

Contents

Part I Applications of Laser Spectroscopy to Basic Physics

High Resolution Laser Spectroscopy of Atomic Hydrogen By T.W. Hänsch, R.G. Beausoleil, B. Couillaud, C. Foot, E.A. Hildum, and D.H. McIntyre (With 5 Figures)	2
Determination of the Rydberg Constant by Doppler-Free Two- Photon Spectroscopy of Hydrogen Rydberg States By L. Julien, J.C. Garreau, and F. Biraben (With 4 Figures)	8
Absolute Wavelength Measurements and Fundamental Atomic Physics. By P. Zhao, W. Lichten, H.P. Layer, and J.C. Bergquist (With 2 Figures)	12
Precision cw Laser Spectroscopy of Hydrogen and Deuterium By M.G. Boshier, P.E.G. Baird, C.J. Foot, E.A. Hinds, M.D. Plimmer, D.N. Stacey, J.B. Swan, D.A. Tate, D.M. Warrington, and G.K. Woodgate (With 3 Figures)	18
First Antiprotons in an Ion Trap. By G. Gabrielse, X. Fei, K. Helmerson, S.L. Rolston, R. Tjoelker, T.A. Trainor, H. Kalinowsky, J. Haas, and W. Kells (With 2 Figures)	22
Antihydrogen Production By G. Gabrielse, L. Haarsma, S.L. Rolston, and W. Kells	26
Excitation of the 1S-2S Transition in Muonium By S. Chu, A.P. Mills Jr., A.G. Yodh, K. Nagamine, H. Miyake, and T. Kuga (With 2 Figures)	28
Atomic Physics in Confined Space: Suppressing Spontaneous Emission at Optical Frequencies and Measuring the Van der Waals Atom-Surface Interaction. By S. Haroche, A. Anderson, E. Hinds, W. Jhe, and D. Meschede (With 3 Figures)	30
Enhanced and Suppressed Visible Spontaneous Emission by Atoms in a Concentric Optical Resonator. By D.J. Heinzen, J.J. Childs, C.R. Monroe, and M.S. Feld (With 1 Figure)	36

Single Atomic Particle at Rest in Free Space: Shift-Free Suppression of the Natural Line Width? By H. Dehmelt (With 4 Figures)	39
Parity Violation in Atoms. By E.D. Commins (With 2 Figures)	43
Towards Precise Parity Violation Measurements in Cesium: Non- linear Optics Experiments in a Forbidden Three-Level System By L. Pottier, M.A. Bouchiat, J. Guéna, Ph. Jacquier, and M. Lintz (With 1 Figure)	48
Intracavity Polarimetry with a Sodium Dimer Ring Laser By A.D. May and S.C. Read	50
Fundamental Tests of Special Relativity and the Isotropy of Space By S.A. Lee, L.-U.A. Andersen, N. Bjerre, O. Poulsen, E. Riis, and J.L. Hall (With 3 Figures)	52

Part II	Laser Cooling, Trapping, and Manipulation of Atoms and Ions
---------	--

Laser Cooling and Trapping of Atoms. By S. Chu, M.G. Prentiss, A.E. Cable, and J.E. Bjorkholm (With 2 Figures)	58
New Measurements with Optical Molasses By P.L. Gould, P.D. Lett, and W.D. Phillips (With 2 Figures)	64
Optical Pumping in Translation Space By D.E. Pritchard, K. Helmerson, V.S. Bagnato, G.P. Lafyatis, and A.G. Martin (With 2 Figures)	68
Ordered Structures of Ions Stored in an rf Trap By R. Casdorff, R. Blatt, and P.E. Toschek (With 2 Figures)	73
Laser Cooling of Mg^+ Ions and First Experimental Observation of Resonant Particle Transport in a Penning Trap By Jin Yu, M. Desaintfuscien, and F. Plumelle (With 1 Figure)	75
Experiment to Observe a Two-Photon Transition in Stored Hg^+ By M. Houssin, M. Jardino, and M. Desaintfuscien	77
High Accuracy Measurement of the g_J Factor of the ^{40}Ca Metastable Triplet Levels By N. Beverini, M. Inguscio, E. Maccioni, F. Strumia, and G. Vissani (With 2 Figures)	79
Atomic Motion in a Laser Standing Wave By J. Dalibard, C. Salomon, A. Aspect, H. Metcalf, A. Heidmann, and C. Cohen-Tannoudji (With 3 Figures)	81

