Julien Chevallier

Assistant professor

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Updated on September 30, 2022.

Academic experience

2017 – ... **Assistant Professor**, *UFR IM^{2}AG, Université Grenoble Alpes*, Grenoble

2016 – 2017 **Postdoc**, *AGM, Université de Cergy-Pontoise (UCP)*, Cergy-Pontoise
Supervisor : Eva Löcherbach.
Financed by Labex MME-DII.

2013 – 2016 **PhD Thesis**, *LJAD, Université Nice Sophia Antipolis (UNSA)*, Nice
Title : Modelling large neural networks via Hawkes processes.
Supervised by Patricia Reynaud-Bouret and François Delarue.
Defense: September 9th, 2016.

2012 – 13 **Postgraduated degree in Mathematics**, ENS DE LYON, Speciality: Probability

2011 – 12 **"Agrégation" in Mathematics**, *Competitive exam to qualify as high school teacher in Mathematics*, 36th over 308

Professional experience

Teaching

- Basics of descriptive and inferential statistics. Tutorial and practical classes.
- Discrete time stochastic processes.
- Temporal point processes.
- Elementary analysis.

Supervision

- **Valentina Mazzi** – *M2 internship* – 2016 (5 months, co-supervised with P. Reynaud-Bouret)
  Subject : Microscopic and macroscopic modelling of neurons.
- Research project – *CEMRACS* – 2017 (1 month, co-supervised with F. Delarue and E. Tanré)
  Subject : Network of interacting neurons with random synaptic weights.
- **Kevin Polisano** – *Postdoc* – 2018/19 (1 year, co-supervised with E. Gaussier and A. Leclercq-Samson)
  Subject : Joint modelling of tweets and follow for information dynamics on Twitter.
- **Anne-Lise Porté** – *PhD* – 2021/... (co-supervised with J.-F. Coeurjolly)
  Subject : Point processes generated by critical points of a latent Gaussian field.
- **Marjolaine Demouge** – *M1 internship* – 2022 (co-supervised with J.-F. Coeurjolly)
  Subject : Continuous testing for spatial point process intensity estimation.

Refereeing services

Reviewer for scientific journals : *Stochastic Processes and their Applications* (5), *Annals of Applied Probability* (3), *Annales de l'IHP (B) Probabilités et Statistique* (3), *Acta Applicandae Mathematicae* (1), *Journal of Theoretical Probability* (1), *Journal of Approximation Theory* (1), *Journal of Statistical Physics* (1), *Kinetic and Related Models* (1), *Statistics and Probability Letters* (1), *Transactions on Modeling and Computer Simulation* (1).

Responsibilities

2015 – 2016 **Elected member of the Research committee**, UNSA

2017 – ... **Co-organisation of the weekly seminar.**, LJK

2019 **Co-organisation of the MathEnJeans 2019 congress in Grenoble**
Organisation of the night show.

2019 – . . . **Elected member of IM2AG council**
Participation to the research committee.

Publications

In refereed journals

Detection of dependence patterns with delay, *J. Chevallier et T. Lalöe*, Biometrical Journal, 57:1110-1130 (2015). DOI : 10.1002/bimj.201400235
Available on arXiv:1406.0476.

Microscopic approach of a time elapsed neural model, *J. Chevallier, M.J. Caceres, M. Doumic et P. Reynaud-Bouret*, Mathematical Models and Methods in Applied Sciences, 25, 2669 (2015). DOI : 10.1142/S021820251550058X
Available on arXiv:1506.02361.

Mean-field limit of generalized Hawkes processes, *J. Chevallier*, Stochastic Processes and their Applications, (2017). DOI : 10.1016/j.spa.2017.02.012
Available on arXiv:1510.05620.

Fluctuations for mean-field interacting age-dependent Hawkes processes, *J. Chevallier*, Electronic Journal of Probability, (2017). DOI : 10.1214/17-EJP63
Available on arXiv:1611.02008.

Mean Field Limits for Nonlinear Spatially Extended Hawkes Processes with Exponential Memory Kernels, *J. Chevallier, A. Duarte, E. Löcherbach et G. Ost*, Stochastic Processes and their Applications, (2018). DOI : 10.1016/j.spa.2018.02.007
Available on arXiv:1703.05031.

Stimulus sensitivity of a spiking neural network model, *J. Chevallier*, Journal of Statistical Physics, (2018). DOI : 10.1007/s10955-017-1948-y
Available on arXiv:1709.06958.

Uniform decomposition of probability measures: quantization, clustering and rate of convergence, *J. Chevallier*, Journal of Applied Probability, (2018). DOI : 10.1017/jpr.2018.69
Available on arXiv:1709.06958.

Network of interacting neurons with random synaptic weights, *J. Chevallier et al.*, ESAIM: Proceedings and Surveys, EDP Sciences, 55: 1037-1045 (2019). DOI : 10.1051/proc/201965445
Available on hal-01928990.

Fluctuations for Spatially Extended Hawkes Processes, *J. Chevallier and G. Ost*, Stochastic Processes and their Applications, 130 (9), 5510-5542 (2020). DOI : 10.1016/j.spa.2020.03.015
Available on arXiv:1909.06401.

Diffusion approximation of multi-class Hawkes processes: Theoretical and numerical analysis, *J. Chevallier, A. Melnykova et I. Tubikanec*, Advances in Applied Probability, 53(3), 716-756 (2021). DOI : 10.1017/apr.2020.73
Available on arXiv:2003.10710.

Submitted to refereed journals

Natural selection and the advantage of recombination, *P. J. Gerrish et al.*, (2020)
Available on bioRxiv 2020.08.28.271486.

Natural selection promotes the evolution of recombination 1: between the products of natural selection, *P. J. Gerrish et al.*, (2021)
Available on bioRxiv 2021.06.07.447320.

Published on a website with review committee

Nos neurones se synchronisent-ils ?, *(in french) J. Chevallier and P. Reynaud-Bouret (participation of M. Monticelli for the animations)*, Image des Mathématiques

Attendance to conferences, workshops, seminars, etc.

International conferences

As invited speaker

2014/09/17 **PDE-MANS**, Grenada, Spain

2015/09/09 **MathStatNeuro Workshop**, Nice, France

2017/06/20 **PDE-MANS 2017**, Grenada, Spain

2018/04/13 **JSTAR**, Rennes, France

2019/06/18 **CIMPA Research Summer School**, La Habana, Cuba

2022/06/01 **New trends on Hawkes processes**, Toulouse, France

2022/06/24 **ANR ChaMaNe meeting**, *Mini-course about Neural Field Equations*, Île Rousse, France

With an oral presentation or a poster

2015/06/02 **47th JdS (congress of the French Statistics Society, SFdS)**, Lille, France

2015/06/09 **Congress of the SMAI (French Society of Applied and Industrial Mathematics)**, *Mini-symposium "Processus de Hawkes et leurs applications"*, Les Karellis, France, (invited talk)

2015/07/06 **30th European Meeting of Statisticians**, Amsterdam, Holland

2016/06/01 **ICMNS 2**, Antibes, France
With a poster presentation.

2017/12/13 **Deterministic and Stochastic Models in Neuroscience**, Toulouse, France

2018/04/13 **JSTAR**, Rennes, France

2018/06/12 **ICMNS 2018**, Antibes, France

2018/06/14 **SPA 2018**, Göteborg, Sweden

Various skills

Languages

French	Native speaker
English	Fluent

Computer skills

Programming language	R, Python, few notions of HTML and Java