

CONTENTS

Photon Impact: Photoionization of Atoms

Determination of the Asymmetry Parameter β of the Xe 5p Spin-Orbit Components Between 20 and 105 eV <i>Manfred O. Krause, Thomas A. Carlson, Pamela R. Woodruff</i>	1
A Gas Phase Angle-Resolved ESSR System <i>M. O. Krause, T. A. Carlson</i>	3
Experimental Determination of Matrix Elements and Phase Difference for Hg 6s ² Photoionization: Measurement of Spinpolarization <i>F. Schäfers, G. Schönhense, U. Heinmann</i>	5
Mercury 5d and Cadmium 4d Subshell Photoionization: Evidence of Relativistic and Correlation Effects <i>G. Schönhense</i>	7
Comparison of Dipole Matrix Elements and Eigenquantum Defects for Ar 3p, Kr 4p and Xe 5p Below and Above the Ionization Threshold <i>G. Schönhense, F. Schäfers, U. Heinmann</i>	9
Analysis of Autoionization Resonances of the Rare Gases Ar, Kr, Xe by Measurement of Spin Polarization of Photoelectrons <i>F. Schäfers, U. Heinmann</i>	11
The Angular Distribution of Photoelectrons Leaving the He ⁺ Ion in the n=2 Excited State <i>J. M. Bizau, F. Wuilleumier, D. Ederer, P. Dhez, S. Krummacher, V. Schmidt</i>	13
Autoionization in Helium Leading to the He ⁺ (n=2) Final State <i>Pamela R. Woodruff, James A. R. Samson</i>	15
The K-Shell Photoionization Spectrum of Lithium Vapor <i>S. Krummacher, V. Schmidt, J. M. Bizau, D. Ederer, P. Dhez, F. Wuilleumier, P. Koch</i>	17
¹ P ^o Resonances of Helium Below the n=4 Threshold of He ⁺ <i>Brian F. Davis, Kwong T. Chung</i>	19
Saddle Point Technique for Autoionizing States of Lithium <i>Kwong T. Chung</i>	20

4p⁵4d¹⁰ - 4p⁶4d⁸4f Interaction in Xe: A Model Calculation Henk Smid, Jørgen E. Hansen	22
Resonant Processes Below 3P Thresholds of Atomic Copper in Photoelectron Spectroscopy F. Combet Farnoux	24
Photoionization of the 7²P Excited States of Cs Atoms N. A. Cherepkov	26
Photoionization Studies of 5d and 6s Shells of Atomic Mercury V. Radojević, W. R. Johnson, K. T. Cheng	28
Hydrogenic Stark Effect: Properties of the Wave Functions David A. Harmin	30
A Parametric Description of Interacting Resonances in the Multichannel Approach S. S. M. Burkov, S. I. Strakhova	31
The Excitation of Two Particle-Two Hole State in Photoionization of Neon S. I. Strakova, V. A. Shakirov	33
Analytic Properties of the Oscillator-Strength Distribution Michael A. Dillon, Mitio Inokuti	35
Hartree-Fock Calculations of the Photoionization of Excited Atomic States Alfred Msezane, Steven T. Manson	37
Photoionization and Photoexcitation of Excited States of the Alkali Atoms: Calculations of Cross Sections, Oscillator Strengths, Cooper Minima, and Angular Distributions Jayanti Lahiri, Steven T. Manson	39
Photoionization of 4f and 5d Subshells of High-Z Elements: Systematics of Cross Sections, Branching Ratios, and Angular Distributions in Relativistic Framework B. R. Tambe, Steven T. Manson	41
Z-Dependence of Minima in Photoionization Cross Sections: Non-Relativistic Results Adrienne Harris, Steven T. Manson	43
Cancellation of Relativistic, Retardation, and Higher Multipole Effects in Inner Shell Photoionization Cross Sections Akiva Ron, R. H. Pratt, S. T. Manson	45
Relativistic Effects on Minima in Photoionization Cross Sections of High-Z Elements Young Soon Kim, Akiva Ron, R. H. Pratt, B. R. Tambe, Steven T. Manson	46

Photon Impact: Photodetachment and Photodissociation

Absorption Coefficient of the Negative Hydrogen Ion <i>A. S. Ghosh, M. Daskham</i>	48
Theoretical Photodetachment Cross Sections for $\text{He}^-({}^4\text{P}^\circ)$ <i>A. U. Hazi, K. Reed</i>	50
Experimental Measurements on the Photodetachment of Atomic and Molecular Ions <i>L. D. Gardner</i>	52
Photodissociation of MgH in the Solar Atmosphere <i>K. K. Datta, Samir Saha, A. K. Barua</i>	53
Complex Quasi-Vibrational Energy Formalism for Molecular Photodissociation <i>Shih-I Chu</i>	55
On the H(n=3) Atoms Formed by Photodissociation of H_2 <i>J. Breton, B. Thieblemont, K. Ito, P. M. Guyon, M. Glass-Maujean</i>	56
Half-Collision Study of $\text{C}^+ + \text{H}$ Interactions <i>H. Helm, P. C. Cosby, M. M. Graff, J. T. Moseley</i>	57
Predissociation of Quasibound Levels in $\text{O}_2^+ f^4\Pi_g$ <i>P. C. Cosby, D. L. Huestis, H. Helm, C. Pernot, J. A. Beswick, J. Durup</i>	59
Laser Induced Processes in Molecules: Multiphoton Absorption (MPA) and Dissociation (MPD) with Two I.R. Wavelengths in Pulsed Molecular Beams <i>M. Bernardini, E. Borsella, R. Fantoni, A. Giardini-Guidoni, J. Reuss, G. Sanna, A. Zecca</i>	61
Photoinduced Ion Pair Formation on N_2O and NO_2 <i>M. G. Kratzat, H. K. Oertel, H. Baumgärtel</i>	63
State-Specific Reactions of CH_3I^+ and CD_3I <i>Iwan Griffiths, Ermand Mukhtar, Frank Harris, John Beynon</i>	65

Photon Impact: Photoionization of Molecules

Polarization of Molecular Photoelectrons <i>N. A. Cherepkov</i>	67
Photoionization of Hydrogenic Ions in Magnetic Fields <i>S. M. Kara, M.R.C. McDowell</i>	69
A Multichannel Quantum Defect Treatment of the Competition Between Preionization and Predissociation in the NO Molecule <i>A. Giusti, Ch. Jungen</i>	71

An Eigenvalue Finite Box Approach to the H₂ Photoionization

73

*G. Raseev, H. Le Rouzo***Autoionization in Molecular Hydrogen: Proton Kinetic Energies, H₂⁺ Vibrational Level Populations, and Isotope Effects**

