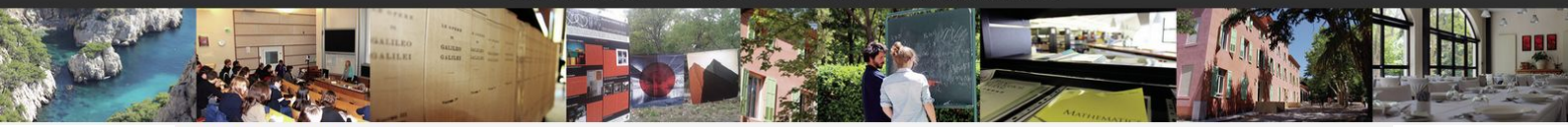


MULTIYEAR PROGRAM

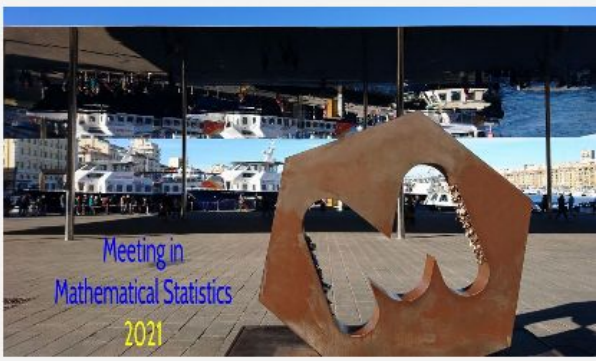
CONFERENCE

Meeting in Mathematical Statistics / *Rencontres de Statistique Mathématique*
Machine learning and nonparametric statistics

13 - 17 December 2021

Scientific Committee & Organizing Committee
Comité scientifique & Comité d'organisation

Cristina Butucea (Université Paris-Est Marne-la-Vallée)
Stanislav Minsker (University of Southern California)
Christophe Pouet (École Centrale de Marseille)
Vladimir Spokoiny (Humboldt University of Berlin)



Description

Contemporary machine learning algorithms define the state of the art in diverse areas (computer vision, robotics and speech recognition, to name a few), bu in many cases theoretical justification behind the success of these methods is still missing. Mathematical results, in particular statistical and probabilisti properties, are being actively developed, but many challenges still remain. Deep learning and generative models are particular examples of the areas wit significant gaps between the engineering success and theoretical understanding. To fill this gap, tools from diverse areas such as nonparametric statistics approximation theory, empirical process theory and computational efficiency are needed.

This conference aims at establishing new fruitful collaborations among the experts in nonparametric statistics and theoretical computer science. Expecte outcome of such collaborations are new developments in the theory of machine learning, including the topics such as deep learning, robustness, privacy an estimation under fairness constraints.

Lectures

Peter Bartlett (UC Berkeley) *Benign overfitting and adversarial examples (abstract)*
Gabor Lugosi (Pompeu Fabra University, Barcelona) *Network archeology: a few results and questions (abstract)*

