

Julien Chevallier

Assistant professor

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Academic experience

- 2017 – ... **Assistant Professor**, UFR IM²AG, Université Grenoble Alpes, Grenoble
Lay-off since September 2025.
- 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 : *Annals of Applied Probability* (4), *Acta Applicandae Mathematicae* (1), *Annales de l'IHP (B) Probabilités et Statistique* (3), *ALEA* (1), *Applied Probability Journals* (1), *ESAIM: Probability and Statistics* (1), *Electronic Communications in Probability* (1), *Electronic Journal of Probability* (2), *Journal of Approximation Theory* (1), *Journal of Mathematical Neuroscience* (2), *Journal of Statistical Physics* (1), *Journal of Theoretical Probability* (1), *Kinetic and Related Models* (2), *Scandinavian Journal of Statistics* (1), *Stochastic Processes and their Applications* (6), *Statistics and Probability Letters* (2), *Transactions on Modeling and Computer Simulation* (1).

Scientific animation

- 2017 – 2022 **Co-organisation of the weekly seminar.**, LJK
- 2019 **Co-organisation of the MathEnJeans 2019 congress in Grenoble**
Organisation of the night show.

- 2019 – 2023 **Elected member of IM2AG council**
Participation to the research committee.
- 2021 **Co-organisation of the BioHasard 2021 conference**, *Online due to Covid-19.*
- 2022 – 2025 **Leader of the SVH team**, *13 permanent members.*
- 2023 **Co-organisattion of SSIAB15**, *May 2023.*
- 2025 **Co-organisattion of GeoSto25**, *June 2025.*

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](https://arxiv.org/abs/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](https://arxiv.org/abs/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](https://arxiv.org/abs/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](https://arxiv.org/abs/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](https://arxiv.org/abs/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](https://arxiv.org/abs/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](https://arxiv.org/abs/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](https://hal.archives-ouvertes.fr/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](https://arxiv.org/abs/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](https://arxiv.org/abs/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](https://doi.org/10.1101/2020.08.28.271486).

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](https://doi.org/10.1101/2021.06.07.447320).

Uniform in time modulus of continuity of Brownian motion, *J. Chevallier*, (2023)
Available on [hal-04361156](#).

Inferring the dependence graph density of binary graphical models in high dimension, *J. Chevallier, E. Löcherbach et G. Ost*, (2024)
Available on [hal-04609972](#).

Community detection for binary graphical models in high dimension, *J. Chevallier, G. Ost*, (2024)
Available on [hal-04803948](#).

Critical point processes obtained from a Gaussian random field with a view toward statistics, *J. Chevallier, J.-F. Coeurjolly et R. Waagepetersen*, (2025)
Available on [hal-05146209](#).

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

2024/05/28 **55es Journées de Statistique de la SFdS**, Bordeaux, France

2025/06/03-05 **56es Journées de Statistique de la SFdS**, Marseille, France

Various skills

Languages

French Native speaker
English Fluent

Computer skills

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