

Cambridge University Press
978-1-107-58635-2 - Elementary Quantum Mechanics
R. W. Gurney
Frontmatter
[More information](#)

ELEMENTARY QUANTUM MECHANICS

Cambridge University Press

978-1-107-58635-2 - Elementary Quantum Mechanics

R. W. Gurney

Frontmatter

[More information](#)

Cambridge University Press
978-1-107-58635-2 - Elementary Quantum Mechanics
R. W. Gurney
Frontmatter
[More information](#)

ELEMENTARY QUANTUM MECHANICS

BY

R. W. GURNEY, M.A., PH.D.

Research Associate in the University of Bristol

CAMBRIDGE
AT THE UNIVERSITY PRESS
1934

Cambridge University Press
978-1-107-58635-2 - Elementary Quantum Mechanics
R. W. Gurney
Frontmatter
[More information](#)

CAMBRIDGE
UNIVERSITY PRESS

University Printing House, Cambridge CB2 8BS, United Kingdom

Cambridge University Press is part of the University of Cambridge.

It furthers the University's mission by disseminating knowledge in the pursuit of education, learning and research at the highest international levels of excellence.

www.cambridge.org

Information on this title: www.cambridge.org/9781107586352

© Cambridge University Press 1934

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 1934

First paperback edition 2015

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

ISBN 978-1-107-58635-2 Paperback

Cambridge University Press has no responsibility for the persistence or accuracy of URLs for external or third-party internet websites referred to in this publication, and does not guarantee that any content on such websites is, or will remain, accurate or appropriate.

CONTENTS

Preface	<i>page</i> vii
<i>Chap. I</i> Energy Diagrams	1
II The New Language of Physics and Chemistry	8
III The Wave Equation—The Hydrogen Atom— Magnetic Moment and Electron Spin—Simple Problems	16
IV The Uncertainty Principle—Systems con- taining many Particles—Electron Configura- tions and the Periodic Table—Metals	49
V The Movement of Particles	66
VI Two Interacting Particles—Diatomic Mole- cules	83
VII Independent Observable Quantities—Homo- nuclear Molecules—Valence Bonds	99
VIII Electrons in Crystals—Insulators and Con- ductors	112
IX Perturbation Theory—The Description of Physical Events	122
X The same continued	139
Mathematical Appendix	148
Table of Electron Configurations and First Ionisation Potentials	157
Subject Index	158
Name Index	160
 Plate (Fig. 10)	 <i>facing page</i> 14

Cambridge University Press

978-1-107-58635-2 - Elementary Quantum Mechanics

R. W. Gurney

Frontmatter

[More information](#)

Cambridge University Press
978-1-107-58635-2 - Elementary Quantum Mechanics
R. W. Gurney
Frontmatter
[More information](#)

PREFACE

The inclusion of sixty-seven diagrams in this book has enabled me to treat the problems of quantum mechanics by graphical methods. At the same time I have tried to present the principles in a form congenial to the experimentalist, keeping always in view the physical significance and actual numerical magnitudes of the various quantities. Two chapters have been devoted to the problems of valency and the properties of molecules. I have not discussed in any detail the scattering of electrons or the use of wave-packets, which have been treated in an elementary way in other text-books, for example in Mott's *Outline of Wave Mechanics*.

My thanks are due to the editors of the *Physical Review* and to Professor H. E. Whyte for the loan of the block from which fig. 10 is printed.

I wish to express my gratitude to Professor N. F. Mott both for criticising the book in manuscript and for assistance in proof reading.

R. W. G.

BRISTOL, 1934