Talks

Arya Akhavan (Iit - Ensae) *Distributed Zero-Order Optimization under Adversarial Noise*
Randolf Altmeyer (University of Cambridge) *Statistical and computational guarantees for sampling from high dimensional posterior distributions*
Denis Belomestny (University Of Duisburg) *Rates of convergence for density estimation with generative adversarial networks*
Annika Betken (University Of Twente) *Combining rank statistics and subsampling for a solution to the change-point problem in time series analysis*
Gilles Blanchard (Université Paris-Saclay) *Fast rates for prediction with limited expert advice*
Timothy Cannings (University Of Edinburgh) *Adoptive Transfer Learning*
Arnak Dalalyan (Crest-Ensae) *Statistical guarantees for generative models*
Farida Enikeeva (Université De Poitiers) *Change-Point Detection in Dynamic Networks with Missing Links*
Subhodh Kotekal (University Of Chicago) *Minimax rates for sparse signal detection under correlation*
Matthias Löffler (Eth Zürich) *AdaBoost and robust one-bit compressed sensing*
Béatrice Laurent-Bonneau (Insa De Toulouse) *Aggregated tests of independence based on HSIC measures*
Tengyuan Liang (University Of Chicago) *Universal Prediction Band, Semi-Definite Programming and Variance Interpolation*
Arshak Minasyan (Crest-Ensae) *All-In-One Robust Estimator of the Gaussian Mean*
Mohamed Ndaoud (Essec) *Minimax Supervised Clustering in the Anisotropic Gaussian Mixture Model: A new take on Robust Interpolation*
Vianney Perchet (Ensae & Criteo AI Lab) *Active learning and/or online sign identification*
Kolyan Ray (Imperial College London) *Bayesian inference for multi-dimensional diffusions*
Markus Reiß (Humboldt University Berlin) *Inference on the maximal rank of time-varying covariance matrices using high-frequency data*
Lionel Riou-Durand (University Of Warwick) *Metropolis Adjusted Underdamped Langevin Trajectories*
Etienne Roquain (Sorbonne Université) *Some transition boundaries for multiple testing with unknown null distribution*
Richard Samworth (University Of Cambridge) *Optimal subgroup selection*
George Stepaniants (Massachusetts Institute Of Technology Learning) *Partial Differential Equations in Reproducing Kernel Hilbert Spaces*
Botond Tibor Szabo (Bocconi University) *Optimal distributed testing under communication constraints in high-dimensional and nonparametric Gaussion white noise model*
Mathias Trabs (Karlsruhe Institute Of Technology) *Dispersal density estimation across scales*
Nikita Zhivotovskiy (Eth) *Stability and Generalization: Some recent results*

Rencontres de statistique mathématique
Meeting in Mathematical Statistics
14-18 December, 2020

Monday		**14 December 2020**
12:45 - 13:15		VIDEOS OF THE DAY *(Event Video)*
13:45 - 14:00	●	Start of the session
14:00 - 15:00		Adaptive rates for trend filltering using dual certificates (Lecture 1) *Sara Van De Geer (Event Video) (Abstract) (Slide)*
15:00 - 15:15	●	Break
15:15 - 15:55	●	Adaptive transfer learning *Richard Samworth (Abstract)* *Chair: Guillaume Lecué*
15:55 - 16:35	●	Statistical Inference in Popularity Adjusted Stochastic Block Model. *Marianna Pensky (Abstract) (Slide)* *Chair: Guillaume Lecué*
16:35 - 17:15	●	High-dimensional classification by sparse logistic regression *Felix Abramovich (Abstract) (Slide)* *Chair: Guillaume Lecué*
17:15 - 17:30	●	Break
17:30 - 18:10	●	Density estimation on manifolds *Clément Berenfeld (Abstract) (Slide)* *Chair: Olga Klopp*
18:10 - 18:50	●	Robust and efficient mean estimation: approach based on the properties of self-normalized sums *Mohamed Ndaoud (Abstract) (Slide)* *Chair: Olga Klopp*
Tuesday		**15 December 2020**
12:45 - 13:15		VIDEOS OF THE DAY *(Event Video)*
13:55 - 14:00	●	Start of the session
14:00 - 15:00		Statistical Optimality and Algorithms for Top-K and Total Ranking (Lecture 1) *Chao Gao (Event Video) (Abstract)* *Chair: Vladimir Spokoiny*
15:00 - 15:15	●	Break
15:15 - 15:55	●	Optimal Change-Point Detection and Localization *Nicolas Verzelen (Abstract) (Slide)* *Chair: Alexandre Tsybakov*
15:55 - 16:35	●	Several structured thresholding bandit problem *Alexandra Carpentier (Abstract) (Slide)* *Chair: Alexandre Tsybakov*
16:35 - 17:15	●	On the connections and equivalences between Gaussian processes and kernel methods in nonparametric regression *Motonobu Kanagawa (Abstract) (Slide)* *Chair: Alexandre Tsybakov*
17:15 - 17:30	●	Break
17:30 - 18:10	●	Robustness of Community Detection to Random Geometric Perturbations *Vianney Perchet (Abstract) (Slide)* *Chair: Randolf Altmeyer*
18:10 - 18:50	●	Kernel Machines with Hard Shape Constraints *Zoltan Szabo (Abstract) (Slide)* *Chair: Randolf Altmeyer*
Wednesday		**16 December 2020**
12:45 - 13:15		VIDEOS OF THE DAY *(Event Video)*
13:25 - 13:30	●	Start of the session
13:30 - 14:10	●	Nonparametric estimation for i.i.d. Gaussian continuous time moving average models *Fabienne Comte (Abstract) (Slide)* *Chair: Pierre Alquier*
14:10 - 14:50	●	Bernstein-von Mises theorem for the scale hyperparameter in inverse problems with a Gaussian prior *Natalia Bochkina (Abstract) (Slide)* *Chair: Pierre Alquier*
14:50 - 15:30	●	Nonparametric Bayesian inference for Hawkes processes *Vincent Rivoirard (Abstract) (Slide)* *Chair: Pierre Alquier*
15:30 - 15:45	●	Break
15:45 - 16:25	●	Robust k-means clustering for distributions with two bounded moments *Nikita Zhivotovskiy (Abstract) (Slide)* *Chair: Marc Hoffmann*
16:25 - 17:05	●	Interactive versus non-interactive locally, differentially private estimation: Two elbows for the quadratic functional *Angelika Rohde (Abstract) (Slide)* *Chair: Marc Hoffmann*
17:05 - 17:45	●	SuperMix: Sparse regularization for mixtures *Clément Marteau (Abstract) (Slide)* *Chair: Marc Hoffmann*
17:45 - 18:25	●	Penalized Langevin dynamics with vanishing penalty for smooth and log-concave targets *Avetik Karagulyan (Abstract) (Slide)* *Chair: Marc Hoffmann*