Optical Elements for Manipulating Atoms. By K. Cloppenburg, G. Hennig, A. Mihm, H. Wallis, and W. Ertmer (With 5 Figures)	87
Acceleration of a Fast Atomic Beam by Laser Radiation Pressure By E. Riis, L.-U.A. Andersen, O. Poulsen, H. Simonsen, and T. Worm (With 2 Figures)	93
Superhigh Resolution Laser Spectroscopy with Cold Particles By S.N. Bagayev, A.E. Baklanov, V.P. Chebotayev, A.S. Dychkov, and P.V. Pokasov (With 3 Figures)	95
Light-Induced Drift and Isotope Separation in Alkali-Noble Gas Systems. By E.R. Eliel, H.G.C. Werij, A.D. Streater, and J.P. Woerdman (With 6 Figures)	99
Wall Frictionless Light-Induced Drift. By J.H. Xu, S. Gozzini, M. Allegrini, G. Alzetta, E. Mariotti, and L. Moi (With 1 Figure)	105

Part III Quantum Jumps

Macroscopic Quantum Jumps in a Single Atom By R.G. Brewer and A. Schenzle (With 3 Figures)	108
On the Theory of Quantum Jumps. By G. Nienhuis	112
Quantum Jumps and Laser Spectroscopy of a Single Barium Ion Using "Shelving" By W. Nagourney, J. Sandberg, and H. Dehmelt (With 3 Figures)	114
The Observation of Quantum Jumps in Hg^+ . By W.M. Itano, J.C. Bergquist, R.G. Hulet, and D.J. Wineland (With 3 Figures) .	117
Quantum Jumps and Related Phenomena of Single Ions and Small Ion Clouds. By Th. Sauter, W. Neuhauser, R. Blatt, and P.E. Toschek (With 5 Figures)	121

Part IV Quantum Optics, Squeezed States, and Chaos

Quantum Devices and Measurements. By R.J. Glauber	126
One-Atom Oscillators for Nonclassical Radiation. By F. Diedrich, J. Krause, G. Rempe, M.O. Scully, and H. Walther (With 2 Figures)	133
Tests of General Relativity and the Correlated Emission Laser By J. Gea-Banacloche, W. Schleich, and M.O. Scully (With 4 Figures)	139

Generation and Application of Squeezed States of Light By H.J. Kimble, R.J. Brecha, L.A. Orozco, M.G. Raizen, Ling-An Wu, and Min Xiao	143
Application of Squeezed-State Light to Laser Stabilization By C.M. Caves (With 2 Figures)	146
Quantum Nondemolition Detection and Squeezing in Optical Fibers. By M.D. Levenson, R.M. Shelby, and S.H. Perlmutter	150
Two-Photon Chaotic States of the Radiation Field By Y.Q. Li and Y.Z. Wang (With 2 Figures)	152
Squeezing Intensity Noise on Laser-like Beams By E. Giacobino, C. Fabre, H. Heidmann, R. Horowicz, S. Reynaud, and G. Camy (With 2 Figures)	154
Probing Quantum Chaos and Localization in the Diamagnetic Kepler Problem. By J.C. Gay and D. Delande (With 2 Figures) . .	156
Weak Localization of Light By M. Rosenbluh, M. Kaveh, and I. Freund (With 4 Figures)	158

