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## Trends in Stochastic Analysis



Festschrift in Honour of Heinrich von Weizsäcker

Edited by

JOCHEN BLATH, PETER MÖRTERS AND  
MICHAEL SCHEUTZOW



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## Preface

This collection of papers on stochastic analysis is dedicated to Professor Heinrich von Weizsäcker on the occasion of his 60th birthday. The papers, written by a group of his students, coauthors, friends and colleagues, capture various important trends in the field, providing overviews of recent developments and often new results. They also give a hint of many of Heinrich's interests, and the profound influence he has, both within the field and on his collaborators. All papers have been peer-reviewed.

Heinrich von Weizsäcker began his research in mathematics as a graduate student in the early seventies. At the time, his focus was on real analysis and measure theory. He obtained his Doctorate at the Ludwig-Maximilian-Universität München in 1973 under the supervision of Professor Hans Richter, for a thesis entitled 'Vektorverbände und meßbare Funktionen' (Vector lattices and measurable functions). In 1977 he defended his habilitation with a thesis entitled 'Einige maßtheoretische Formen der Sätze von Krein-Milman und Choquet' (Some measure theoretic variants of the theorems of Krein-Milman and Choquet) and after brief spells at the universities of Regensburg and Marburg, he moved to a chair at Universität Kaiserslautern.

In Kaiserslautern he built a strong research group, focusing more and more on stochastic analysis. He supervised a total of 11 PhDs and two habilitations; six of his former students remain in academia today. His current PhD students are Richard Kiefer, Martin Kolb and Yang Zou.

On the occasion of his 60th birthday, in April 2007, many of his former students, collaborators and friends met for an international conference on Real and Stochastic Analysis at the University of Kaiserslautern. Some of the contributions to this volume were inspired by presentations given at this conference, but most of them are specially written survey papers, chosen to reflect some of the important modern trends in stochastic analysis and neighbouring fields.

We hope that this book is not only a valuable guide to some modern trends in stochastic analysis for the research community, but also a showcase for the diversity of research activities in which Heinrich's former students and colleagues indulge. As such it is the best evidence of the lasting mathematical and personal influence of Heinrich von Weizsäcker.

Jochen Blath  
Peter Mörters  
Michael Scheutzow



## Heinrich von Weizsäcker's students

### Doctorates

- 1983 W. Krüger  
*Approximation von Integraldarstellungen und verwandte Fragen.*
- 1983 M. Scheutzow  
*Qualitatives Verhalten der Lösungen von eindimensionalen nicht-linearen stochastischen Differentialgleichungen mit Gedächtnis.*
- 1990 D. Zimmermann  
*Über die Integraldarstellung stochastischer Felder unter Verwendung von Methoden der nonstandard-Analysis.*
- 1992 J. Krob  
*Kapazität statistischer Experimente.*
- 1995 W. Doster  
*Zur Berechnung des Hausdorffmaßes von Familien von Wahrscheinlichkeitsmaßen.*
- 1997 P. Scheffel  
*Exponential Risk Rates in Discrete Markov Models.*
- 1998 H. Scholl  
*Optimal Prior Distributions for Statistical Experiments.*
- 2002 J. Blath  
*Refined Multifractal Analysis of Super-Brownian Motion: the Dimension Spectrum of Thick Points.*
- 2003 N. Sidorova  
*Surface Measures on Paths in an Embedded Riemannian Manifold.*
- 2004 M.-F. Ong  
*Die Feynman-Kac-Formel für unbeschränkte Potentiale und allgemeine Anfangsbedingungen.*
- 2004 J. Voß  
*Some Large Deviation Results for Diffusion Processes.*

**Habilitations**

1988 M. Scheutzow

*Stationary and Periodic Stochastic Differential Systems: A Study of Qualitative Changes with Respect to the Noise Level and Asymptotics.*

2001 P. Mörters

*Contributions to Fractal Geometry and Stochastic Processes.*

## Heinrich von Weizsäcker's publications

H.v. Weizsäcker. Zur Gleichwertigkeit zweier Arten der Randomisierung. *Manuscr. Math.*, 11:91–94, 1974.

H.v. Weizsäcker. Sublineare Abbildungen und ein Konvergenzsatz von Banach. *Math. Ann.*, 212:165–171, 1974.

H.v. Weizsäcker. Der Satz von Choquet-Bishop-de Leeuw für konvexe nicht kompakte Mengen straffer Maße über beliebigen Grundräumen. *Math. Z.*, 142:161–165, 1975.

H.v. Weizsäcker. Some negative results in the theory of liftings. In: *Measure Theory*. Springer Lecture Notes in Mathematics 541, 159–172, 1976.

S. Graf and H.v. Weizsäcker. On the existence of lower densities in noncomplete measure spaces. In: *Measure Theory*. Springer Lecture Notes in Mathematics 541, 155–158, 1976.

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