Thursday		17 December 2020
12:45 - 13:15	VIDEOS OF THE DAY *(Event Video)*	
13:55 - 14:00	Start of the session	
14:00 - 15:00	Adaptive rates for trend filltering using dual certificates (Lecture 2) *Sara Van De Geer (Event Video) (Abstract)*	
15:00 - 15:15	Break	
15:15 - 15:55	Out-of-sample error estimate for robust M-estimators with convex penalty *Pierre Bellec (Abstract)* *Chair: Rui M. Castro*	
15:55 - 16:35	Goodness-of-fit testing for multinomials and densities: sharp local minimax rates *Julien Chhor (Abstract)* *Chair: Rui M. Castro*	
16:35 - 17:15	Locally private non-asymptotic testing of distributions is faster using interactive mechanisms *Tom Berrett (Abstract)* *Chair: Rui M. Castro*	
17:15 - 17:30	Break	
17:30 - 18:10	On lower bounds for the bias-variance trade-off *Alexis Derumigny (Abstract)* *Chair: Joseph Salmon*	
18:10 - 18:50	Minimax Coreset Density Estimation *Philippe Rigollet (Abstract)* *Chair: Joseph Salmon*	
Friday		**18 December 2020**
12:45 - 13:15	VIDEOS OF THE DAY *(Event Video)*	
13:55 - 14:00	Start of the session	
14:00 - 15:00	Statistical Optimality and Algorithms for Top-K and Total Ranking (Lecture 2) *Chao Gao (Event Video) (Abstract)* *Chair: Vladimir Spokoiny*	
15:00 - 15:15	Break	
15:15 - 15:55	Improved clustering algorithms for the Bipartite Stochastic Block Model *Suzanne Sigalla (Abstract) (Slide)* *Chair: Victor-Emmanuel Brunel*	
15:55 - 16:35	Phase transition and UQ in variable selection and multiple testing *Eduard Belitser (Abstract)* *Chair: Victor-Emmanuel Brunel*	
16:35 - 17:15	The Kolmogorov-Arnold theorem revisited *Johannes Schmidt-hieber (Abstract) (Slide)* *Chair: Victor-Emmanuel Brunel*	

https://www.cirm-math.fr/Schedule/screen_display.php?id_renc=2536

Rencontres de statistique mathématique
Meeting in Mathematical Statistics
16-20 December, 2019