Part V Atomic Spectroscopy

High Resolution Laser Spectroscopy of Radioactive Atoms By S. Liberman et al. (With 6 Figures)	162
Ultrasensitive Laser Photoionization Spectroscopy of Short-Lived Isotopes and Very Rare Atoms By V.S. Letokhov and V.I. Mishin (With 6 Figures)	167
A New Sensitive Technique for Laser Spectroscopic Studies of Radioactive Rare-Gas Isotopes. By W. Borchers, E. Arnold, W. Neu, R. Neugart, G. Ulm, and K. Wendt (With 1 Figure)	176
Two-Photon Spectroscopy of Atomic Fluorine and Oxygen By W.K. Bischel, D. Bamford, M.J. Dyer, G.C. Herring, and L.E. Jusinski (With 2 Figures)	178
Spectroscopy on Laser-Evaporated Boron and Carbon By H. Bergström, G. Faris, H. Hallstadius, H. Lundberg, A. Persson, and C.-G. Wahlström (With 1 Figure)	181
Highly Excited Barium Rydberg States in External Fields By H. Rinneberg, J. Neukammer, A. König, K. Vietzke, H. Hieronymus, M. Kohl, H.-J. Grabka, and G. Jönsson (With 1 Figure)	183

CW Laser Spectroscopy of Long-Lived 5dnl (l>2) Autoionizing States in BaI. By W. Hogervorst (With 2 Figures)	185
Laser Spectroscopy of Double-Rydberg States of Barium By P. Camus, P. Pillet, and J. Boulmer (With 2 Figures)	188
Some Studies on Barium Autoionization States. By L. Xu, Y.-Y. Zhao, G.-Y. Wang, and Z.-Y. Wang (With 2 Figures)	190

Part VI Molecular Spectroscopy

Impact of Laser Spectroscopy on Chemistry. By R.N. Zare	194
Rydberg States of H ₂ . By R.D. Knight, J.E. Sohl, Yang Zhu, and Liang-guo Wang (With 3 Figures)	198
Laser/Electric Field Dissociation Spectroscopy of Molecular Ions By N. Bjerre and S.R. Keiding (With 4 Figures)	202
Barrier Tunneling in He ₂ c ³ Σ ⁺ _g By D.C. Lorents, S.R. Keiding, and N. Bjerre (With 2 Figures) . .	206
Radiative Lifetimes of Xe ₂ , Kr ₂ , and Ar ₂ Excimers and Dependence on Internuclear Distance By B.P. Stoicheff and A.A. Madej (With 5 Figures)	208
Laser-Induced Fluorescence of Hg ₂ and Hg ₃ Excimers By J.B. Atkinson, L. Krause, R.J. Niefer, and J. Supronowicz (With 3 Figures)	212
Observation of Ba ₂ Excimer Structure and Investigation of Ionization Processes of Rydberg Atoms and Molecules By Wu Dong-hong, Yang Yu-fen, and K.T. Lu (With 2 Figures) . .	214
High Resolution UV Studies of Free Radicals. By J.J. ter Meulen, G. Meijer, W. Ubachs, and A. Dymanus (With 3 Figures)	216
High Resolution Diode Laser Spectroscopy of Transient Species By C.B. Dane, D.R. Lander, R.F. Curl, and F.K. Tittel (With 2 Figures)	219
High-Resolution Laser Photofragment Spectroscopy of Near-Threshold Resonances in SiH ⁺ By P.J. Sarre, J.M. Walmsley, and C.J. Whitham	221
High-Resolution Zero Kinetic Energy Photoelectron Spectroscopy of Nitric Oxide. By W. Habenicht, R. Baumann, and K. Müller-Dethlefs (With 4 Figures)	223
Coherent Laser Spectroscopy. By A.M. Prokhorov (With 4 Figures)	225

