et Industrielles (SMAI)*, Les Karelis, Franța, June 2015, (invited talk).
- *Avalanches and Rupture Phenomena*, Nancy, France, February 2015.
- *Journées Modélisation Aléatoire Statistique*, Toulouse, France, August 2014.
- *Colloque Franco-Roumain de Mathematiques Appliquees*, Lyon, France, August 2014.
- *Journées de Probabilités*, Marseille, France, May 2014.
- *TOSCA Seminar*, La Petite Pierre, France, November 2013.
- *Joint International Meeting of the AMS and the Romanian Mathematical Society*, Alba Iulia, Romania, June 2013.
- *PDEs and Stochastic Processes, The 5th Workshop Series on Mathematics*, Pitești, Romania, October 2012.
- *International Conference on Controlled Deterministic and Stochastic Systems*, Iassy, Romania, July 2012.
- *International Conference on Complex Analysis and Related Topics, The 13th Romanian-Finnish Seminar*, Ploiești, Romania, June 2012.
- *Probability and Related Aspects*, Alba Iulia, Romania, May 2012.
- *Spring School in Probability*, Dubrovnik, Croatia, April 2012.
- *XV-Conference of the Romanian Mathematical Society*, Hunedoara, Romania, September 2011

Talks in Scientific Seminars

- *Seminar* at "Gheorghe Mihoc-Caius Iacob Institute of Mathematical Statistics and Applied Mathematics of the Romanian Academy", Bucharest, November 2017 and March 2023.
- *Seminar „Calcul de Malliavin et processus fractionnaires”*, Laboratoire Paul Painleve, CNRS, Paris, France, November 2017.
- *Seminar* at "Technical University of Civil Engineering", Bucharest, March 2017.

- *Potential Theory Seminar*, organized by IMAR and University of Bucharest, Faculty of Mathematics and Computer Science, September 2013, April 2015, October 2015, and January 2016.
- *Séminaire de l'équipe de Statistique, Probabilités, Optimisation et Contrôle*, Université de Dijon, France, invited by Prof. Dr. Samuel Hermann, March 2015.
- *Séminaire de l'équipe EDPs²*, Laboratoire de mathématiques de l'Université de Savoie, Chambéry, invited by Prof. Dr. Marguerite Gisclon, April 2014.
- *Groupe de travail*, Équipe de Probabilités et Statistiques, Université de Lorraine and Institut Élie Cartan de Lorraine, Nancy, April 2014.
- *Analysis and Stochastics Seminars* of Technical University Dresden, Germany, invited by Prof. Dr. René Schilling, June 2012.

Fellowships

- Research fellowship of the French Institute in Bucharest: 1 month, (November-December 2023).
- Postdoctoral fellowship at the University Paris 1, France, founded by the Cultural Service of the French Embassy in Bucharest, (October-November 2016).
- Postdoctoral fellowship of the Research Institute of the University of Bucharest (ICUB), Romania: 9 months (April-December 2015).
- Joint research project with Prof. Dr. Ioan R. Ionescu (Univ. Paris-Nord), entitled *Modeling of snow avalanches and stochastic aspects*, founded by the Laboratoire Européen Associé CNRS Franco-Roumain, May–November 2015.
- PhD fellowship of the Cultural Service of the French Embassy in Bucharest: support for 12 months, during two academic years (2011-2013).
- PhD fellowship in a POSDRU project, co-founded by EU and the Romanian Government, 2011-2013.
- BITDEFENDER Junior Research fellowship at IMAR: 6 months in 2010.

Research grants

- Director of the project *Random time modifications of stochastic processes with numerical aspects for non-linear equations*, funded by the Romanian Ministry of Education and Research, 2018-2020.

Participation at research grants

- Member of the research team of the project *Stochastic analysis methods for the evolution equations of non-local branching and fragmentation processes*, funded by the Romanian Ministry of Education and Research, 2022-2024.
- Member of the research team of the project *Stochastic analysis and nonlinear equations for fragmentation processes*, funded by the Romanian Ministry of Education and Research, 2017-2019.
- Member of the research team of the project *Dense avalanches: from experiment to software*, funded by the Romanian Ministry of Education and Research, 2017-2018.
- Member of the research team of the project *Analysis of Schroedinger equations*, funded by the Romanian Ministry of Education and Research, 2015-2017.
- Member of the research team of the project *Mathematical Modeling of Ductile Rupture*, funded by the Romanian Ministry of Education and Research, 2011-2016.