74

*K. Kirby, A. Dalgarno***Theoretical Study of Shape Resonance in the Partial Photoionization Cross Section for the B⁴Σ_g⁻ States of O₂⁺**

76

*G. Raseev, H. Lefebvre-Brion, H. Le Rouzo, A. L. Roche***Manifestations of Shape Resonances in Molecular Photoionization**

78

*Dan Dill, P. M. Dittman, Dinesh Loomba, J. A. Stephens, J. R. Swanson, J. L. Dehmer, Scott Wallace***Studies of Photoionization Cross Sections of Diatomic and Polyatomic Molecules**

80

*R. R. Lucchese, V. McKoy***Triply-Differential Photoelectron Studies of Atomic and Molecular Photoionization**

81

*A. C. Parr, D. L. Ederer, R. Stockbauer, J. B. West, Keith Codling, D.M.P. Holland, J. L. Dehmer***Experimental Evidence for Shape Resonance in the Photoelectron Spectroscopy of Small Molecules**

83

*Thomas A. Carlson, Frederick S. Grimm, David Mehaffy, Paul R. Keller, James W. Taylor, Manfred O. Krause, John D. Allen, Jr.***Vibrational Branching Ratios Following Autoionization in H₂**

85

*K. Ito, L.F.A. Ferreira, T. Govers, O. Dutuit, P. M. Guyon, H. Frohlich***Vibrationally Resolved Partial Photoionization Cross Sections Associated to the Ejection of a 3σ_g Electron in O₂ Molecules**

87

*P. Morin, I. Nenner, P. M. Guyon, L.F.A. Ferreira, K. Ito***Molecular Beam Photoionization Study of Sulfur Dioxide and Sulfur Dioxide Dimer**

89

*J. Erickson, C. Y. Ng***Excitation and Photoionization of Electronically Excited States of NO by Multiphoton Optical-Optical Double Resonance**

91

D. Gauyacq, W. Y. Cheung, W. A. Chupka, S. D. Colson, M. Seaver

Autoionization of Ar ₂ Rydberg States Following Photon Impact <i>P. M. Dehmer</i>	93
Photoionization and Photofragmentation of Small Clusters of Rare Gas Atoms <i>P. M. Dehmer, S. T. Pratt</i>	95
The Photoelectron Spectrum of Xe ₃ by the Photoelectron- Photoion Coincidence Technique <i>E. D. Poliakoff, P. M. Dehmer, J. L. Dehmer, Roger Stockbauer</i>	97
Polarization of Fluorescence Following Molecular Photoionization <i>E. D. Poliakoff, J. L. Dehmer, Dan Dill, A. C. Parr, K. H. Jackson, R. N. Zare</i>	99
Spin Polarized Photoelectrons Produced from CH ₃ Br Molecules by Unpolarized and Circularly Polarized VUV Radiation <i>B. Osterheld, F. Schäfers, G. Schonhense, U. Heinzmann</i>	101
Threshold Photoelectron Spectroscopy of OCS <i>M.-J. Hubin-Franksin, J. Delwiche, P.-M. Guyon, I. Nenner</i>	103
Two-Photon-Ionization Coefficients of C ₃ H ₈ , C ₄ H ₈ , CH ₃ NH ₂ , (CH ₃) ₂ NH, and (CH ₃) ₃ N <i>W. K. Bischel, L. C. Lee</i>	105
Electron Atom Collisions: Elastic Scattering	
S- and P-Wave Phaseshifts and Momentum-Transfer Cross Sections for Thermal-Energy Electrons in Rare Gases by ECR-Spectroscopy Method <i>K. S. Golovanivsky, A. P. Kabilan</i>	106
The Momentum Transfer Cross Section for Low Energy Electrons in Ne: An Appraisal from the Characteristic Energy <i>Iwao Ogawa, Hisaya Murakoshi, Sumio Yoshizawa, Sumiko Masuda</i>	108
Elastic Scattering Cross Sections for Electron Impact Excitation of SO <i>O. J. Orient, S. K. Srivastava, Ione Iga</i>	110
Electron Total Cross-Section Measurements for Neon and Argon at Low Energies <i>J. Ferch</i>	112
Electron Impact Cross Sections for Cesium <i>L. Maleki, H. Tanaka, L. Vuskovic, S. Trajmar</i>	114
Grand Total Cross Sections for Electron Impact on He and Ne: 50 to 300 eV <i>John C. Nickel, David F. Register, Sandor Trajmar</i>	116

Total Cross Sections for Electrons Scattered from Gases: 0.5-3.0 keV Range on Ar	118
<i>J. C. Nogueira, Ione Iga, Lee Mu-Tao</i>	
Slow Electron Elastic Scattering on Argon	120
<i>M. Ya. Amusia, N. A. Cherepkov, L. V. Chernysheva, D. Davidovic, V. Radojevic</i>	
Angular Momentum Behavior of Quantum Defects and Phase Shifts for Modified Coulomb Potentials	122
<i>A. Oza, V. B. Sheorey, C. S. Shukre</i>	
Elastic Scattering of Electrons from Noble Gases	124
<i>R. P. McEachran, A. D. Stauffer</i>	
Calculations of Total Cross Sections for Scattering of Slow Electrons by Helium Atom	125
<i>Yang Xiang-Dong, Gou Qing-Quan</i>	
On the Use of the Finite Element Method with Lagrange Multipliers in Scattering Theory	126
<i>Birte L. Christensen-Dalsgaard</i>	
Unitarized Eikonal-Born Series Method for Fast Electron Atom Collisions	128
<i>F. W. Byron, Jr., C. J. Joachain, R. Potvliege</i>	
Calculation of Phase Shifts for Electron-Atom Scattering Using Extended Numerov Method	129
<i>Joseph M. Paikday</i>	
Elastic Scattering of Electrons from Helium Atom in High Energy Higher Order Born Approximation	130
<i>H. S. Desai, N. S. Rao</i>	
Elastic Scattering of Electrons by Lithium at Intermediate Energies	131
<i>S. S. Tayal, A. N. Tripathi, M. K. Srivastava</i>	
Second Born Amplitudes for Electron-Hydrogen Scattering at High Energies	133
<i>M. Gavrilă, P. Mandal</i>	
Forward Elastic Scattering in Modified Glauber Approximation	135
<i>S. P. Khare, B. L. Jhanwar, M. K. Sharma</i>	
Elastic Scattering of Electrons from Lithium at Intermediate Energies	137
<i>B. B. Srivastava, S. S. Dhal, R. Shingal</i>	
Application of Electron Scattering in Hot Plasmas to Spectral Line Broadening	139
<i>Balazs F. Rozsnyai, Abraham Goldberg</i>	

