

FOREWORD



Nicu Boboc in 2012, at a conference in Pitești

This issue of the journal represents the Nicu Boboc memorial volume. It is the proceedings of the conference "Analyse stochastique et thèmes connexes", which was held in Bucharest, Romania, from May 6 to 9, 2019. The meeting was organized by the Simion Stoilow Institute of Mathematics of the Romanian Academy and the Faculty of Mathematics and Informatics of the University of Bucharest, in the frame of the Centre Francophone de Mathématiques de Bucarest. The conference was dedicated to the memory of Nicu Boboc and it was attended by many of his friends, former students, collaborators and colleagues.

The volume contains research papers by Boboc's colleagues and friends, prominent researchers in the field, several articles of colleagues which were unable to participate have been added. We thank them all for their contribution to the success of this volume. We added two rather historical articles about Nicu Boboc, written sixteen years ago by distinguished Romanian mathematicians, teachers of him: Cabiria Andreian Cazacu and Solomon Marcus.

Topics include: convolution and Riesz capacities, 3-D stochastic vorticity equations; the heat equation for the Dirichlet fractional Laplacian; fundamental solution of the generators of translation invariant Dirichlet forms; elliptic equations and solutions to the Kolmogorov equation; homogenization of symmetric jump processes on $\mathbb{R}^d$ and in random media; nonlinear transport equations; harmonic functions and potential kernels; stochastic evolution equations; perturbations of nonhomogeneous eigenvalue problems; Wasserstein distance for heat semigroups of diffusion processes on Riemannian manifolds; stochastic wave equation with fractional Gaussian random noise. We also refer to the list of the twenty one delivered talks at the conference, right after this introduction.

Nicu Boboc had deep contributions to the field of Potential Theory and for four decades he was the leader of the Romanian group working in this field, in particular, he was for fifty years one of the organizers of the Potential Theory Seminar in Bucharest. Boboc published forty-eight articles in this journal and many of them had an important impact. He also served for many years as a member of the editorial board of the journal. Actually, in the sixth decade of the last century it became a tradition to publish significant papers in Potential Theory in this journal. Information on the scientific activity of Nicu Boboc are included in the first article of this issue, which presents the work and life of Nicu Boboc and it is completed with the list of his PhD students. The list of scientific publications of Nicu Boboc may be found in the article [J. Veselý, Life and work of Nicu Boboc, *Revue Roumaine Math. Pures Appl.* **59** (2014), 3–16], published in a volume dedicated to him, on the occasion of his 80th birthday.

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The Editors: Lucian Beznea, Ionel Popescu, and Michael Röckner

Analyse stochastique et thèmes connexes

Bucharest, Romania, May 6-9, 2019

List of talks

Vlad Bally (Paris): *Upper bounds for the function solution of the homogeneous 2D Boltzmann equation with hard potential*

Krzysztof Bogdan (Wrocław): *Semilinear Dirichlet problem for the fractional Laplacian*

Gheorghe Bucur (Bucharest): *Nicu Boboc, the mathematician*

Zhen-Qing Chen (Seattle): *Stability of heat kernel estimates and parabolic Harnack inequalities for symmetric Dirichlet forms*

Iulian Cîmpean (Bucharest): *A natural extension of Markov processes and applications to singular SDEs*

Dan Crisan (London): *Long time asymptotics for diffusion semigroups gradient bounds*

Madalina Deaconu (Nancy): *Hitting times and strong convergence of some particular one-dimensional diffusions*

Jean-Stéphane Dhersin (Paris): *Cost functionals for large random trees*

Stephen Gardiner (Dublin): *Inequalities for the analytic content, and the Bergman analytic content, of domains in Euclidean space*

Martin Grothaus (Kaiserslautern): *On the stochastic heat equation with sticky reflected boundary condition*

Wolfhard Hansen (Bielefeld): *Nearly hyperharmonic functions are infima of excessive functions*

Elton P. Hsu (Evanston): *From geodesic flow to Riemannian Brownian motion*

Moritz Kassmann (Bielefeld): *Heat kernel bounds for Markov processes corresponding to symmetric nonlocal Dirichlet forms with singular measures*

Oana Lupaşcu-Stamate (Bucharest): *Rosenblatt Laplace motion*

Sylvie Méléard (Paris): *Time scales for large populations birth and death processes - quasi stationary distributions and resilience*

Vicențiu Rădulescu (Craiova): *Nonlinear problems with unbalanced growth: isotropic and anisotropic models*

- Max von Renesse** (Leipzig): *Dean-Kawasaki Dynamics: Particle-ular solutions for an ill posed SPDE*
- Michael Röckner** (Bielefeld): *Nonlinear Fokker-Planck-Kolmogorov equations and stochastic distribution dependent SDE*
- Karl-Theodor Sturm** (Bonn): *Beyond metric measure spaces with uniform lower Ricci bounds – gradient estimates for Neumann Laplacians on locally semi-convex domains*
- Denis Talay** (Nice): *Sensitivity analysis of stochastic differential equations w.r.t. the Hurst parameter of the driving fractional Brownian motion*
- Anton Thalmaier** (Luxembourg): *Characterizing curvature by functional inequalities in Riemannian and sub-Riemannian geometry*
- Bálint Tóth** (Bristol & Budapest): *Invariance principle for the random Lorentz Gas – beyond the Boltzmann-Grad limit*
- Gerald Trutnau** (Seoul): *Existence, uniqueness and ergodic properties for time-homogeneous Itô-SDEs with non-smooth coefficients*
- Ciprian Tudor** (Lille): *Asymptotic expansion on Wiener space*