

Mathematical Methods for Physicists

A concise introduction

This text is designed for an intermediate-level, two-semester undergraduate course in mathematical physics. It provides an accessible account of most of the current, important mathematical tools required in physics these days. It is assumed that the reader has an adequate preparation in general physics and calculus.

The book bridges the gap between an introductory physics course and more advanced courses in classical mechanics, electricity and magnetism, quantum mechanics, and thermal and statistical physics. The text contains a large number of worked examples to illustrate the mathematical techniques developed and to show their relevance to physics.

The book is designed primarily for undergraduate physics majors, but could also be used by students in other subjects, such as engineering, astronomy and mathematics.

TAI L. CHOW was born and raised in China. He received a BS degree in physics from the National Taiwan University, a Masters degree in physics from Case Western Reserve University, and a PhD in physics from the University of Rochester. Since 1969, Dr Chow has been in the Department of Physics at California State University, Stanislaus, and served as department chairman for 17 years, until 1992. He served as Visiting Professor of Physics at University of California (at Davis and Berkeley) during his sabbatical years. He also worked as Summer Faculty Research Fellow at Stanford University and at NASA. Dr Chow has published more than 35 articles in physics journals and is the author of two textbooks and a solutions manual.

Mathematical Methods for Physicists

A concise introduction

TAI L. CHOW

California State University



CAMBRIDGE UNIVERSITY PRESS
Cambridge, New York, Melbourne, Madrid, Cape Town, Singapore, São Paulo

Cambridge University Press
The Edinburgh Building, Cambridge CB2 2RU, UK

Published in the United States of America by Cambridge University Press, New York

www.cambridge.org
Information on this title: www.cambridge.org/9780521652278

© Cambridge University Press 2000

This publication is in copyright. Subject to statutory exception
and to the provisions of relevant collective licensing agreements,
no reproduction of any part may take place without
the written permission of Cambridge University Press.

First published 2000

A catalogue record for this publication is available from the British Library

Library of Congress Cataloguing in Publication data

Chow, Tai L.

Mathematical physics : mathematical methods for scientists and engineers / Tai L. Chow.
p. cm.

Includes bibliographical references and index.

ISBN 0-521-65227-8 (hc.) – ISBN 0-521-65544-7 (pbk.)

1. Mathematical physics. I. Title

QC20 .C57 2000

530.15 21–dc21 99–044592

ISBN-13 978-0-521-65227-8 hardback

ISBN-10 0-521-65227-8 hardback

ISBN-13 978-0-521-65544-6 paperback

ISBN-10 0-521-65544-7 paperback

Transferred to digital printing 2006