Electron-Atom Collisions: Inelastic Scattering

Near Threshold Excitation of He 2 ³ S by Electron Impact <i>A. R. Johnston, P. D. Burrow</i>	140
Near-Threshold Electron-Impact Excitation of High-n Rydberg States of Ar and N ₂ <i>Peter Hammond, George C. King, Frank H. Read</i>	142
The Excitation of Optically Forbidden Inner-Shell Transitions in Argon by Electron Impact with High Resolution <i>David A. Shaw, George C. King, Frank H. Read</i>	144
High Precision Measurement of Na-D2 Line Polarisation Near Threshold Following Electron Impact in Intermediate Magnetic Fields <i>B. Stumpf, K. Becker, G. Schulz</i>	146
Electron Impact Excitation Cross Sections for the 2 ² P State of Lithium <i>L. Vusković, S. Trajmar, D. F. Register</i>	148
Absolute Differential Cross Sections for Electron Impact Excitation of Neon <i>David F. Register, Sandor Trajmar, George Steffensen</i>	150
Electronic Correlations in Neon by Electron Impact <i>A. Dugeut, A. Lahmam-Bennani</i>	152
Electron Impact Excitation of the Metastable States of the Inert Gases <i>P. J. O. Teubner, J. L. Riley, M. C. Tonkin, J. E. Furst, S. J. Buckman</i>	153
Electron Impact Excitation of Atomic Hydrogen-Ratios of 2s and 2p Differential Cross Sections <i>B. Lohman, L. Frost, E. Weigold</i>	155
Electron Excitation of Na(3P) to the Na(3D) State <i>Richard Dang, Alan Gallagher</i>	157
The Use of Radiation Trapping in the Measurement of the Electron Excitation Cross Section for the Production of the 1s ₄ (³ P ₁) Level of Ne <i>R. E. Miers, J. E. Gastineau, M. H. Phillips, L. W. Anderson, C. C. Lin</i>	158
A Method for Measuring the Electron Excitation Cross Section for the Production of Atoms in Metastable Levels <i>M. H. Phillips, R. E. Miers, L. W. Anderson, C. C. Lin</i>	160
Atomic Field Bremsstrahlung from 3-10 keV Electrons on Rare Gas Atoms <i>Mars Semaan, Carroll Quarles</i>	162

On the Z-Dependence of Bremsstrahlung Cross Section from Electron Impact on Free (Gaseous) Atoms <i>R. Hippler, K. Saeed, I. McGregor, H. Kleinpoppen</i>	164
Comparison of Theory and Experiment for Electron Bremsstrahlung from Atoms <i>H. K. Tseng, R. H. Pratt</i>	166
Bremsstrahlung Cross Sections in Cesium (Z=55) <i>M. Lamoureux, R. H. Pratt, I. J. Feng</i>	168
Characterization of Angular Distributions in Bremsstrahlung and Photoeffect <i>Lynn Kissel, R. H. Pratt, Young Soon Kim</i>	170
Comparison of Electron and Positron Bremsstrahlung Energy Spectra as Illustrating the Determining Factors in Features of Radiation <i>I. J. Feng, H. K. Tseng, R. H. Pratt</i>	172
Low-Energy Electron Excitation of Mg Atom <i>Avdonina N. B., Amusia M. Ya.</i>	174
Electron Impact Excitation of Atomic Copper <i>Alfred Z. Msezane, Ronald J. W. Henry</i>	176
Many-Body Theory of Electron Impact Excitation from Metastable Targets <i>Fernando J. da Paixao, Gy. Csanak, David C. Cartwright</i>	178
Glauber Calculation for Arbitrary ls-nf Excitation in e-H Collisions <i>S. C. Mukherjee, B. Barmanray, S. K. Sur</i>	180
Excitation of the Hydrogen Atom by Electron Impact–Influence of Vacuum Polarisation <i>Sujata Bhattacharyya, Lali Chatterjee, Topen Roy</i>	182
Simplified Second Order Many-Body Theory for Electron Impact Excitation: The 2^3S of He <i>Fernando J. da Paixao, Gilda D. Meneses</i>	184
Two-Step Excitation of the 3^1D State in Helium Atom by Intermediate Energy Electrons <i>V. V. Balashov, S. M. Burkov, A. I. Magunov, S. I. Strakhova</i>	186
Coupled-Channels Calculations of Excitation and Ionization in Collisions of Negatively Charged Projectiles with Atoms <i>M. Martir, J. F. Reading, A. L. Ford, R. L. Becker</i>	188
e-He Scattering Based on the Variable-Charged Coulomb-Projected Born Approximation <i>C. S. Singh, R. Srivastava, D. K. Rai</i>	190

Excitation of the Lowest Autoionizing Levels in Li,
Na, and K

192

R. Srivastava, C. S. Singh, D. K. Rai

Electron-Atom Collisions: Resonances

Autodetachment Spectroscopy: $\text{He}^-({}^4\text{P}^\circ)$	194
<i>R. N. Compton, G. D. Alton, D. J. Pegg</i>	
High Resolution Metastable-State Excitation Functions in the Noble Gases	196
<i>H. W. Dassen, R. K. B. Helbing, J. C. Huschilt, J. W. McConkey, G. C. King, R. Gomez</i>	
A Study of Resonance Structure in Electron Elastic- Scattering from Argon, Krypton and Xenon with High Resolution	198
<i>Peter Hammond, George C. King, Frank H. Read</i>	
High Resolution Electron Impact Excitation of Negative Ion Resonances in Ne, Ar, Kr and Xe	200
<i>Stephen J. Buckman, George C. King, Frank H. Read</i>	
Classification of Negative Ion Resonances in Neon	202
<i>C. W. Clark, K. T. Taylor</i>	
Electron Scattering from Neon and Argon in Resonance Regions	204
<i>K. T. Taylor, C. W. Clark, K. A. Berrington, P. G. Burke, P. C. Ojha</i>	
Calculation Showing $[\text{He}^-({}^2\text{P}^\circ)]$ is a Feshbach Resonance	206
<i>A. K. Bhatia, A. Temkin</i>	
Complex SCF Calculations on Resonance States in Electron Scattering from Atoms and Molecules	207
<i>C. William McCurdy, Richard C. Mowrey, Jack G. Lauderdale</i>	
Multichannel Resonances in e^- -H Scattering	209
<i>Y. K. Ho, J. Callaway</i>	
Weyl's Theory in an L_2 Basis: Gauss Quadrature of the Spectral Density	211
<i>John T. Broad</i>	

