Anna Melnykova

Last updated: May 27, 2019

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Born on 28 February 1994 in Kiev, Ukraine.
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Current position: Currently I am a PhD student in University of Cergy-Pontoise (in co-direction with University of Grenoble Alpes). My thesis is devoted to statistical methods for stochastic diffusions with a degenerate variance coefficient. In particular, I work on parametric inference for fully- and partially observed processes, approximation schemes and hypothesis testing. On more general level, I am interested in stochastic models arising in biological and medical context.

Language proficiency:
English (fluent)
French (advanced)
German (advanced)
Russian, **Ukrainian** (native)

Programming language proficiency:
R: `RCpp`, `RMarkdown`
Python: `numpy`, `scipy`, `pelican`
Notions of **Julia**, **MatLab** and **Mathematica**
LaTeX, Markdown, `vim`

Education

2017–2020 PhD candidate in Mathematics — Université de Cergy-Pontoise
Subject: Statistics for Neuroscience.
Supervisors: Eva Löcherbach (Sorbonne Université), Adeline Samson (Université Grenoble Alpes)

2016–2017 M.Sc. in Statistics — Université Grenoble Alpes
Thesis: Parametric estimation techniques in hypoelliptic ergodic diffusions.
Supervisor: Adeline Samson (Université Grenoble Alpes)

2014–2016 M.Sc. in Mathematics — National Technical University of Ukraine
Thesis: Asymptotic behaviour of solutions of SDEs.
Supervisor: Oleg Klesov (NTUU "KPI")

2015–2016 Exchange student in Financial Mathematics — University of Ulm
During my stay I was also employed by University of Ulm as a teacher assistant (*"Studentische Hilfskraft"*) at the undergraduate course *"Höhere Mathematik I für Physiker"*.

Scholarships & Grants

2018	Travel grant to a Master Class organized by Henri Lebesgue Centre in Angers	200 Euro
2018	Young researcher grant for participation in CEMRACS research session	2500 Euro
2016	IDEX Scholarship for international Master students	5000 Euro
2015	Baden-Württemberg Stiftung Scholarship for exchange students	2400 Euro

Schools & Formations during PhD

2018 Masterclass on Ergodicity of Stochastic Processes — Angers, France
Markov processes • Coupling Methods • Functional Inequalities • Gibbs sampling • Quasi-Stationary Distributions

2018 Health Data Challenge — Aussois, France
Matrix factorization • deconvolution methods • tumor heterogeneity in cancer research

2018 CEMRACS 2018 (summer school + 5 weeks research session) — Luminy, France
Horizontal gene transfer in bacteria populations • Numerical simulation of birth and death process • Hamilton-Jacobi PDE • Asymptotic-preserving numerical scheme

2017 Winter School on Deterministic and Stochastic models in Neuroscience — Toulouse, France
Mean field models • neural field equations • numerical methods • kinetic models of neuronal networks

Talks

Conferences

Aug. 2019 Conference on Stochastic Analysis and Applications **(invited)** — Risør, Norway
Statistical testing of the covariance matrix rank in multidimensional neuronal models

June 2019 Dynstoch 2019 — Delft, Netherlands
Statistical testing of the covariance matrix rank in multidimensional neuronal models

June 2019 51èmes Journées de Statistique — Nancy, France
Statistical testing of the covariance matrix rank in multidimensional neuronal models

Sept. 2018 Stochastic Equations, Limit Theorems and Statistics of Stochastic Processes — Kiev, Ukraine
Statistical challenges in Neuroscience

June 2018 DynStoch 2018 — Porto, Portugal
Parametric inference for multidimensional hypoelliptic diffusion

May 2018 50èmes Journées de Statistique — Paris Saclay, France
Parametric inference for multidimensional hypoelliptic diffusion

Seminars & Working groups:

April 2019 Seminar du departement DATA — Grenoble, France
Statistical testing of the covariance matrix rank in multidimensional neuronal models

Nov. 2018 Demi-journée des doctorants — Grenoble, France
Parametric inference for multidimensional hypoelliptic diffusion

Nov. 2018 Groupe de Travail Math-Bio — Grenoble, France
Horizontal Gene Transfer: numerical comparison between stochastic and deterministic approach

Teaching

2018-2019	*Méthodes statistiques pour la biologie*	L3 in UFR IM2AG	36h, TP
2018-2019	*Statistique et Probabilité Inférentielles*	L2 in UFR Science et Économie	20h, TD

Various organizational activities

March 2019 *Congrès MATh.en.JEANS 2019* — Grenoble, France
Member of local organizing committee

Publications

1. V. Calvez, S.F. Iglesias, H. Hivert, S. Méléard, A. Melnykova, S. Nordmann (2018) "Horizontal gene transfer: numerical comparison between stochastic and deterministic approaches" (submitted to "ESAIM: Proceedings and Surveys")

2. A. Melnykova (2018) "Parametric inference for multidimensional hypoelliptic ergodic diffusion with full observations" (submitted, preprint available on ArXiV)