Nicolas Chopin

Professor of data sciences

ENSAE
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Experience

Sept. 2006– to date **Professor of data sciences**, *ENSAE, IPP*, Palaiseau, FRANCE

2003–2006 **Lecturer in Statistics**, *Bristol University*, UK

2002–2003 **Statistical methodologist**, *UMS-INSEE*, Paris, FRANCE

1999–2002 **Junior Lecturer in Statistics**, *ENSAE*, Malakoff, France

Education

2010 **Habilitation à Diriger des recherches**, *Université Paris Dauphine*
(French habilitation to supervise Ph.D. students, Viva 1st Dec. 2010)

1999–2003 **Ph.D. thesis in Statistics**, *Université Paris VI*, supervisor: Pr C.P. Robert
Sequential Monte Carlo methods and their applications to Bayesian inference.

1997–1999 **Msc. in Economics and Statistics**, *ENSAE*

1994–1997 **Msc. in Engineering**, *Ecole Polytechnique*

Research Interests

I am interested in Bayesian computation in a general sense, that is, the development of numerical methods to perform Bayesian learning and inference. I am particularly interested in:

- Monte Carlo methods, especially Sequential Monte Carlo (particle filtering): theory (convergence properties, etc), methodology, and applications; Importance sampling, Markov chain Monte Carlo (MCMC), and recently quasi-Monte Carlo.
- Deterministic approximations: Laplace, Variational Bayes and Expectation Propagation.

I am also interested in Bayesian modelling and practical applications: I am collaborating or have collaborated with scientists from different areas of Science, such as cosmology, neuro-sciences, and (very recently) public health.

Awards, distinctions and grants

- Fellow of the IMS (Institute of Mathematical Statistics), 2020
- ANR grant B3DCMB, 2017-2021, 145 KE; (Big Bang à partir de Big Data (du fond diffus cosmologique)
- CREST coordinator of 'SP Bayes' (Statistique Bayésienne semi-paramétrique) ANR Project led by J. Rousseau (2008-10)
- EPSRC first grant EP/C015886/1, Oct 2005 - Oct 2008, £74.000 ; 'Novel Applications of Sequential Monte Carlo'. (Grant awarded on a competitive basis.)

- 2002 Leonard J. Savage Award for an outstanding doctoral dissertation in Bayesian econometrics and statistics ('Theory and Methods' section), International Society for Bayesian Analysis.

Teaching

- **ENSAE**: "Introduction to Stochastic processes" (2nd year, 20 hrs), "Statistique 1" (2nd year, 20 hrs, 2006-2018), "Monte Carlo and simulation" (2nd year, 16 hrs), "State-space models and sequential Monte Carlo (3rd year, 18 hrs)
- **Master M2 MVA**: "Probabilistic Graphical models" (M2, half of the 24h course)
- **Université Paris Dauphine**: "Hidden-Markov models and Particle methods" (M2, 18 hours, 2007 to 2015); "Time Series" (M1, 20 hours, 2008-09)
- **HEC Paris**: "Statistique" (L3, 50 hrs, 2011-2017)
- **HEC Lausanne**: "Introduction to Time series" (Msc, 28 hours, 2009-2014)
- **Bristol University**: Bayesian Analysis (18 hours, lvl 3, 2003-06), Introduction to Statistics (18 hours, lvl 2, 2003-06)
- **Ecole Polytechnique**: "chargé de cours incomplet" (60 hours, 2007-08)
- **Universita dell'Insubria**: Bayesian Analysis (18 hours, 2005)

Academic Responsibilities

- **Associate Editor:** Annals of Statistics (2019 to date); Biometrika (2018 to date); J. Roy. Stat. Soc. B (2012-2020); Stats & Comp. (2013-2017); Stat. Methods and Appl. (2012-2015); member (2013-14) and secretary (2015-16) of the research section of the RSS.
- **Membership:** American Statistical Association (ASA), Inst. of Mathematical Statistics (IMS), Royal Statistical Society (RSS), International Society for Bayesian Analysis (ISBA).
- **Post-doc supervision:** Francesca Crucinio (2023).
- **Ph.D. supervision:** Otmane Sakhi (2020-23), Younès Youssfi (2020-23), Hai-Dang Dau (2019-22), Gabriel Ducrocq (2019-22), Lionel Riou-Durand (2016-19, post-doc at Warwick U), Alexander Buchholz (2015-18, Amazon), Charles Findling (2015-18, co-supervision at ENS), Vincent Cottet (2014-17, French administration), Mathieu Gerber (2012-15, lecturer at Bristol U), James Ridgway (2012-15, Capital Fund Management), Pierre Jacob (2009-12, co-supervision, assistant prof at Havard U), Christian Schäfer (2009-2012, Dept), Giusi Moffa (Bristol, 2005-06), Elisa Varini (Bristol, 2004-05, co-supervision, CNR)
- **Ph.D. examiner:** Rémi Leluc (Télécom Paris, 2023), Aurélien Enfroy (Télécom Sud Paris, 2022), Francesca Crucinio (Warwick, 2021), Tobias Schwedes (Imperial, 2019), Jordan Franks (Jyväskylä, 2019), Daniel W. Kennedy (QUT, 2019), Changye Wu (Dauphine, 2018), Jeremy Heng (Oxford, 2016), Van Bien Bui (Nice, 2016), Yohan Petetin (Télécom Sud-Paris, 2014), Paul Bui Quang (Rennes, 2013), Sinan Yildirim (Cambridge, 2012), Salima El Kolei (Nice, 2012), Mohamed Sedki (Montpellier, 2012), Anthony Lee (Oxford, 2011), Meïli Baragatti (Marseille, 2011), Nicole White (QUT, 2011), Hugo Hammer (Trondheim, 2008), Zhen Liu (Lancaster, 2008), Adam Johansen (Cambridge, 2006), David Hastie (Bristol, 2004).
- **Conference organisation:** Master class in Bayesian Statistics (CIRM, Oct 2018), SMC 2015 (Paris, 26-28 Aug), NeuroStats 2014 (Warwick, 3-5 Sept)
- **Visits:** Postdam (Aug 2022), Yale (Feb 2019), Oxford (Apr 2017), Pompeu Fabra, Barcelone (May 2013), INRIA Bordeaux (Jul 2011), Cambridge (Oct 2010, Jan 2008, Apr 2007), Lisboa (Nov 2010), Insubria (Nov 2005), Trondheim (March 2013, Sept 2005), Bank of Canada (Sept 2004).

Book

- Chopin, N. and Papaspiliopoulos, O. (2020). An introduction to Sequential Monte Carlo, Springer, doi: 10.1007/978-3-030-47845-2.