**Electron Atom Collisions: Spin Dependence, Alignment, and
Post-Collision Interactions**

Near Threshold Polarized Electron-Lithium Ionization

213

*G. Baum, E. Kisker, W. Raith, W. Schröder, U. Sillmen,
D. Zenses*

"Triple" Scattering Experiment for Obtaining the Maximum Possible Information on Elastic Electron Scattering From Mercury	215
<i>O. Berger, J. Kessler, K. J. Kollath, R. Möllenkamp, W. Wübker</i>	
Optical Studies of Spin Polarisation	217
<i>K. Bartschat, K. Blum</i>	
Fine Structure Effect in Elastic Electron Atom Scattering	218
<i>G. Friedrich Hanne</i>	
Resonance Structures in the Scattering Asymmetry for Inelastic Scattering of Polarized Electrons by Mercury Atoms	220
<i>K. Bartschat, G. F. Hanne, A. Wolcke</i>	
Observation of Integrated State Multipoles After Excitation of 6^3P_1 States of Hg by Polarized Electrons	222
<i>K. Bartschat, G. F. Hanne, A. Wolcke, J. Kessler</i>	
Spin Polarisation Effects in Electron-Photon Coincidence Experiments	224
<i>K. Bartschat, K. Blum, G. F. Hanne, J. Kessler</i>	
Angular Correlation Parameters of Heavy Rare Gas Atoms	225
<i>I. McGregor, D. Hils, R. Hippler, N. A. Malik, J. F. Williams, A. A. Zaidi, H. Kleinpoppen</i>	
Polarization Correlation Parameters Including Spin-Orbit Effects from Coincident Photon Analysis of the 6^1S_0 - 6^1P_1 - 6^1S_0 and 6^1S_0 - 6^3P_1 - 6^1S_0 Processes in Mercury	227
<i>A. A. Zaidi, I. McGregor, H. Kleinpoppen</i>	
Zero Field Quantum Beats in the Electron Impact Excitation of Sodium	229
<i>P. J. O. Teubner, J. E. Furst, M. C. Tonkin, S. T. Buckman</i>	
A Study of the Excitation of the 2P State of Hydrogen Using the Electron-Photon Coincidence Techniques	231
<i>J. Slevin, M. Eminyan, J. M. Woolsey, G. Vassilev, H. Q. Porter, C. Back</i>	
Electron Impact Excitation of He (3^1P)	233
<i>T. C. F. King, J. F. Williams, A. Crowe</i>	
Electron-Proton Angular Correlation in Low Energy Electron-Krypton Collisions	235
<i>Hiroyuki Nishimura, Atsumori Danjo, Yasuo Koike</i>	
Polarization Properties of Cascade Radiation Induced by Electron Impact	237
<i>H. B. van Linden van den Heuvell, G. Nienhuis, H. G. M. Heideman, J. van Eck</i>	

**Electron-Proton Angular Correlation Measurements for
He(1'S-2'P) Excitation by Electron Impact: A**

Progress Report

239

N. C. Steph, D. E. Golden

**The Correlation Parameters λ and χ for the Resonance
Transitions in Neon and Argon Atoms in the Multichannel
Diffraction Approximation**

241

V. V. Balashov, I. V. Kozhevnikov, A. I. Magunov

An Optical-Potential Model for Post-Collision Interaction

243

W. van de Water, H. G. M. Heideman

Post-Collision Interaction in Inner-Shell Ionization

245

of Ar-L_{2,3} by Electron Impact

R. Huster, W. Mehlhorn

**Read (PCI) Effect in Auger-Electron Emission in Ar-LMM
and Ne-KLL Processes Excited by Electron Impact**

247

*K. Wakiya, H. Suzuki, T. Takayanagi, M. Muto,
S. Ito, Y. Iketaki, S. Ohtani*

**The Kr M_{2,3}M_{4,5}N_{2,3} and Ar L₁L_{2,3} Coster-Kronig
Processes Following Electron Impact Ionization**

249

A. Yagishita, H. Suzuki, S. Ohtani, H. Hanashiro

Continuum Electrons from Hydrocarbon Gases

251

Roman Laubert, George Bissinger, James Joyce

**Read (PCI) Effects in Auger Processes by Inner
Shell Photoionization and Electron Impact Ionization**

253

Junya Mizuno, Takeshi Ishirhara, Tsutomu Watanabe

Electron-Atom Collisions: Ionization

(e, 2e) Cross Sections for Argon

255

J. Kimman, Pan Guang-Yan, F. J. de Heer

Impulsive (e, 2e) Energy-Sharing Experiments on He

257

R. Camilloni, G. Stefani

**Electron Momentum Distributions and Binding Energies
for the Valence Orbitals of Chloromethane**

259

A. Minchinton, A. Giardini-Guidoni, E. Weigold

(e, 2e) Spectroscopy of Some Halogenated Compounds

261

A. Giardini-Guidoni, R. Fantoni, A. Sergio, R. Tiribelli

Three-Charged Particle Break-Up Scattering Amplitude

263

Yu. V. Popov, J. Bang, G. G. Benayoun

Absolute Partial Electron Impact Ionization Cross

265

Section Functions and Ratios for Xenon

K. Stephan, T. D. Märk

Cross Sections for Double Ionization of Atomic Oxygen by Electron Impact	267
<i>D. L. Ziegler, J. H. Newman, K. A. Smith, R. F. Stebbings</i>	
Search for the Density Effect in K-Shell Ionization by Ultra Relativistic Electrons	268
<i>C. Brendel, P. Eschwey, H. Genz, U. Kuhn, W. Löw, P. Seserko, A. Richter, R. Sauerwein</i>	
Correlation Effects in the Electron Impact Excitation of Atoms Near the Ionisation Threshold	270
<i>W. van de Water, H. G. M. Heideman</i>	
Numerical Calculation of Electron-Impact Ionization	272
<i>C. Bottcher</i>	
The Differential Cross Sections of the Lithium Atom Ionization by Fast Electrons	274
<i>A. N. Grum-Grzhimailo</i>	
Eikonal-Born Series Treatment of the Ionization of Atomic Hydrogen by Fast Electrons	276
<i>B. Piraux, C. J. Joachain, F. W. Byron, Jr.</i>	
New Method of Evaluation of the Glauber Amplitude for Electron-Impact Ionization of Atomic Hydrogen	278
<i>A. C. Roy, A. K. Das, N. C. Sil</i>	
Screening Effects in Triple Differential Cross Section for Electron Impact Ionization of Helium	280
<i>Anil Pathak, M. K. Srivastava</i>	
Polarized-Coulomb Projected Born Approximation for the Triple Differential Cross Section for Electron Impact Ionization of Helium	282
<i>Anil Pathak, M. K. Srivastava</i>	
Xe Autoionising Levels Between the $\text{Xe}^+ {}^2\text{P}_{3/2}$ and ${}^2\text{P}_{1/2}$ Ionic States Induced by Electron Impact	284
<i>D. Mathur, D. C. Frost</i>	
The Ejected Electron Spectra of Autoionizing and Auger Transitions in the Group IIIB Elements Ga, In and Tl Excited by Low Energy Electron Impact	286
<i>C. G. Back, G. K. James, V. Pejcev, D. Rassi, K. J. Ross, M. Wilson</i>	
Excitation of Autoionizing States in Atoms by Fast Charged Particles: Theory	288
<i>V. V. Balashov</i>	
Calculations of Doubly Excited States of Three-Electron Atomic Systems	290
<i>Lester Lipsky, M. J. Conneely</i>	

