

Anna Melnykova

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Born on 28 February 1994 in Kiev, Ukraine.
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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.

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 Subject: Statistics for Neuroscience. Supervisors: Eva Löcherbach (Sorbonne Université), Adeline Samson (Université Grenoble Alpes)	Université de Cergy-Pontoise 
2016–2017	M.Sc. in Statistics Thesis: Parametric estimation techniques in hypoelliptic ergodic diffusions. Supervisor: Adeline Samson (Université Grenoble Alpes)	Université Grenoble Alpes 
2014–2016	M.Sc. in Mathematics Thesis: Asymptotic behaviour of solutions of SDEs. Supervisor: Oleg Klesov (NTUU "KPI")	National Technical University of Ukraine 
2015–2016	Exchange student in Financial Mathematics During my stay I was also employed by University of Ulm as a teacher assistant (" <i>Studentische Hilfskraft</i> ") at the undergraduate course " <i>Höhere Mathematik I für Physiker</i> ".	University of Ulm 

Scholarships & Grants

2019	"Research in Pairs" grant from Oberwolfach research center <i>Jointly with Irene Tubikanec (JKU Linz, Austria)</i>	
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 Academical Excellence 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 Markov processes • Coupling Methods • Functional Inequalities • Gibbs sampling • Quasi-Stationary Distributions	Angers, France
2018	Health Data Challenge Matrix factorization • deconvolution methods • tumor heterogeneity in cancer research	Aussois, France
2018	CEMRACS 2018 (summer school + 5 weeks research session) Horizontal gene transfer in bacteria populations • Numerical simulation of birth and death process • Hamilton-Jacobi PDE • Asymptotic-preserving numerical scheme	Luminy, France
2017	Winter School on Deterministic and Stochastic models in Neuroscience Mean field models • neural field equations • numerical methods • kinetic models of neuronal networks	Toulouse, France

Talks

Conferences

Aug. 2019	Conference on Stochastic Analysis and Applications (invited) <i>Statistical testing of the covariance matrix rank in multidimensional neuronal models</i>	Risør, Norway
June 2019	DynStoch 2019 <i>Statistical testing of the covariance matrix rank in multidimensional neuronal models</i>	Delft, Netherlands
June 2019	51èmes Journées de Statistique <i>Statistical testing of the covariance matrix rank in multidimensional neuronal models</i>	Nancy, France
Sept. 2018	Stochastic Equations, Limit Theorems and Statistics of Stochastic Processes <i>Statistical challenges in Neuroscience</i>	Kiev, Ukraine
June 2018	DynStoch 2018 <i>Parametric inference for multidimensional hypoelliptic diffusion</i>	Porto, Portugal
May 2018	50èmes Journées de Statistique <i>Parametric inference for multidimensional hypoelliptic diffusion</i>	Paris Saclay, France

Seminars & Working groups:

Nov. 2019	Demi-journée des doctorants <i>Estimation in a multi-class system of interacting neurons</i>	Grenoble, France
Nov. 2019	Seminar of LJAD team <i>Concentration inequalities for a covariance rank estimation in multidimensional neuronal models</i>	Nice, France
Sept. 2019	Seminar of SAMM team, Sorbonne Université <i>Parameter estimation in hypoelliptic ergodic diffusion with full observations</i>	Paris, France
April 2019	Seminaire du departement DATA <i>Statistical testing of the covariance matrix rank in multidimensional neuronal models</i>	Grenoble, France
Nov. 2018	Demi-journée des doctorants <i>Parametric inference for multidimensional hypoelliptic diffusion</i>	Grenoble, France
Nov. 2018	Groupe de Travail Math-Bio <i>Horizontal Gene Transfer: numerical comparison between stochastic and deterministic approach</i>	Grenoble, France

Various:

March-May 2019	2 lectures at Probability Reading Group 1st: <i>Construction of the Lebesgue Integral</i> 2d: <i>Ergodicity for dynamical systems</i>	LJK, Grenoble
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Scientific stays

Jan. 2020	2 weeks stay to work with Irene Tubikanec	Oberwolfach, Germany
Oct. 2019	2 weeks stay to work with Susanne Ditlevsen	Copenhagen, Denmark
2019	Several short stays to work with Patricia Reynaud-Bouret	Nice, France

Teaching

2018-2020	<i>Méthodes statistiques pour la biologie</i>	L3 in UFR IM2AG	36h/an, TP
2018-2019	<i>Statistique et Probabilité Inférentielles</i>	L2 in UFR Science et Économie	20h, TD

Various organizational activities

2019	<i>Congrès MATH.en.JEANS 2019</i> Member of local [volunteering] organizing committee	Grenoble, France
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Publications

Accepted:

2019	V. Calvez, S.F. Iglesias, H. Hivert, S. Méléard, A. Melnykova, S. Nordmann "Horizontal gene transfer: numerical comparison between stochastic and deterministic approaches" (to appear in "ESAIM: Proceedings and Surveys")
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Submitted:

2019	A. Melnykova "Parametric inference for multidimensional hypoelliptic ergodic diffusion with full observations"
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In preparation:

2019	A. Melnykova, P. Reynaud-Bouret, A. Samson "Concentration inequalities for an estimator of covariance matrix rank in neuronal models"
2020	J. Chevallier, A. Melnykova, I. Tubikanec "The construction of numerical splitting schemes for the hypoelliptic diffusion arising as a limit of Hawkes processes with Erlang kernels."
2020	S. Ditlevsen, A. Melnykova, A. Samson "Estimation in a multi-class systems of interacting neurons"