

Pierre GABRIEL

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PROFESSIONAL EXPERIENCE

2012- ... Assistant professor, University of Versailles
2011-2012 Post-doctoral fellow, Inria Lyon
2008-2011 PhD student - teaching assistant, University Pierre & Marie Curie - Paris 6

EDUCATION

2008-2011 PhD in Mathematics, University Paris VI
GROWTH-FRAGMENTATION EQUATIONS AND APPLICATIONS TO PRION DISEASES
Supervisors : Marie Doumic and Benoît Perthame
Prize Thiessé de Rosemont/Demassieux of the Chancellerie des universités de Paris
2007-2008 Master of Sciences (Numerical Analysis and PDEs), University Paris VI
2007 Agrégation de mathématiques (French competitive examination for some teacher positions)
2006-2008 École Normale Supérieure de Cachan
2004-2006 École Normale Supérieure de Paris

PRIZES AND AWARDS

2013-2017 Holder of the Prime d'Excellence Scientifique
2012 Prize Thiessé de Rosemont/Demassieux of the Chancellerie des universités de Paris (thesis award)

RESEARCH INTEREST

- Mathematics applied to biology, structured populations dynamics
- Long-time behavior of partial differential equations
- Optimal control

INVITATIONS IN FOREIGN UNIVERSITIES

2016 Universidad de Granada, Spain (1 week)
2015 Tongji University, Shanghai, China (1 week)
2012 University of Cambridge, England (1 week)
2011 Vanderbilt University, Nashville, Tennessee (3 months)

INVITED TALKS IN CONFERENCES

- 2017 Workshop on PDEs, Granada, Spain
Conference “PDMPs, Theory and applications”, Seillac
Workshop on Coagulation and Fragmentation Equations, Vienna, Austria
- 2016 CIMPA Research School “Mathematical models in biology and medicine”, Mauritius
13th French-Romanian Conference of Applied Mathematics, Iasi, Romania
Days “Modeling”, Marseille
- 2015 The 8th ICIAM, Pékin, China
SIAM Conference on Control & Its Applications, Paris
Conference MB2, Métabief
Annual Meeting of the Society for Mathematical Biology, Atlanta, USA
7th SMAI Congress, Les Karellis
Workshop PDMP of the ANR Project PIECE, Saint-Martin-de-Londres
- 2014 Workshop on PDEs : Modelling, Analysis and Numerical Simulation, Granada, Spain
12th French-Romanian Conference of Applied Mathematics, Lyon
Kickoff day of the ANR Project KIBORD, Paris
- 2013 CIMPA Research School on “PDE methods in Biology and Medicine”, La Habana, Cuba
Starting session of the GdR Metice, Paris
6th SMAI Congress, Seignosse
Workshop “Mathematical modeling : A powerful tool for anti cancer drug development”, Lyon
Conference “Mathematical Modeling in Cell Biology”, Lyon
- 2012 10th International Conference on Operations Research, La Habana, Cuba
- 2011 SIAM Conference on Analysis of Partial Differential Equations, San Diego, USA
ICNODEA, Cluj-Napoca, Romania
Mathematics and Biology : Young Investigators International Workshop, Rouen
- 2010 Conference on Computational and Mathematical Population Dynamics, Bordeaux

SEMINARS

- 2017 Math-Bio seminar, Université Paul Sabatier, Toulouse
- 2016 Differential Equations seminar, Universidad de Granada, Spain
Numerical Analysis seminar, Université de Franche-Comté, Besançon
- 2015 Analysis seminar, Université de Tours
Partial Differential Equations seminar, Université de Versailles
- 2013 Numerical Analysis seminar, Université de Rennes
Analysis and Applications seminar, Université d'Évry
- 2012 Geometric Analysis and PDE seminar, University of Cambridge, England
Seminar of the MIP team, Université Paul Sabatier, Toulouse
Applied Analysis seminar, Université Aix-Marseille 1
Seminar of the LBBE, Université Lyon 1
- 2011 Numerical Analysis and PDE seminar, Université Paris-Sud 11
Mathematical Modelling in Medecine and Biology seminar, Inria Lyon
PDE seminar, Vanderbilt University, Nashville, Tennessee
- 2010 Seminar of the MIP team, Université Paul Sabatier, Toulouse
Numerical Modeling and Images seminar, Université Paris Descartes
Math-Bio seminar, Université Paris 6