Electron-Molecule Collisions: Elastic Scattering

A Separable Exchange Approximation for Electron-Molecule Scattering Calculations <i>T. N. Rescigno, A. E. Orel</i>	291
PDE Approach to Electron-Molecule Scattering <i>K. Onda, A. Temkin</i>	293
Sensitivity Analysis in Electron Scattering <i>Carol A. Venanzi</i>	295
The Application of Separable Potential Approximations to Exchange in Electron-Molecule Scattering <i>Barry I. Schneider, Lee A. Collins</i>	296
The Generation and Application of <i>ab-initio</i> Optical Potential to Electron-Molecule Collisions <i>Barry I. Schneider, Lee A. Collins</i>	298
A Linear Algebraic Approach to Electron-Molecule Collisions: General Formulation and Static-Exchange Calculations <i>L. A. Collins and B. I. Schneider</i>	299
Exchange in Low-Energy Electron-Molecule Scattering <i>Michael A. Morrison, Lee A. Collins</i>	301
The Application of a Fractional \tilde{C} -Functional for Electron-Molecule Scattering <i>K. Takatsuka, Lee Mu-Tao, V. McKoy</i>	303
Incoherent Renormalized Multicenter Potential Model (IRMPM) for Electron Linear Molecule Collision at Intermediate and High Energies <i>Lee Mu-Tao, Luiz Carlos G. Freitas</i>	305
A Generalized Fixed-Nuclei Theory of e^- -Molecule Scattering <i>Edgardo Ficocelli Varrachio</i>	307
Electron Molecule Collisions: Theory	
Low Energy Electron-Hydrogen Molecule Scattering <i>D. Basu, S. Sur, A. S. Ghosh</i>	309
Elastic Scattering of Electrons by Polyatomic Molecules in the First Born Approximation <i>B. S. Sharma, A. N. Tripathi</i>	311
Elastic Scattering of Electrons from Hydrogen Molecules in Independent Atom Model Approximation <i>H. S. Desai, K. N. Joshipura</i>	313
Energy Loss by Slow Electrons and by Slow Atoms in a Molecular Gas <i>Isao Shimamura</i>	314
Vibrational Excitation of N_2 by 5 to 50 eV Electrons <i>John R. Rumble, Jr., Donald G. Truhlar, Walter J. Stevens</i>	316

Frame-Transformation Theory: Application to e-H ₂ Collisions <i>K. A. Jerjian, Ronald J. W. Henry</i>	318
Low-Energy Electron-Polar Molecule Collisions: Adiabatic Nuclei and Unitarized Born Approximations <i>N. T. Padial, D. W. Norcross, L. A. Collins</i>	320
Low Energy Scattering of Electrons by Diatomic Molecules <i>C. J. Noble, P. G. Burke, S. Salvini</i>	322
Theoretical Investigations of Low Energy e-H ₂ Scattering <i>Andrew N. Feldt, Thomas L. Gibson, Michael A. Morrison</i>	324
Electron-Impact Excitation Cross Sections of the a ¹ Π _g State of N ₂ by the Close-Coupling Method <i>Thomas K. Holley, Sunggi Chung, Chun C. Lin</i>	326
O ₂ (¹ Δ) Production by Electron Impact <i>T. R. Dooling, M. S. Zediker, G. H. Miley</i>	328
Distorted-Wave-Approximation Cross Sections for Excitation of Several Electronic States of H ₂ and N ₂ by Low-Energy-Electron Impact <i>Lee Mu-Tao, V. McKoy</i>	330
Electron Scattering from Highly Polar Molecules <i>H. S. Desai, V. M. Chhaya</i>	332
Very Low Energy Resonance States of Alkali Hydride and Alkali Halide Negative Ions <i>W. R. Garrett</i>	333
Rotational Excitation of CSCL Molecule by Electron Impact <i>G. P. Gupta, K. C. Mathur</i>	335
Nuclear Excited Feshbach Resonances in e ⁻ -HCl Scattering <i>J. P. Gauyacq, A. Herzenberg</i>	337
Electron-Molecule Collisions: Inelastic; Experiment	
Low Energy, High Resolution Study of Electron Scattering Using Crossed Electron-Beam and Target-Beam: A Progress Report <i>L. McDonald, S. R. Ryan, N. C. Steph, D. E. Golden</i>	339
Low Energy Electron Impact Excitation of the e ³ Σ ⁻ State of Carbon Monoxide <i>S. Shadfar, W. C. Paske, A. W. Garrett, D. E. Golden</i>	341
Low Energy Electron-N ₂ Collisions: Polarization and Excitation Analysis <i>H. W. Dassen, J. C. Huschilt, J. W. McConkey</i>	342

Vibrational Excitation of CH ₄ and C ₂ H ₆ by Electron Impact: 3-30 eV <i>Minoru Kubo, Daisuke Matsunaga, Hiroshi Tanaka</i>	344
Cross Sections for C ¹ Π _u and B ¹ Σ _u ⁺ States of H ₂ by Electron Impact <i>Joseph M. Ajello, S. K. Srivastava</i>	346
Experimental Inelastic Differential Cross Sections for NH, <i>A. Duguet, A. Lahmam-Bennani</i>	348
Scattering of Low Energy Electrons by Highly Polar Molecules <i>B. Jaduszliwer, A. Tino, P. Weiss, B. Bederson</i>	349
Double Differential Cross Sections for Ethane at Intermediate Energy <i>G. G. B. de Souza, A. C. de A. e Souza</i>	351
Rotational Structure of H ₂ -, D ₂ -Werner-Bands After Electron and Proton Impact: Determination of a Gas Temperature <i>D. Hasselkamp, K.-H. Schartner, W. Spitz</i>	353
The K-Shell Spectra of F ₂ and HF—Shape Resonances in Diatom Molecules <i>C. E. Brion, A. P. Hitchcock</i>	355
Electron-Molecule Collisions: Elastic, Inelastic; Experiment	
Ultra Low Energy Electron Scattering by H ₂ and N ₂ <i>G. R. Freeman, T. Wada</i>	357
Differential Elastic Electron Scattering for C ₂ H ₆ and C ₃ H ₈ from 3 to 20 eV <i>Daisuke Matsunaga, Minoru Kubo, Hiroshi Tanaka</i>	358
Elastic Scattering of Intermediate Energy Electrons by NO and N ₂ O <i>Minoru Kubo, Daisuke Matsunaga, Tadasu Suzuki, Hiroshi Tanaka</i>	360
High Resolution Electron Scattering Spectroscopy of OCS <i>D. Roy, M.-J. Hubin-Franksin, B. Leclerc, A. Poulin, J. Delwiche</i>	362
Electron Energy Loss Spectroscopy of CO Using a New Position Sensitive Multidetector <i>Suzannah Davel, Barry Wallbank, John Comer, Peter J. Hicks</i>	364
High Resolution Electron Energy-Loss Spectroscopy of Unsaturated Molecules <i>Steven Taylor, David G. Wilden, John Comer</i>	366
Threshold Excitation of H ₂ in the Ionization Continuum <i>W. Graudejus, K. Köllmann</i>	367
Excited States of the Bromine Molecule from Threshold Electron Spectra <i>J. Jureta, M. Kurepa, S. Cvejanović</i>	368