CARS Investigation of Relaxation Processes in Highly Excited Molecules. By S.S. Alimpiev, A.A. Mokhnatyuk, S.M. Nikiforov, A.M. Prokhorov, B.G. Sartakov, V.V. Smirnov, and V.I. Fabelinskii (With 1 Figure)	229
Four-Wave Processes in Spectroscopy of Vibrational Molecular States. By S.S. Alimpiev, V.S. Nersisjan, S.M. Nikiforov, A.M. Prokhorov, and B.G. Sartakov (With 4 Figures)	231
Dynamic and Static Properties of Molecules in Highly Excited Vibrational States By T. Shimizu, Y. Matsuo, K. Nakagawa, and T. Kuga	234
Highly Nonthermal Intramolecular Energy Distribution in Isolated Infrared Multiphoton Excited CF_2Cl_2 Molecules. By E. Mazur, Kuei-Hsien Chen, and Jyhpyng Wang (With 3 Figures)	236
Stimulated Emission from Normally Non-fluorescent T.I.C.T. States of 7-DAMC. By V. Chandrasekhar, B.M. Sivaram, B. Sivasankar, and S. Natarajan (With 1 Figure)	239
Picosecond Spectroscopy of Molecular Dynamics of Proteins and Enzymes By R. Rigler, A. MacKerell, H. Vogel, and L. Nilsson (With 3 Figures)	242

Part VII Clusters, Surfaces and Solids

CARS Spectroscopy of NH_3 Clusters in Supersonic Jets By H.D. Barth and F. Huisken (With 2 Figures)	246
Doppler-free Laser Spectroscopy of Na_3 By H.-J. Foth and W. Demtröder (With 3 Figures)	248
Optical Spectrum of the Icosahedral C_{60} - "Follene-60": A Challenge for Laser Spectroscopy By A. Rosén, S. Larsson, and A. Volosov (With 2 Figures)	251
Second-Harmonic and Sum-Frequency Generation for Surface Studies By J.H. Hunt, P. Guyot-Sionnest, and Y.R. Shen (With 3 Figures)	253
Second Harmonic Generation on the (111) Surface of BaF_2 By J. Reif, P. Tepper, E. Matthias, E. Westin, and A. Rosén (With 4 Figures)	257
Study of Adsorbates on a Silver Surface by Sum-Frequency Generation with Surface Plasmon Waves. By Z. Chen, Y.J. Liu, J.B. Zheng, and Z.M. Zhang (With 2 Figures)	260

Adsorbate Resonance Enhancement in Optical Surface Second-Harmonic Generation By W. Heuer, L. Schröter, and H. Zacharias (With 1 Figure)	262
Narrow Resonances in CdSSe Doped Glasses: An Application of Frequency Domain 4-Wave Mixing By J.T. Remillard and D.G. Steel (With 3 Figures)	264
Nonlinear Doppler-free Spectroscopy of Gas-Phase Atoms at Glass-Vapor Interfaces. By S. Le Boiteux, P. Simoneau, D. Bloch, and M. Ducloy (With 5 Figures)	267
Laser Photothermal Surface Spectroscopy By C. Karner, Q. Kong, G. Schmidt, and F. Träger	272
Dynamics and Topography in Molecular Beam Scattering on Surfaces: A Comparative Study of NO on Diamond and Graphite By J. Häger, C. Flytzanis, and H. Walther (With 4 Figures)	274
Multiphoton-Stimulated Emission of Electrons and Ions from the (111) Surface of BaF ₂ . By H.B. Nielsen, J. Reif, E. Matthias, E. Westin, and A. Rosén (With 3 Figures)	279
Four-Wave Mixing Spectroscopy of Metastable Defect States in Diamond. By S.C. Rand (With 2 Figures)	281