ORGANIZATION OF SCIENTIFIC EVENTS

- 2016 Member of the organizing committee of the summer school “PDE and Probability for Life Sciences”, CIRM, Marseille, France
- 2013 Organizer of the day “Modélisation mathématique en biologie”, Versailles, France
- 2012 Member of the organizing committee of the summer school “Modélisation en dynamique des populations et Évolution (EDP et Probabilités)”, La Londe les Maures, France

PARTICIPATION TO FUNDED RESEARCH PROJECTS

- 2014-2018 member of the ANR project KIBORD : KInetic models in Biology Or Related Domains (PI : L. Desvillettes)
- 2016-2017 coordinator of a PEPS - Jeunes Chercheur-e-s
- 2014-2016 member of the ICODE project : Stability and stabilization of switched systems (PI : M. Akian)
- 2009-2012 member of the ANR project TOPPAZ : Theory and Observations of Polymerization processes in Prion and Alzheimer diseases (PI : M. Doumic)

ACADEMIC DUTIES

- 2016- ... Co-organizer of the PDE seminar of the Laboratoire de Mathématiques de Versailles
- 2014- ... In charge of a first year educational unit, University of Versailles
- 2013-2017 Elected member of the council of the faculty of Sciences, University of Versailles
- 2012-2014 Co-head of a Master formation, University of Versailles

SUPERVISION OF GRADUATE STUDENTS

- 2016- ... PhD of Hugo Martin (co-supervised 50% with M. Doumic)
- 2016 M2 internship of Hugo Martin (co-supervised with M. Doumic)
- 2014 M1 project of Thomas Bernard and Abderrazak Bhairia
- 2013 M1 project of Hassan Frissane and Houssein Rouis

TEACHING

University of Versailles

- 2016-2017 Mathematics for biologists (L1)
Differential Equations and Differential Geometry (L2)
Topology and Differential Calculus (L3)
Functional Analysis and PDE (M1)
Preparation to french competitive examinations for teaching positions (M2)
- 2015-2016 Mathematics for biologists (L1)
Functional Analysis and PDE (M1)
Preparation to french competitive examinations for teaching positions (M2)
- 2014-2015 Mathematics for biologists (L1)
Differential Equations and Differential Geometry (L2)
Functional Analysis (M1)
PDE and Numerical Approximation (M1)
Preparation to french competitive examinations for teaching positions (M2)

2013-2014 Mathematics for biologists (L1)
Functional Analysis (M1)
PDE and Numerical Approximation (M1)
Preparation to french competitive examinations for teaching positions (M1 & M2)

2012-2013 Mathematics for biologists (L1)
Functional Analysis (M1)
PDE and Numerical Approximation (M1)
Preparation to french competitive examinations for teaching positions (M2)

ENS Cachan

2013-2016 Mini-course on Structured Equations (L3)

University Paris 6

2008-2011 Calculus (L1 & L2)