High Resolution Threshold Electron Spectroscopy of N₂ and CO

370

*P. Hammond, J. Jureta, G. C. King, F. H. Read***Electron-Molecule Collisions: Inelastic, Resonances, Ionization; Experiment****Shape Resonances in 0-20 eV Electron Scattering by Molecules**

372

*Michel Tronc, Laurence Malegat, Roger Azria,
Yvonnick Lecoat***A Digital Technique for the Study of Narrow Structure in**

374

Electron-Atom and Electron-Molecule Scattering*W. C. Paske, S. Shadfar, S. Lorentz, N. C. Steph,
D. E. Golden***Visualisation of the Fixed Nuclei Electron Molecule Scattering**

375

by a Few Channel Description on the Adiabatic Angular Basis*M. Le Dourneuf, Vo Ky Lan, J. M. Launay***Visualisation of Nuclear Excitation of Molecules by Electron**

377

Impact by a Few Electron Nuclear Channel Description*M. Le Dourneuf, Vo Ky Lan, J. M. Launay***The Dissociative Ionization of N₂O by Low-Energy Electron**

379

Impact the N⁺ and N₂⁺ Dissociation Channels*R. Locht, J. L. Olivier, W. Beeckman, P. Trousson,
J. Momigny***Single and Double Electron Impact Ionization of NO**

381

*T. D. Märk, E. Märk, Y. B. Kim, K. Stephan***Electron Impact Ionization Cross Section of Nitrogen in its**

383

Metastable A¹S_u⁺ State*P. B. Armentrout, Susan M. Tarr, Ariel Dori and Robert S. Freund***Total Electron Impact Ionization Cross Section of Ammonia**

384

*N. Djurić, D. Belić, M. Kurepa***Ionization of H₂ by Electron Impact: Triple Differential**

386

Cross Section in the Coulomb-Projected-Born Approximation*B. L. Jain, W. N. Shelton***Electron-Molecule Collisions: Dissociation, Dissociative Attachment; Experiment****The Influence of Fast Excited H Fragments on Balmer**

388

Emission Cross Sections in Ammonia*M. D. Tasić, J. M. Kurepa***Translational Spectroscopy of Electron Impact**

390

**Dissociation of HF by Doppler Profile Measurements
of Balmer- α Emission***M. Ohno, N. Kouchi, K. Ito, N. Oda, Y. Hatano*

Polarised Emission from OH($A^3\Sigma^+$) Radicals Following the Electron Impact Dissociation of H ₂ O <i>K. Becker, B. Stumpf, G. Schulz</i>	392
Translational Energy Distributions of the Excited Hydrogen Atoms (n = 3,4,5) and Their Production Mechanism in e - H ₂ Collisions <i>Teiichiro Ogawa, Morihide Higo</i>	394
Dissociative Excitation of SO ₂ by Electron Impact <i>S. K. Srivastava, J. M. Ajello</i>	396
Dissociation of CF ₄ and Other Fluoro-Alkanes by Electron Impact <i>Harold F. Winters, Mitio Inokuti</i>	397
Polarization of Fragment Emission Produced by Electron Impact on Triatomic Cyanides <i>Tamotsu Kondow, Takashi Nagata, Kozo Kuchitsu</i>	399
Dissociation of H ₂ ⁻ States Into Unstable H ⁻ States <i>A. Huetz, J. Mazeau</i>	401
Experimental Thermal Electron Attachment Cross Sections for the Processes SF ₆ ⁻ /SF ₆ and Cl ⁻ /CFCl ₃ <i>Ara Chutjian</i>	403
Translational Excess Energy in Dissociative Electron Attachment Processes <i>Eugen Illenberger</i>	405
Dissociative Attachment in Sodium Halides <i>D. Teillet-Billy, L. Bouby, J. P. Ziesel</i>	407
Dissociative Attachment in C ₂ N ₂ and C ₂ H ₂ <i>Robert Abouaf, Lydia Andric, Roger Azria, Michel Tronc</i>	409
Spin-Orbit Splitting and Dynamical Coupling for Differential H ⁻ Cross Section in Hydrogen Halides <i>R. Azria, Y. Le Coat, M. Tronc</i>	411
Differential Cross Section for Negative Ion Formation in Halogen Molecules <i>R. Azria, R. Abouaf, D. Teillet-Billy, D. Babic</i>	413
Thermal Electron Attachment to Van der Waals Molecules as Studied by the Pulse Radiolysis-Microwave Cavity Technique <i>M. Toriumi, A. Nishikawa, Y. Hatano</i>	415
Negatively Charged Water Clusters, or the First Observation of Free Hydrated Electrons <i>Martin Armbruster, Hellmut Haberland, Hans-Georg Schindler</i>	417

The Concept of a Local Complex Potential for Nuclear Motion in Electron-Molecule Collisions	419
<i>R. K. Nesbet</i>	
Theoretical Study of Vibrational Excitation and Dissociative Electron Attachment in F ₂ *	420
<i>A. U. Hazi, A. E. Orel, T. N. Rescigno</i>	
Positron-Atom and -Molecule Collisions: Experiment and Theory	
Comparison Measurements of Total Cross Sections for Inter- mediate Energy Positrons and Electrons Colliding with Kr, Xe, and H ₂	422
<i>W. E. Kauppila, M. S. Dababneh, K. R. Hoffman, Y.-F. Hsieh, V. Pol, T. S. Stein</i>	
Experimental Search for Positron Scattering Resonances	424
<i>T. S. Stein, F. Laperriere, M. S. Dababneh, Y.-F. Hsieh, V. Pol, W. E. Kauppila</i>	
Inelastic Scattering of Slow Positrons by Noble Gas Atoms	426
<i>P. G. Coleman, J. T. Hutton, D. R. Cook, L. M. Diana, S. C. Sharma</i>	
Total Cross-Sections for Positron—N ₂ Scattering for 200–1000 eV	428
<i>J. Dutton, C. J. Evans, H. L. Mansour</i>	
A New Global Operator for Delta Functions Applied to Positron-Atom Scattering	430
<i>Richard J. Drachman</i>	
Low Energy P-Wave Phase Shifts for e ⁺ H Using an Adiabatic Approximation	432
<i>E. A. G. Armour, C. A. Becker</i>	
Elastic Scattering of Positrons and Electrons by Inert Gas Atoms Variational-Static Approximation	434
<i>A. H. Moussa</i>	
Positronium Formation in Positron-Hydrogen Scattering	436
<i>J. W. Humberston</i>	
Field-Theory of Positronium Formation in e ⁺ -H Scattering	438
<i>Edgardo Ficocelli Varracchio</i>	
Excitation of Alkali Atoms by Electron and Positron Impact at Intermediate Energies	440
<i>R. K. Sharma, G. P. Gupta, K. C. Mathur</i>	
Elastic Scattering of Positrons by Rare Gases	442
<i>G. Peach</i>	