Part VIII Miscellaneous Laser Spectroscopy Experiments

Four-Wave Mixing and Stimulated Emission Processes in Strongly Driven Systems. By Y. Shevy and M. Rosenbluh (With 2 Figures)	284
Self-Oscillation Due to Four-Wave Mixing and to Pressure-Induced Two-Wave Mixing in Sodium. By D. Grandclément, G. Grynberg, and M. Pinard (With 2 Figures)	287
Two-Photon-Excited Parametric and Wave-Mixing Processes in Atomic Sodium. By P.-L. Zhang and S.-Y. Zhao (With 1 Figure)	289
Narrow Resonances in Four-Wave Mixing Due to Radiative Decay By Jing Liu, G. Khitrova, D. Steel; and P. Berman (With 2 Figures)	291
Experimental Observation of Nonlinear Birefringence in a J=1/2 to J=1/2 System. By D.E. McClelland, R. Holzner, D.M. Warrington, R.J. Ballagh, and W.J. Sandle (With 2 Figures)	294
Laser Modified Birefringence in a Doppler Broadened Medium By P.J. Manson, H.-A. Bachor, and R.J. Sandeman (With 2 Figures)	297

Nonlinear Magneto-Optic Effects in a $J=1$ to $J'=0$ Transition By W. Lange, K.-H. Drake, and J. Mlynek (With 2 Figures)	300
Collision-Induced Ramsey Resonances in Sm Vapor By J. Mlynek, E. Buhr, and W. Lange (With 2 Figures)	302
Optical Resonances with Subnatural Linewidths Resulting from Nonstationary Optical Pumping. By W. Gawlik (With 1 Figure)	304
A New SO(4)-Based Scheme for Producing Atoms in Circular Rydberg States. By D. Delande and J.C. Gay (With 1 Figure)	306
Transmission Zeeman Beat Spectroscopy for Determination of Depolarisation Rates in Atomic Ground States By P. Hannaford, R.M. Lowe, and R.J. McLean (With 1 Figure)	308
Broadband Light Photon Echoes and Collisional Energy Transfers By A. Débarre, J.-C. Keller, J.-L. Le Gouët, and P. Tchénio (With 1 Figure)	310
Competition Effects Among Nonlinear Optical Processes By D.J. Gauthier, M.S. Malcuit, J.J. Maki, and R.W. Boyd (With 2 Figures)	312
Resonant Optical Suppression of the Van der Waals Force By J.F. Lam, S.C. Rand, and R.A. McFarlane (With 2 Figures)	314
Light-Induced Cherenkov Emission By R. Shuker and I. Golub (With 1 Figure)	317

Part IX Laser Spectroscopic Diagnostics

Recent Developments in CARS Combustion Spectroscopy By A.C. Eckbreth (With 3 Figures)	320
The Rotational Dual Broadband Approach and Noise Considerations in CARS Spectroscopy. By M. Aldén, P.- E. Bengtsson, H. Edner, S. Kröll, D. Nilsson, and D. Sandell (With 1 Figure)	324
Resonance CARS Spectroscopy of the OH Radical in Flames and Discharge. By B. Attal-Trétout, P. Berlemont, and J.P. Taran (With 2 Figures)	326
Electronically Resonant CARS Spectroscopy of C_2 in a Flame By C.G. Aminoff, M. Kaivola, and T. Virtanen (With 2 Figures)	330
CARS Thermometry of a H_2 Supersonic Jet By G. Marowsky and A. Slenczka (With 2 Figures)	333