Other teaching activities

2016 Mini-course on the Renewal Equation, CIMPA Research School, Mauritius

2014 Volunteer animator at the Mathematics summer camp “Mat’ les vacances”

POPULARIZATION

2016 Conference for high school students, Lycée des Mascareignes, Mauritius

2013 Redaction of short text for the program “Mathematics for Planet Earth”

PUBLICATIONS

- [18] V. Calvez, P. Gabriel, and Á. Mateos González. Limiting Hamilton-Jacobi equation for the large scale asymptotics of a subdiffusion jump-renewal equation. Submitted, arXiv :1609.06933.
- [17] É. Bernard, M. Doumic, and P. Gabriel. Cyclic asymptotic behaviour of a population reproducing by fission into two equal parts. Submitted, arXiv :1609.03846.
- [16] É. Bernard and P. Gabriel. Asymptotic behavior of the growth-fragmentation equation with bounded fragmentation rate. *J. Funct. Anal.*, Vol.272, No.8 (2017), p.3455-3485.
- [15] M. Chyba, J.-M. Coron, P. Gabriel, Y. Mileyko and H. Rezaei. Identification of the fragmentation role in the amyloid assembling processes and application to their optimization. Proceedings of the SIAM Conference on Control and its Applications (CT15), Paris, 2015, p.348-355.
- [14] P. Gabriel. Global stability for the prion equation with general incidence. *Math. Biosci. Eng.*, Vol.12, No.4 (2015), p.789 - 801.
- [13] V. Calvez, P. Gabriel and S. Gaubert. Non-linear eigenvalue problems arising from growth maximization of positive linear dynamical systems. Proceedings of the 53rd IEEE Annual Conference on Decision and Control (CDC), Los Angeles, CA, 2014, p.1600-1607.
- [12] M. Chyba, J.-M. Coron, P. Gabriel, A. Jacquemard, G. Patterson, G. Picot and P. Shang. Optimal Geometric Control Applied to the Protein Misfolding Cyclic Amplification Process. *Acta Appl. Math.*, Vol.135 (2015), p.145-173.
- [11] J.-M. Coron, P. Gabriel and P. Shang. Optimization of an amplification protocol for misfolded proteins by using relaxed control. *J. Math. Biol.*, Vol.70, No.1-2 (2015), p.289-327.
- [10] P. Gabriel and F. Salvarani. Exponential relaxation to self-similarity for the superquadratic fragmentation equation. *Appl. Math. Lett.*, Vol.27 (2014), p.74-78.

- [9] D. Balagué, J. A. Cañizo and P. Gabriel. Fine asymptotics of profiles and relaxation to equilibrium for growth-fragmentation equations with variable drift rates. *Kinetic Related Models*, Vol.6, No.2 (2013), p.219-243.
- [8] V. Calvez and P. Gabriel. Optimal growth for linear processes with affine control. *arXiv :1203.5189 [math]*, Mar. 2012.
- [7] S. Prigent, A. Ballesta, F. Charles, N. Lenuzza, A. Pastore, P. Gabriel, L. M. Tine, H. Rezaei and M. Doumic. An efficient kinetic model for amyloid fibrils assemblies and its application to polyglutamine aggregation. *PLoS ONE*, Vol.7, No.11 (2012), e43273.
- [6] P. Gabriel, S. P. Garbett, V. Quaranta, D. R. Tyson and G. F. Webb. The contribution of age structure to cell population responses to targeted therapeutics. *J. Theor. Biol.*, Vol.311 (2012), p.19-27.
- [5] P. Gabriel. Long-time asymptotics for nonlinear growth-fragmentation equations. *Comm. Math. Sci.*, Vol.10, No.3 (2012), p.787-820.
- [4] V. Calvez, M. Doumic and P. Gabriel. Self-similarity in a general aggregation-fragmentation problem; Application to Fitness Analysis. *J. Math. Pures Appl.*, Vol.98, No.1 (2012), p.1-27.
- [3] P. Gabriel. The shape of the polymerization rate in the prion equation. *Math. Comput. Modelling*, Vol.53, No.7-8 (2011), p.1451-1456.
- [2] P. Gabriel and L. M. Tine. High-Order WENO scheme for polymerization-type equations. *ESAIM Proc.*, Vol.30 (2010), p.53-69.
- [1] M. Doumic and P. Gabriel. Eigenelements of a general aggregation-fragmentation model. *Math. Models Methods Appl. Sci.*, Vol.20, No.5 (2010), p.757-783.