Excitation and Ionization in Electron-Ion Collisions

Plasma Effects on Inelastic Electron-Ion Scattering <i>B. L. Whitten, G. J. Hatton, N. F. Lane, J. C. Weisheit</i>	443
Schwinger's Variational Principle for Electron-Ion Scattering <i>Nasser Maleki</i>	445
Radiative Decay of Autoionizing Resonances in Electron Impact Excitation Cross Sections <i>A. K. Pradhan</i>	446
Oscillator Strengths for S II <i>Y. K. Ho, R. J. W. Henry</i>	448
Non-Adiabatic Effects in Scattering of Slow Electrons on Molecular Ions <i>G. V. Golubkov, G. K. Ivanov</i>	450
Relativistic R-Matrix Calculation of e-Atom Scattering <i>Ian P. Grant, Patrick H. Norrington</i>	452
Elastic Scattering of Hydrogenlike Ions by Structureless Charged Particles in the Glauber Approximation <i>T. T. Gien</i>	453
Electron Excitation of Helium Like Ions <i>K. A. Berrington, J. G. Doyle, A. E. Kingston</i>	455
Electron Excitation of Positive Ions with 3s, 3p, 3d and 4s Electrons <i>P. G. Burke, K. L. Baluja, P. L. Dufton, A. E. Kingston</i>	456
Elastic Scattering of Electrons from H_2^+ , and Studies of Related Dynamic Processes <i>Hidekazu Takagi, Hiroki Nakamura</i>	457
Cross Sections and Rate Coefficients for Electron Scattering with Helium-like Ions and Line Ratios for Plasma Diagnostics <i>A. K. Pradhan, R. B. Christensen, D. W. Norcross, D. G. Hummer, J. M. Shull</i>	459
Inelastic Scattering of Electrons by Hydrogenic Ions <i>N. Abu-Salbi, J. Callaway</i>	461
The Variable-Charge Coulomb-Projected Born Approximation for Electron Collisions with Ions <i>J. A. Schaub-Shaver, A. D. Stauffer</i>	463
Electron-Impact Ionization of Xe^{3+} <i>D. C. Gregory, P. F. Dittner, D. H. Crandall</i>	465

Contributions of Autoionization to Ionization Cross Sections in Ions of the Transition Series Elements <i>D. C. Griffin, C. Bottcher, M. S. Pindzola</i>	467
Excitation-Autoionization in Electron Impact Ionization of Ti^{+3} and Zr^{+3} <i>R. Aaron Falk, Gordon H. Dunn, D. C. Gregory, D. H. Crandall</i>	469
Ionization of Multiply Charged Atoms Preceded by Electron Capture <i>K. J. LaGattuta, Y. Hahn</i>	471
Electron Impact Ionization of Positive Ions with Allowance for Autoionizing and Radiative Decay Channels <i>K. Butler, D. L. Moores</i>	473
Systematics of Electron Impact Ionization Cross Sections for Atoms and Ions <i>S. M. Younger</i>	475
Electron-Ion Collisions: Theory and Experiment	
Search for the Inverse Auger Effect with Quasi Free Electrons <i>D. Brandt, M. Clark, T. McAbee, P. Peters, S. Shafroth, J. Swenson, R. Mowat</i>	477
Dielectronic Recombination for Mg^{1+} : End-Point of the Sodium Sequence <i>K. J. LaGattuta, Y. Hahn</i>	479
Close Coupling of Resonance Excitation and Dielectronic Recombination Channels for a Problem of Electron Collisions with Multiply Charged Ions <i>L. P. Presnyakov, A. M. Urnov, B. N. Chichkov</i>	480
Relativistic Effects on the Dielectronic Recombination of Highly Ionized Atomic Systems <i>P. A. Shorer, A. Dalgarno</i>	481
Quantum Defect Theory of Dissociative Recombination of Slow Electrons with H_2^+ Ions <i>A. Giusti, C. Derkets, J. N. Bardsley</i>	482
Dissociative Recombination of vibrationally Excited Ions <i>A. J. Cunningham, T. F. O'Malley, R. M. Hobson</i>	484
Rate Coefficients for Direct Radiative Recombination of Fast Electrons with Atomic Ions <i>Young Soon Kim, R. H. Pratt</i>	486

Atom-Atom Collisions

The Repulsive Potential Function Between Two Helium Atoms <i>Gou Qing-Quan, Huang Shu-Xun, Liu Zhi-uan, Liu Xiang-Shi</i>	488
The Repulsive Potential Function Between Hydrogen and Helium Atoms <i>Huang Shu-Xun</i>	490
Total and Ionization Cross Sections for He*(2 ¹ S)-Ar and He*(2 ³ S)-Ar in the Thermal Energy Range <i>S. Burdenski, R. Feltgen, H. Lichtenfeld, H. Pauly</i>	491
Velocity Dependence of the Cross Section for the Associative Ionization of Ne Atoms by Laser Excited He (3 ¹ P) Atoms <i>A. Pesnelle, S. Runge, D. Sevin, N. Wolffer, G. Watel</i>	493
A Method for Extending Bethe's Stopping-Power Formula to Lower Collision Energies <i>James M. Peek</i>	495
Complex Coordinate Method for Interpolated Numerical Potentials—Application to Predissociation Lifetime Calculations <i>Krishna K. Datta, Shih-I Chu</i>	497
Coherence Analysis of S → D Transitions: Li(2s→3d) Excitation in 2-10 keV Li-He Collisions <i>N. Andersen, T. Andersen, K. Refsgaard</i>	499
Theoretical Coherence Parameters for S → D Transitions: Li(2s→3d) Excitation in keV Li-He Collisions <i>Svend Erik Nielsen, John S. Dahler</i>	501
Empirical Interaction Potentials Between Sr and Rare Gas Atoms <i>Hiroshi Harima, Yukio Fukuzo, Kunihide Tachibana, Yoshio Urano</i>	503
Quenching of Ne(³ P ₀) Atoms at 150°K <i>J. D. Clark, C. O. Akoshile, A. J. Cunningham</i>	505
Multichannel Treatment of Ionization with Discretization of the Electronic Continuum <i>David A. Micha, Rubén D. Piacentini</i>	506
Product Angle-Velocity Distributions for Ionization of Hydrogen Atoms by Helium Metastable Atoms <i>A. Khan, H. R. Siddiqui, P. E. Siska</i>	508
Simultaneous Excitation of Both Collision Partners in He-He Collisions <i>G.J.N.E. de Vlieger, J. van Eck, D. van Pijkeren, H.G.M. Heideman</i>	510