Subharmonic Resonances in Higher-Order Collision-Enhanced Wave Mixing in a Sodium-Seeded Flame By R. Trebino and L.A. Rahn (With 2 Figures)	335
Recent Advances in Flame Diagnostics Using Fluorescence and Ionization Techniques. By J.E.M. Goldsmith	337
LIF with Tunable Excimer Lasers as a Possible Method for Instantaneous Temperature Field Measurements at High Pressures By P. Andresen, A. Bath, H.W. Lülf, G. Meijer, and J.J. ter Meulen (With 1 Figure)	341
Collision-Free Energy Distribution of OH Radicals After H_2O_2 Photolysis Using LIF in a Flow System. By A. Jacobs, M. Wahl, R. Weller, and J. Wolfrum (With 1 Figure)	342
Laser Diagnostics of Radicals in Catalytic Reactions By A. Rosén, S. Ljungström, T. Wahnström, and B. Kasemo (With 2 Figures)	344
Development of Element Determination Methods by Resonance Ionization Spectrometry. By E.-L. Lakomaa, I. Auterinen, J. Likonen, R. Zilliacus, and R. Salomaa	346
Laser Monitoring in the Atmosphere. By G. Megie	349
Applications of Laser and Lidar Spectroscopy to Meteorological Remote Sensing. By T.D. Wilkerson, G.K. Schwemmer, K.J. Ritter, U.N. Singh, and R. Mahon (With 4 Figures)	352
Laser Remote Sensing of the Atmosphere. By T.D. Wilkerson	355
High-Resolution Water Vapor Spectroscopic Measurements in the 720-nm Region for Lidar Meteorological Applications By B.E. Grossmann and E.V. Browell (With 2 Figures)	361
Analysis of Surface Films on Liquids by Pulsed Laser Photoacoustic Spectroscopy By M.W. Sigrist, Z.H. Chen, and D. Scherrer (With 2 Figures)	364
Spectroscopic Diagnosis for Control of Laser Treatment of Atherosclerosis. By R.R. Richards-Kortum, A. Mehta, T. Kolubayev, C. Hoyt, R. Cothren, B. Sacks, C. Kittrell, M.S. Feld, N.B. Ratliff, T. Kjellstrom, G. Bordagaray, M. Fitzmaurice, and J. Kramer (With 4 Figures)	366
Laser Spectral Analysis of Human Atherosclerotic Vessels By A.A. Oraevsky, V.S. Letokhov, V.G. Omelyanenko, S.E. Ragimov, A.A. Belyaev, and R.S. Akchurin (With 1 Figure)	370

Diagnostics of Cancer Tumours and Atherosclerotic Plaque Using Laser-Induced Fluorescence. By P.S. Andersson, J. Johansson, E. Kjellén, S. Montán, K. Svanberg, and S. Svanberg (With 2 Figures)	372
---	-----

Part X **Spectroscopic Techniques**

Towards the Ultimate Laser Resolution. By J.L. Hall, D. Hils, C. Salomon, and J.-M. Chartier (With 1 Figure)	376
Effects of Curvature in Laser Spectroscopy with Strong Fields By Ch.J. Bordé, Ch. Chardonnet, and D. Mayou (With 9 Figures)	381
Single Recoil Component Optical Ramsey Fringes at 514.5 nm in an I ₂ Supersonic Beam By G. Camy, N. Courtier, and J. Helmcke (With 2 Figures)	386
High Resolution Optical Multiplex Spectroscopy By K.P. Dinse, M.P. Winters, and J.L. Hall (With 2 Figures)	388
Fourier Transform Heterodyne Spectroscopy: A Simple Novel Technique with Ultrahigh (150 mHz) Resolution By E. Mazur (With 3 Figures)	390
High Frequency Modulation Spectroscopy. By T.F. Gallagher, C.B. Carlisle, G. Janik, H. Riris, and L.G. Wang	393
Laser Sideband Spectroscopy of Molecules. By G. Magerl, W. Schupita, J.M. Frye, R.H. Schwendeman, D. Peterson, Shin- Chu Hsu, Yit-Tsong Chen, and T. Oka (With 3 Figures)	395
Sideband Saturation Spectroscopy with a Frequency-Modulated PbSnTe Diode Laser. By Y. Ohshima, Y. Matsumoto, M. Takami, and K. Kuchitsu (With 2 Figures)	398
A New Method of Signal Recording and Averaging in Diode-Laser Spectroscopy. By K. Uehara (With 2 Figures)	400
Velocity-Modulated Laser Spectroscopy Using GaAlAs Diode Lasers By B. Lindgren, H. Martin, and U. Sassenberg (With 2 Figures) . .	402
A High Sensitivity Modulation Method for Atomic Beam Absorption Spectroscopy. By C. Salomon, H. Metcalf, A. Aspect, and J. Dalibard (With 2 Figures)	404
The Inverse Hook Method for Measuring Oscillator Strengths By W.A. van Wijngaarden, K.D. Bonin, and W. Happer	406

