

Proceedings of Symposia in PURE MATHEMATICS

Volume 31

Probability

American Mathematical Society Symposium
University of Illinois
Urbana, Illinois
March, 1976

Joseph L. Doob
Editor



American Mathematical Society

Probability

Proceedings of Symposia in PURE MATHEMATICS

Volume 31

Probability

American Mathematical Society Symposium
University of Illinois
Urbana, Illinois
March, 1976

Joseph L. Doob
Editor



American Mathematical Society
Providence, Rhode Island

PROCEEDINGS OF THE SYMPOSIUM IN PURE MATHEMATICS
OF THE AMERICAN MATHEMATICAL SOCIETY

HELD AT THE UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN
URBANA, ILLINOIS
MARCH 1976

EDITED BY
JOSEPH L. DOOB

Prepared by the American Mathematical Society
with partial support from National Science Foundation contract no. 76-00261

2000 *Mathematics Subject Classification*. Primary 60-XX.

Library of Congress Cataloging in Publication Data



Symposium in Pure Mathematics, University of Illinois
at Urbana-Champaign, 1976.
Probability.

(Proceedings of symposia in pure mathematics ; v. 31)
Bibliography: p.

I. Probabilities—Congresses. I. Doob, Joseph L.
II. American Mathematical Society. III. Title.
IV. Series.

QA273.ALS96 1976 519.2 77-2017
ISBN 0-8218-1431-1

© Copyright 1977 by the American Mathematical Society.
Printed in the United States of America.

The American Mathematical Society retains all rights
except those granted to the United States Government.

∞ The paper used in this book is acid-free and falls within the guidelines
established to ensure permanence and durability.

Visit the AMS home page at URL: <http://www.ams.org/>

Copying and reprinting information can be found at the back of this volume

10 9 8 7 6 5 4 06 05 04 03 02 01

CONTENTS

Small random perturbations of dynamical systems with reflecting boundary... R. F. ANDERSON and STEVEN OREY	1
Brownian motion and classical analysis..... D. L. BURKHOLDER	5
A Liapunov principle for semimartingales..... HANS FÖLLMER	15
Applications of dual processes to diffusion theory..... R. HOLLEY, D. STROOCK and D. WILLIAMS	23
A general theorem of representation for martingales..... JEAN JACOD	37
Central limit theorem and related questions in Banach space..... NARESH C. JAIN	55
A renewal theorem for random walk in a random environment..... HARRY KESTEN	67
On prediction processes..... FRANK B. KNIGHT	79
A derivation of the Boltzmann equation from classical mechanics..... OSCAR E. LANFORD III	87
Random times and decomposition theorems..... P. WARWICK MILLAR	91
Stochastic stability and boundary problems..... MARK A. PINSKY	105
Some sample path properties of the asymmetric Cauchy processes..... WILLIAM E. PRUITT and S. JAMES TAYLOR	111
The Martin boundary of a recurrent random walk has one or two points..... D. REVUZ	125
The cofine topology revisited..... JOHN WALSH	131
Poisson point process of Brownian excursions and its applications to diffusion processes..... SHINZO WATANABE	153
Some Q -matrix problems..... DAVID WILLIAMS	165

Copying and reprinting. Material in this book may be reproduced by any means for educational and scientific purposes without fee or permission with the exception of reproduction by services that collect fees for delivery of documents and provided that the customary acknowledgment of the source is given. This consent does not extend to other kinds of copying for general distribution, for advertising or promotional purposes, or for resale. Requests for permission for commercial use of material should be addressed to the Assistant to the Publisher, American Mathematical Society, P. O. Box 6248, Providence, Rhode Island 02940-6248. Requests can also be made by e-mail to reprint-permission@ams.org.

Excluded from these provisions is material in articles for which the author holds copyright. In such cases, requests for permission to use or reprint should be addressed directly to the author(s). (Copyright ownership is indicated in the notice in the lower right-hand corner of the first page of each article.)

ISBN 0-8218-1431-1



9 780821 814314

PSPUM/31

AMS on the Web
www.ams.org