

CONTENTS

Volume 1

Foreword

D. KLEPPNER

Experiments with Atomic Hydrogen

Introduction	5
A Thumbnail History of Hydrogen	6
The Bohr Theory	10
The Hydrogen Fine Structure, I: Early Work and the Lamb-Retherford Experiment	13
The Hydrogen Fine Structure, II: Recent Developments	33
The Hydrogen Fine Structure, III: Related Topics	47
The Hyperfine Separation of Hydrogen	63
The Hydrogen Maser	68

S. J. BRODSKY

Quantum Electrodynamics and the Theory of the Hydrogen Atom

Introduction	95
The Free Lepton	96
The Hydrogen Atom	105
The Relativistic Atom	118
The Atom in an External Field	127

The Lamb Shift	136
The Hyperfine Splitting of the Ground State of Hydrogen	156
Other Hydrogen-Like Systems	162

P. G. H. SANDARS

Graphical Methods in Angular Momentum Theory

Introduction	175
Basic Angular Momentum Theory	176
Diagrams	181
The Theorems of Yutsis, Levinson, and Vanagas	188
Diagrams with no Free Lines	193
Applications	204

CONTENTS

Volume 2

W. R. BENNETT, Jr.

Some Aspects of the Physics of Gas Lasers

R. NOVICK

Experimental X-Ray Astronomy

A. DALGARNO

Atomic Processes in Astrophysics