

Jimmy Garnier

CONTACT INFORMATION

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EDUCATION

- 2012 - **University of Alberta**, Mark Lewis laboratory , Edmonton, Alberta Canada
Postdoctoral Fellow
- 2009 - 2012 **French National Institute of Agricultural Research**, Avignon
Ph.D., Mathematics
Thesis : [Mathematical analysis of population dynamics models: Partial Differential Equations integro-differential equations](#) ;
Advisors : François Hamel (LATP Marseille) and Lionel Roques (INRA Avignon)
- 2008 - 2009 **École Normale Supérieure of Cachan** , Cachan
Préparation à l'Agrégation de Mathématiques
ranking: 47/250
- 2007 - 2008 **Université de Provence** , Marseille
Master's degree in Mathematics
Partial Differential Equations, Numerical Analysis, Optimization and Control, Programing (C++, FORTRAN)
Thesis : *Success rate of a biological invasion and the spatial distribution of the founding population*
Advisors : François Hamel (LATP Marseille) and Lionel Roques (INRA Avignon)
- 2006 - 2007 **Université Denis Diderot, Paris 7** , Paris
1st year of Master's degree in Mathematics
Probability, Spectral analysis, Statistics, PDEs, Complex analysis, Algebra, Functional analysis.
Thesis : *SIR model for the *Chicungunya* disease carried by the *Aedes Albopictus**
Advisors : M Cadivel (Université de la Réunion, France)
- 2006 - 2007 **École Normale Supérieure de Cachan** , Cachan
Bachelor's degree in Mathematics
Integration et Probability, Algebra, Ordinary Differential Equations, Differential Geometry, Biology.

RESEARCH INTERESTS

Analysis and Applied Mathematics.
Non local dispersal model via integro-differential operators applied to Ecology.
Reaction-diffusion models in heterogeneous media.
Traveling waves and transition waves. Applications in Ecology to gene repartition during a colonization.
Extinction, persistence and dispersal of populations, and their relationships with spatial heterogeneities.
Inverse problems for parabolic equations with non-constant coefficients.

JOURNAL ARTICLES

Preprints

- J Coville, O Bonnefon, J Garnier, F Hamel and L. Roques. [The spatio-temporal dynamics of neutral genetic diversity](#), submitted;
- J Coville, O Bonnefon, J Garnier and L. Roques. [Inside dynamics of solutions of integro-differential equations](#), accepté DCDS-B;

- O Bonnefon, **J Garnier**, F Hamel and L Roques. [Inside dynamics of delayed travelling waves](#), *Math. Mod. Nat. Phen.*, 8: 44–61, 2013;
- L Roques, **J Garnier**, F Hamel and E Klein. [Allee effect promotes diversity in traveling waves of colonization](#), *Proc. Natl. Acad. Sci. USA*, 109(23): 8828–8833, 2012, doi : 10.1073/pnas.1201695109;
- J Garnier**, T Giletti, G Nadin. [Maximal and Minimal spreading speed for reaction diffusion equations in nonperiodic slowly varying media](#), *J. Dynam. Differential Equations*, 24(3):521–538, 2012;
- J Garnier**, T Giletti, F Hamel, L Roques. [Inside dynamics of pulled and pushed fronts](#), *J. Math. Pures Appl.*, 11:173–188, 2012;
- J Garnier**, F Hamel, L Roques. [Success rate of a biological invasion and the spatial distribution of the founding population](#), *Bull. Math. Bio.*, 74:453–473, 2012;
- M Cristofol, **J Garnier**, F Hamel et L Roques. [Uniqueness from pointwise observations in a multi-parameter inverse problem](#), *Comm. Pure Appl. Anal.* 11(1): 173–188 2012;
- J Garnier**. [Accelerating solutions in integro-differential equations](#), *SIAM J. Math. Anal.*, 43(4): 1955–1974, 2011.