	Mon 16/12	Tue 17/12	Wed 18/12	Thu 19/12	Fri 20/12
09:00	9:00 - 10:00 Wide two-layers neural networks : Lecture 1 Andrea Montanari	9:00 - 10:00 Wide two-layers neural networks : Lecture 2 Andrea Montanari	9:00 - 10:00 On Clustering bounds : Lecture 1 Nicolas Verzelen	9:00 - 10:00 On Clustering bounds : Lecture 2 Nicolas Verzelen	9:15 - 10:00 Optimal separation rates for independence testing via permutation tests Tom Berrett
10:00	10:00 - 10:30 Coffee Break	10:00 - 10:30 Coffee Break	10:00 - Coffee Break	10:00 - 10:30 Coffee Break	10:00 - 10:30 Coffee Break
	10:30 - 11:15 Local asymptotic normality for quantum stochastic processes Madalin Guta	10:30 - 11:15 Statistical vignettes from the front lines of quantum computing: measuring the performance of quantum computers	10:15 - 11:00 Nonparametric drift estimation for i.i.d. paths of stochastic differential equations Fabienne Comte	10:30 - 11:15 Bayesian inference for nonlinear inverse problems Vladimir Spokoiny	10:30 - 11:15 Statistical inference and PDE$\hat{\theta}$s: some results in interacting Mc-Kean-Vlasov particle systems Marc Hoffmann
11:00	11:15 - 12:00 Sharp and adaptive minimax nonparametric estimation of pure quantum states Samriddha Lahiry	11:15 - 12:00 Compatibility of quantum measurements: some simple necessary criteria Ion Nechita	11:00 - 11:45 Signal detection lower bounds for time-varying covariance matrices Markus Reiß	11:15 - 12:00 Variance reduction for dependent sequences with application to MCMC Alexey Naumov	11:15 - 12:15 Early stopping for kernelized spectral filter algorithms Martin Wahl
12:00			11:45 - 12:30 Projected least squares: a numerically cheap quantum tomography procedure with optimal error bounds		
	12:30 - 14:00 Lunch	12:30 - 14:00 Lunch	12:30 - 14:00 Lunch	12:30 - 14:00 Lunch	12:30 - 14:00 Lunch
13:00					
14:00			14:00 - 19:30 Free afternoon		
15:00					
16:00	16:00 - 16:45 Bernstein-von Mises theorem in Semi-Parametric Bayesian non-regular mixture model Natalia Bochkina	16:00 - 16:45 Robust subgaussian estimation of a mean vector in nearly linear time Guillaume Lecué		16:00 - 16:45 Structure-adaptive manifold estimation Nikita Puchkin	
17:00	16:45 - 17:30 Huber loss leads to minimax rate optimal robust estimation Arnak Dalalyan	16:45 - 17:30 Quantifying uncertainty in variable selection and multiple testing Eduard Belitser		16:45 - 17:30 Manifold clustering Franz Besold	
	17:30 - Coffee Break	17:30 - Coffee Break		17:30 - Coffee Break	
18:00	17:45 - 18:30 Sample complexity and the central limit theorem for entropic optimal transport Jonathan Niles-weed	17:45 - 18:30 On the necessity of degrees-of-freedom adjustment for confidence intervals from debiasing procedures		17:45 - 18:30 A Generalization Bound for Online Variational Inference Pierre Alquier	
	18:30 - 19:15 Statistical Optimal Transport Alexandra Suvorikova	18:30 - 19:15 Testing for planted communities in inhomogeneous random graphs Rui M. Castro		18:30 - 19:15 Scaled minimax optimality in high-dimensional linear regression: A non-convex algorithmic regularization approach	
19:00					

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Rencontres de statistique mathématique
Meeting in Mathematical Statistics
16-20 December, 2019

	Mon 16/12	Tue 17/12	Wed 18/12	Thu 19/12	Fri 20/12
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