Research visits

- University Paris 13, France, collaboration with Prof. Dr. Ioan R. Ionescu, 2015–2024.
- University of Zürich, Switzerland, collaboration with Dr. Delia Coculescu, 2017–2023.
- BCAM, Spain, collaboration with Prof. Dr. Arghir Zărnescu, 2018.
- Institut Elie Cartan de Lorraine, France, collaboration with Prof. Dr. Madalina Deaconu, 2016, 2018, and 2019.
- Scientific visit of one week at Technical Univ. Dresden, Germany, invited by Prof. Dr. René Schilling, June 2012.

Co-organized scientific seminars:

- *Probability Theory, Statistics and Applications*, co-organized with Prof. C.-A. Tudor, Gheorghe Mihoc-Caius Iacob Institute of Mathematical Statistics and Applied Mathematics of the Romanian Academy, 2017-present.
- *Potential Theory Seminar*, co-organized with Prof. L. Beznea and Gheorghe Bucur, IMAR and University of Bucharest, Faculty of Mathematics and Computer Science, 2011-present.

- During the first semester of the academic year 2015-2016, I co-organized with Prof. L. Beznea a scientific seminar on Monte Carlo methods for simulation of Markov processes for Master students at Faculty of Mathematics and Computer Science, University of Bucharest.

Member of the local organizing committee of the following international conferences:

- *Special session Processus aleatoire spatio-temporels et applications*, jointly with Bastien Mallein (Univ. Toulouse) and Radu Stoica (Univ. of Lorraine), Bucharest, August 2024.
- *Special session Stochastic and Potential*, co-organized with L. Beznea (Bucharest) and (Kent State Univ.) at The Tenth Congress of Romanian Mathematicians, Pitesti, July 2023.
- *Special session Stochastic Analysis and its Applications*, co-organized with C.-A. Tudor (Univ. Lille 1) and Oana Mocioalca (Kent State Univ.) at The Ninth Congress of Romanian Mathematicians, Galati, July 2019.
- *Analyse stochastique et thèmes connexes*, Bucharest, May 2019.
- *Potentiel et probabilités*, Bucharest, January 2019.
- *Theorie du potentiel et EDP non-lineaires*, Bucharest, November 2018.
- *Atelier de travail en Stochastique et EDP*, Bucharest, September 2018.
- *Le XIII-eme Colloque Franco-Roumain de Mathematiques Appliquées*, co-organizer with J.S. Dhersin (Univ. Paris 13) and Titus Lupu (Univ. Zurich) of the Special Session "Stochastic Processes", Iași, August 2016.
- *Joint International Meeting of the German Mathematical Society and the Romanian Mathematical Society*, Constanta, September 2017.
- *Colloque Franco-Roumain en Théorie des Probabilités*, Bucharest, November 2015.
- *The Eighth Congress of Romanian Mathematicians*, Iași, Romania, June 2015.
- *Joint International Meeting of the AMS and the Romanian Mathematical Society*, Alba Iulia, Romania, June 2013.
- *International Conference on Complex Analysis and Related Topics, The 13th Romanian-Finnish Seminar*, Ploiești, Romania, June 2012.
- *Probability and Related Aspects*, Alba Iulia, Romania, May 2012.
- *The Seventh Congress of Romanian Mathematicians*, Brașov, Romania, June 2011.

Participation at conferences, workshops, and summer schools

- *Regional Romanian-French Summer School in Applied Mathematics*, Sinaia, July 2015.
- *Brussels Summer School of Mathematics*, Brussels, August 2013.
- *XI-ème Colloque Franco-Roumain de Mathématiques Appliquées*, Bucharest, August 2012.
- *Partial differential equations, optimal design and numeric*, Benasque, Spain, August 2011.
- *The first NIMS Probability Summer School*, Daejeon, South Korea, August 2011.
- *Partial Differential Equation*, Summer School from Cortona, Italy, August 2010.
- *Evolution equation and numerical analysis*, SIMUMAT Summer School from Castro Urdiales, Cantabria, Spain, July 2009.

PC Skills: Matlab, LaTeX.

Foreign Languages: French, English.

September 2024