INVITED TALKS

- 22 Nov 2013** *Conséquences de la propagation d'une espèce sur sa diversité génétique : une approche mathématique*. Journées EDP Rhône-Alpes-Auvergne, Université de St Étienne, France (conférencier invité);
- 24 Sept 2013** *Genetic consequences of range expansion: mathematical insights*. Workshop ERC « Reaction-Diffusion Equations, Propagations and Modelling », EHESS, Paris, France (conférencier invité);
- 05 Sept 2013** *Modélisation en dynamique des populations et génétique des populations*. Workshop Fédération « Modélisation, Simulation, Interactions Fondamentales », Université de Savoie, Chambéry, France (conférencier invité);
- 16 Mai 2013** *Effect of climate niche shifting on the genetic diversity*. Workshop « Impact of climate change on biological invasions and population distribution », Banff International Research Station, Alberta, Canada, (conférencier invité);
- 14 Déc 2012** *Long distance dispersal accelerates range expansions*. Workshop «Everything Disperses to Miami: The Role of Movement and Dispersal in Ecology, Epidemiology and Environmental Science», Miami, Florida, USA, (conférencier invité);
- 04 Juin 2012** *Fast propagation and accelerating solutions in integro-differential equations*. 9ème Conférence de l'AIMS, «Dynamical Systems, Differential Equations and Applications», Orlando, Florida, USA, Juillet 2012, (conférencier invité);
- 05 Avr 2012** *Comment l'effet Allee favorise le maintien de la biodiversité le long d'un front de colonisation*. 3ème Journée d'Écologie Numérique, INRA Montpellier, (conférencier invité);
- 18 Oct 2011** *The impact of Allee effect and long distance dispersal events on biological invasion*. Conférence URTICLIM, Belgodère (France), (conférencier invité);
- 04 Nov 2010** *Long distance dispersal, Accelerating rates of spread in biological invasions models*. Conférence URTICLIM, Avignon, (conférencier invité);
- 16 Mar 2010** *On the effects of the initial condition on establishment and spread of biological invasions*. «Spatio-Temporal Patterns», Conférence Franco-Japonaise du ReaDiLab, Archamp, (conférencier invité);
- 10 Nov 2009** *Allee effects and spatial structure of founding populations*. Conférence URTICLIM, Orléans, (conférencier invité).

CONTRIBUTED PRESENTATIONS

- 04 Fév 2013** *Genetic diversity under climate change*. Lab meeting, Lewis Research Group, University of Alberta, Edmonton, Canada, (conférencier invité);
- 05 Nov 2012** *The impact of long distance dispersal and Allee effect on the dynamics of range-expanding population*. Mathbio seminar, University of Alberta, Edmonton, Canada, (conférencier invité);
- 15 Oct 2012** *Diversity in traveling waves of colonization*. Lab meeting, Lewis Research Group, University of Alberta, Edmonton, Canada, (conférencier invité);
- 06 Déc 2011** *The impact of long distance dispersal events on migration*. Séminaire Modemic, INRA Montpellier, (conférencier invité);
- 17 Jan 2011** *Biological invasions models : Establishment stage and propagation phenomena*. Séminaire des doctorants, Université Claude Bernard Lyon 1, Lyon, (conférencier invité);
- 11 Oct 2010** *Accelerating solutions in integro-differential equations*. Séminaire Maths bio et santé, Laboratoire Jacques-Louis Lions, Paris, (conférencier invité);
- 25 Jan 2010** *Phénomènes de propagation en dynamique des populations*. Café des Sciences INRA, Avignon, (conférencier invité).

TEACHING

- 2011-2012 Tutorial sections for undergraduate students in Mathematics and Informatics and students in Earth science at Aix-Marseille University;
- 2010-2011 Tutorial sections for undergraduate students in Mathematics and Informatics at Aix-Marseille University;
- 2009-2010 Oral test in Classe Préparatoire of Mathematics (MPSI and MP) at Lycée Thiers, Marseille;
- 2007-2008 Oral test in Classe Préparatoire of Mathematics (MPSI and MP) at Lycée Thiers, Marseille.

REFeree SERVICES

Journals

- Bulletin of Mathematical Biology (1);
- Ecology Letters (1);
- Journal of Mathematical Biology (2);
- Mathematical Medicine and Biology (1).