

# Foreword

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Since 1996, the so-called *Journées MAS* constitute the main event organized by the MAS group of the SMAI, which is dedicated to *Random and Statistical Modeling (Modélisation aléatoire et statistique)*. Every two years, this conference aims at gathering a large number of French probabilists and statisticians for 3 days devoted to a rich and varied selection of lectures. The 2018 edition took place in Dijon from 29 to 31 August 2018.

The main topic of the meeting was *Sampling and Processes*. Six plenary talks related to that topic were given by Jérémie Bigot, Djalil Chafaï, Fabienne Comte, Benjamin Jourdain, Victor Panaretos and Françoise Pène. They covered a wide range of views in statistics or/and in probability and highlighted significant achievements both on the theoretical and applied sides. The plenary schedule was completed by the two presentations given by Anna Ben-Hamou and Aran Raoufi, the recipients of the Neveu PhD Prize in 2016 and 2017 respectively. Finally, the conference offered twenty parallel sessions which showcased the recent advances on a series of timely areas in statistics or in probability and even at the interface of the two. Each of these sessions included a longer talk designed to introduce the main subject to a wide audience, at least one application-oriented talk and one talk given by a young researcher.

This issue proposes to revisit some of the outstanding talks that were given during the *Journées MAS 2018*. It should be considered as a snapshot, necessarily incomplete, of the current state of research activity in the French stochastic community.

Among the plenary speakers, Jérémie Bigot offers a beautiful introduction to the use of Wasserstein distances and optimal transport concepts in statistics, Fabienne Comte solves major questions related to the nonparametric estimation of the drift of a diffusion and Françoise Pène proposes an impressive overview on the theory of random walks in random sceneries. Additionally, the contributions of 4 parallel sessions are included : the chapter after the session on *Dynamics of interacting particle systems* mixes exclusion models in dimension one (facilitated exclusion process, weakly asymmetric simple exclusion processes) with kinetically constrained models on a grid (Duarte model, FA-1f model). The session on *Limit theorems* is summarized in a chapter which deals with several techniques (Stein's method, Hammond-Sheffield's model, subadditivity) and applications (Poissonian functionals, correlated random walks and random fields, random growth models). The contribution due to the speakers of the session on *Change-point detection and segmentation* emphasizes several topics including multiple change-point estimation with adaptive penalties, cross-segmentation of matrices, estimation of the singularity point in cusp-type models and inference for thresholded autoregressive models. Finally, the session on *Stochastic processes and biology* is represented by one original contribution devoted

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to scaling limits of individual-based models for demographic dynamics with natural selection.

To conclude this short introduction, we would like to warmly thank the scientific committee, the organizing committee, the MAS committee, Djaliil Chafaï and the team at ESAIM Proc, as well as all the authors of this volume and all the speakers of the Journées MAS 2018 for their contribution to the success of this important scientific event in the French probability and statistics community.

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