Random matrices arise from, and have important applications to, number theory, probability, combinatorics, representation theory, quantum mechanics, solid-state physics, quantum field theory, quantum gravity, and many other areas of physics and mathematics.

This volume of surveys and research results, based largely on lectures given at the Spring 1999 MSRI program of the same name, covers broad areas such as topologic and combinatorial aspects of random matrix theory; scaling limits, universalities, and phase transitions in matrix models; universalities for random polynomials; and applications to integrable systems. Its stress on the interaction between physics and mathematics will make it a welcome addition to the shelves of graduate students and researchers in both fields, as will its expository emphasis.

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Random Matrix Models and Their Applications

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CAMBRIDGE UNIVERSITY PRESS

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The Mathematical Sciences Research Institute wishes to acknowledge support by the National Science Foundation.

PUBLISHED BY THE PRESS SYNDICATE OF THE UNIVERSITY OF CAMBRIDGE
The Pitt Building, Trumpington Street, Cambridge, United Kingdom

CAMBRIDGE UNIVERSITY PRESS
The Edinburgh Building, Cambridge CB2 2RU, UK
40 West 20th Street, New York, NY 10011-4211, USA
10 Stamford Road, Oakleigh, Melbourne 3166, Australia
Ruiz de Alarcón 13, 28014 Madrid, Spain
Dock House, The Waterfront, Cape Town 8001, South Africa

http://www.cambridge.org

© Mathematical Sciences Research Institute 2001

Printed in the United States of America

A catalogue record for this book is available from the British Library.

Library of Congress Cataloging in Publication data:

Random matrix models and their applications / edited by Pavel M. Bleher, Alexander R. Its.
p. cm. (Mathematical Sciences Research Institute publications ; 40)
Includes bibliographical references and index.
ISBN 0-521-80209-1
1. Random matrices. I. Bleher, Pavel M. (Pavel Maximovich), 1947– II. Its, Alexander R. III. Series.

QA188.R34 2001
512.9′434–dc21 2001025395

ISBN 0 521 80209 1 hardback