High Precision Measurements of Vapor Densities By W.T. Hill, III (With 2 Figures)	407
An Atomic Resonance Filter Operating at Fraunhofer Wavelengths By J.A. Gelbwachs (With 1 Figure)	409
Development of an Optically Pumped Polarized Deuterium Target By L. Young, R.J. Holt, M.C. Green, and R. Kowalczyk (With 1 Figure)	411
Diagnostics of a Cooling Electron Beam by Thomson Scattering of Laser Light. By J. Berger, P. Blatt, P. Hauck, W. Meyer, R. Neumann, C. Habfast, H. Poth, B. Seligmann, and A. Wolf (With 2 Figures)	413

Part XI Spectroscopic Sources

Diode Pumped Solid-State Laser Oscillators for Spectroscopic Applications. By R.L. Byer, S. Basu, T.Y. Fan, W.J. Kozlovsky, C.D. Nabors, A. Nilsson, and G. Huber	416
Spectroscopy of the 3 μ m Laser Transitions in $\text{YAlO}_3:\text{Er}$ By W. Lüthy, M. Stalder, and H.P. Weber (With 3 Figures)	420
Fibre Lasers. By A.I. Ferguson, M.W. Phillips, D.C. Hanna, and A.C. Tropper (With 2 Figures)	422
Recent Developments in Nonlinear Optical Materials By R.C. Eckardt, Y.X. Fan, M.M. Fejer, W.J. Kozlovsky, C.N. Nabors, R.L. Byer, R.K. Route, and R.S. Feigelson (With 3 Figures)	426
Single-Mode Operation of Pulsed Dye Lasers. By B. Burghardt, W. Mückenheim, and D. Basting (With 1 Figure)	430
A Room Temperature Tunable Color Center Laser with a LiF:F_2^- Crystal. By S.-H. Liu, F.-G. Wang, Z. Lin, Y. Taira, K. Shimizu, and H. Takuma (With 2 Figures)	432
Recent Progress in Semiconductor Lasers By R. Lang (With 3 Figures)	434
Spectroscopy with Ultrashort Electrical Pulses By D. Grischkowsky, C.-C. Chi, I.N. Duling III, W.J. Gallagher, M.B. Ketchen, and R. Sprik (With 3 Figures)	438

Part XII VUV Spectroscopy

Generation and Application of Coherent Tunable VUV Radiation at 60 to 200 nm. By G. Hilber, A. Lago, and R. Wallenstein	446
Third-Harmonic Generation in Both Positively and Negatively Dispersive Xe. By P.R. Blazewicz and J.C. Miller (With 2 Figures)	455
Laser Depletion Spectroscopy of Core-Excited Levels By S.E. Harris and J.K. Spong (With 4 Figures)	458
Laser Spectroscopy of Atoms and Molecules Below 100 nm By W.E. Ernst, T.P. Softley, L.M. Tashiro, and R.N. Zare (With 1 Figure)	462
Internal State Selected Population and Velocity Distribution of Hydrogen Desorbing from Pd(100). By L. Schröter, G. Ahlers, H. Zacharias, and R. David (With 2 Figures)	464
Laser Spectroscopy of the Diamagnetic Hydrogen Atom in the Chaotic Regime. By A. Holle, J. Main, G. Wiebusch, H. Rottke, and K.H. Welge (With 3 Figures)	466
Index of Contributors	471