Differential Cross Sections for Ion-Pair Formation in 0.2-1.0 keV He* (2^3S) + Na Collisions	512
<i>M. J. Coggiola, R. V. Hedges, K. T. Gillen</i>	
Estimation of Rate Coefficients for Lithium Fine Structure Mixing Induced by Collisions with Noble Gas Atoms	514
<i>A. I. Reznikov</i>	
Molecular Treatment of Adiabatic and Diabatic K-L Shell Interaction: The Na-He Collision	516
<i>C. Courbin-Gaussorgues, V. Sidis, J. Vaaben</i>	
Interaction Potentials for Ne(3P_0) + Ne from Differential Cross Sections	518
<i>Wolfgang Beyer, Hellmut Haberland, Dieter Hausmann</i>	
The Pumping Process of the Helium-Neon Laser, New Light on an Old Problem	520
<i>Hellmut Haberland</i>	
Autoionization in Thermal Energy Collisions of Polarized Ne($3p\ {}^3D_3$) and Ne($3s\ {}^3P_2$) Atoms with Hg	522
<i>W. Bussert, J. Ganz, H. Hotop, M.-W. Ruf, A. Siegel, H. Waibel</i>	
Ion-Atom Collisions; Elastic Scattering	
Differential Elastic Scattering Cross Sections for Sodium Ions Incident on Atomic Hydrogen for keV Energies	524
<i>J. L. Peacher, D. M. Blankenship, T. J. Kvale, E. Redd, P. J. Martin, J. T. Park</i>	
Scattering of He $^+$ in He	526
<i>T. K. Rai Dastidar, K. Rai Dastidar</i>	
Collisional Electron Detachment from Negative Ions	
Theory of Collisions of Negative Ions with Atoms	527
<i>R. D. Taylor, J. B. Delos, T. S. Wang</i>	
Electron Loss by Fast Li $^-$ Ions	529
<i>R. W. McCullough, M. B. Shah, M. Lennon, H. B. Gilbody</i>	
Electron Detachment via Direct Coupling and "Charge Exchange" to Shape Resonances in Negative Ion Molecule Collisions	531
<i>Vu Ngoc Tuan, V. A. Esaulov</i>	
Total Cross Section Measurements for Collisions of F $^-$ with H $_2$ and D $_2$	533
<i>M. S. Huq, D. S. Fraedrich, R. L. Champion, L. D. Doverspike</i>	

Electron Detachment in Collisions Between Negative Ions and CO Molecules	535
<i>R. N. Ilin, V. I. Sakharov, I. T. Serenkov</i>	
Associative Detachment in Thermal Collisions of Negative Halogen Ions with Hydrogen Atoms	537
<i>J. P. Gauyacq</i>	
Theory of Ion-Atom Collisions	
Exact Solution of the Schrödinger Equation with a Trajectory Method in Atomic Collisions	539
<i>Georg Terlecki, Norbert Grün, Werner Scheid</i>	
“One and a Half Centered” Calculations of Ionization and Charge Transfer in $\text{H}^+ + \text{He}^+$ and $\text{He}^{2+} + \text{H}$ Collisions	541
<i>J. F. Reading, A. L. Ford, R. L. Becker</i>	
Asymptotic Cross Sections in Ion-Atom Collisions	543
<i>B. C. Saha, P. K. Roy</i>	
Time-Dependent Description of Atomic Collision Processes. High and Intermediate Energy Proton-Atom Scattering	545
<i>M. Horbatsch, H. J. Lüdde, A. Henne, E.K.U. Gross, R. M. Dreizler</i>	
Quantum Theory of Near-Adiabatic Collisions	547
<i>John B. Delos</i>	
Use of a New Diabatic Molecular Representation in $\text{He}^+ \text{-He}$ Collision	549
<i>T. K. Rai Dastidar, K. Rai Dastidar, R. Sen. Gupta</i>	
Quasi-molecular States for Collisions Between Multiply Charged Ions and He Atoms	550
<i>V. K. Nikulin, A. V. Samoylov</i>	
Ar K and Kr L Excitation in Ar-Kr Collisions	552
<i>R. McMurray, M. J. Reenan, H. O. Lutz, W. Fritsch, U. Wille</i>	
Magnus Approach to Rotationally Induced Inner-Shell Excitation	554
<i>U. Wille</i>	
Coulomb Deflection Factors for K-Shell Ionization	556
<i>R. Gundersen, L. Kocbach, J. M. Hansteen</i>	
The SCA for K-Shell Ionization by Relativistic Ions	558
<i>Kjell Aashamar, Per Amund Amundsen</i>	
K-Shell Ionization During α -Decay	560
<i>R. Anholt, P. A. Amundsen</i>	

Electronic Relativistic Effects in K-Shell Ionization of Heavy Atoms by Heavy Ions <i>G. L. Webster, L. N. Tunnell</i>	562
Relativistic Green's Function Including Screening <i>D. Bunaciu, Z. Iwinski, R. H. Pratt</i>	563
Improvements to Bohr's Electron-Loss Cross Section Formula for Fast Hydrogenic Projectiles Colliding with He and N <i>George H. Gillespie</i>	564
Convergence Acceleration of the Partial Wave Expansion of Scattering Amplitude <i>C. R. Garibotti, F. F. Grinstein</i>	566
Reviewed and Improved Binary Encounter Model for Atom Ionisation by Light Ion Impact <i>L. Avaldi, M. Milazzo</i>	568
Information-Theoretical Interpretation of Rydberg-State Excitation, Multiple Ionization, and Charge Distribution in Ion-Atom Collisions <i>T. Åberg, O. Goscinski</i>	570
Adiabatic Internuclear Potential and Elastic Scattering in Heavy Ion Collisions <i>H. Hartung, H. Lenz, T. Morović, B. Fricke, W.-D. Stepp, A. Rosén</i>	572
Rainbow Effect in the Case of a Composite Singular Potential <i>Cao xuan Chuan, Ho van Hoa</i>	574