

CONTENTS

I. SPECTROSCOPY AND COLLISION PHYSICS OF ATOMS IN D.C. FIELDS

A. MAGNETIC FIELDS

Laser Spectroscopy of the Diamagnetic Hydrogen Atom
in the Chaotic Regime 1
A. Holle, J. Main, G. Wiebusch, H. Rottke, and K. H. Welge

Strongly Magnetized Atoms - in the Laboratory and in
the Cosmos..... 9
G. Wunner, G. Zeller, U. Woelk, W. Schweizer, R. Niemeier,
F. Geyer, H. Friedrich, and H. Ruder.

Implications of New Evidence on Quasi-Landau Spectra for
a Unified Treatment of Collisions and Spectra.....37
U. Fano

Magnetic Rotation Spectroscopy with Synchrotrons and
with Lasers.....47
J. P. Connerade, W. R. S. Garton, J. Holmes, Ma-Hui,
Shen-Ning and T. A. Starakas

Photoabsorption and Photoionization of an Atom in a
Magnetic Field.....59
P. F. O'Mahony, M. A. Al-Laithy, and K. T. Taylor

Atomic Diamagnetism.....71
D. Wintgen and H. Friedrich

Oscillations in Absorption Spectra of Atoms in Magnetic Fields.....97
J. B. Delos and M. L. Du

Spectra of the Strongly Magnetized Hydrogen Atom Close
to the Ionization Threshold.....109
G. Zeller, U. Woelk, G. Wunner and H. Ruder

Accurate Eigenergies for the Magnetized Hydrogen Atom.....	115
P. C. Rech, M. R. Gallas and J. A. C. Gallas	
Liapunov Exponents for the Diamagnetic Kepler Problem and the Transition from Regular to Irregular Motion.....	121
W. Schweizer, H. Friedrich, G. Wunner, R. Niemier and H. Ruder	
Cross Section for Potential Scattering in the Presence of a Magnetic Feld and Limit for $B \rightarrow 0$	129
S. Nuzzo and M. Zarcone	
The Hydrogen Atom in a Strong Magnetic Field.....	135
A. Alijah, J. T. Broad, and J. Hinze	

B. ELECTRIC FIELDS

The Hydrogen Atoms in Strong Electric Fields.....	141
R. J. Damburg	
Quantum Beats in the Electric-Field Mixing of the $n=2$ States of Atomic Hydrogen.....	151
J. F. Williams, E. L. Heck and H. Slim	
Noble Gas Atoms in Strong DC Electric Fields.....	163
R. Ch. Ziegelbecker and L. Windholz	
An Atomic Interferometer.....	177
H. C. Bryant	
Effect of Polarizability of Alkali Dimers in Electron and Positron Scattering.....	187
N. Bhattacharya and D. N. Tripathi	

C. COMBINED ELECTRIC AND MAGNETIC FIELDS

Highly Excited Barium Rydberg Atoms in External Electric, Magnetic, and Combined Fields.....	193
H. Rinneberg, J. Neukammer, M. Kohl, A. König, V. Vietzke, H. Hieronymus and H.-J. Grabka	
Experimental Investigation and Analysis of Rydberg Atoms in the Presence of Parallel Magnetic and Electric Fields.....	215
J. Pinard, P. Cacciani, S. Liberman, E. Luc-Koenig and C. Thomas	
Negative Ion Photodetachment in a Static External Field.....	233
C. H. Greene	

Wavefunction Localization for the Hydrogen Atom in Parallel External Electric and Magnetic Fields.....	245
S. Bivona, P. F. O'Mahony and K. T. Taylor	
II. CHAOS IN ATOMS IN D.C. AND LOW-FREQUENCY FIELDS	
Some Aspects of Quantum Chaos.....	251
M. Robnik	
Quantum Chaos: Destruction and Scars of Symmetries.....	275
D. Delande and J.-C. Gay	
Stochastic Formulation of Energy Level Statistics: Application to the Hydrogen Atom in a Magnetic Field.....	297
H. Hasegawa	
Highly Excited Hydrogen Atoms in Strong Microwaves.....	315
J. E. Bayfield and D. W. Sokol	
Chaos in One-Dimensional Hydrogen.....	327
D. C. Humm and M. H. Nayfeh	
Two-Frequency Microwave Quenching of Highly Excited Hydrogen Atoms.....	343
L. Moorman, E. J. Galvez, K. A. H. van Leeuwen, B. E. Sauer, A. Mortazawi-M., G. von Oppen and P. M. Koch	
III. LASER-ATOM INTERACTION AT HIGH INTENSITIES	
Atoms in Intense Optical Fields: Pondermotive Forces and Above-Threshold Ionization.....	359
P. H. Bucksbaum	
Electron Energy Spectra in High Intensity Multiphoton Ionization.....	375
G. Petite and P. Agostini	
H ₂ in Intense Laser Radiation - Multiphoton Two Electron Direct Processes.....	393
M. H. Nayfeh, J. Mazumder and D. C. Humm	
Multiphoton Ionization of Atomic Hydrogen by Extra Photons.....	409
E. Karule	
Strong-Field Excitation of Continuum Resonances.....	417
Z. A. Melhem and P. L. Knight	

Low-Energy Radiative Scattering in a Laser Field.....	425
F. H. M. Faisal	
New Results on Multiphoton Free-Free Transitions.....	433
F. Trombetta, B. Piraux and G. Ferrante	
Multichannel Multiphoton Ionization of the Hydrogen	
Atom by a Chaotic Field: Role of Polarization	445
S. Basile, F. Trombetta and G. Ferrante	
Participants.....	451
Index.....	455