

CONTENTS

Photoionization of Atoms I

Photoionization of the $3p^5 4s$ Excited States of Argon <i>P.C. Ojha, P.G. Burke</i>	1
One and Two Electron Atomic Photoionization Processes <i>P. Scott, P.G. Burke, A.E. Kingston</i>	2
Radiative Recombination Coefficients for Complex Atomic Ions <i>G. Peach</i>	3
Double-Electron Photoionization of Helium <i>S.N. Tiwary</i>	4
A New QDT Analysis of Two-Channel Interactions <i>Annick Guisti-Suzor</i>	5
Photoionisation of Si II: an Application of Quantum Defect Theory <i>K.T. Taylor, C.J. Zeippen</i>	6
Simple Dependences of Bound-Free Dipole Matrix Elements and Their Zeros on the Properties of the Initial State <i>David Salzmann, R.H. Pratt, M.S. Wang, R.Y. Yin</i>	7
Zeros in Dipole Matrix Elements of Photoionization of Excited Alkali Atoms <i>Jayanti Lahiri, Steven T. Manson</i>	8
Cross Sections for Photoionization of Excited d-States of Alkali Atoms: Hartree-Fock Calculations <i>Alfred Z. Msezane, Steven T. Manson</i>	9
The Resonance Photoionisation of Helium to $He^+(n=2)$ <i>S.M. Burkov, S.I. Strakhova</i>	10
Theoretical Investigations of Spin Polarisation in Mercury <i>F. Keller, F. Combet Farnoux</i>	11
Polarization of Atomic Photoelectrons in Relativistic and Non-relativistic Theories <i>N.A. Cherepkov</i>	12
Photoionization of High-Z Atoms: Relativistic Effects on Cooper Minima in the 6p Subshell <i>S.T. Manson, C.J. Lee, R.H. Pratt, I.B. Goldberg, B.R. Tambe, Akiva Ron</i>	13
Z n & Dependence of Cancellation of Relativistic and Retardation Effects in Photoionization <i>R.H. Pratt, Akiva Ron, S.T. Manson, Sung Dahm Oh</i>	14
Relativistic Effects in the Photoionization of the 5p Subshell of High-Z Elements <i>B.R. Tambe, Steven T. Manson</i>	15
Relativistic Study of Multichannel Interactions in Photoionization of High-Z Atoms: RRPA Applied to Radium and Radon <i>Pranawa C. Deshmukh, Steven T. Manson, Vojislav Radojevic</i>	16

Relativistic Many-Body Approach to the Photoionization of Alkali Atoms	17
<i>J.E. Hansen, W.R. Johnson, G. Soff</i>	
Energy Shift of Emitted X-Rays Following Inner Shell Photoionization Near Threshold	18
<i>J. Mizuno, T. Ishihara, T. Watanabe</i>	
Photoionization of Atoms II	
Near-Threshold Measurement of the Photo-Doubledetachment of $\text{He}^-(4p^0)$	19
<i>Y.K. Bae, M.J. Coggiola, J.R. Peterson</i>	
Photoionization of Atomic Oxygen, Cesium, and Rubidium	20
<i>J.A.R. Samson, P. Pareek, H. Suemitsu</i>	
Photoionization of Excited Cs 6p and Cs 7p Subshells	21
<i>Alfred Z. Msezane</i>	
Alignment of $\text{Cd}^+(4d^{-1} 2D_{5/2})$ after Photoionization with Synchrotron Radiation	22
<i>W. Kronast, W. Mehlhorn</i>	
Strong Variations of Angular Distribution and Polarization of Fluorescence Radiation in the Region of an Autoionizing Resonance of Photoabsorption	23
<i>V.V. Balashov, N.M. Kabachnik, V.S. Senashenko</i>	
Observation of the $1s2p2p' 4p^e$ Resonance in He^- Photodetachment	24
<i>J.R. Peterson, Y.K. Bae, M.J. Coggiola</i>	
Resonance Photoabsorption by the Two Electron Systems near the $n=2$ and $n=3$ Thresholds	25
<i>A. Wague</i>	
Electron Spectroscopy of Atomic Fe, Co and Ni Excited by VUV Photon Impact	26
<i>E. Schmidt, H. Schröder, B. Sonntag, H. Voss, H.-E. Wetzel</i>	
Photoionization of Laser Excited Sodium and Barium Atoms	27
<i>J.M. Bizau, B. Carré, P. Dhez, D. Ederer, P. Gérard, J.C. Keller, P. Koch, J.L. Legouet, J.L. Picqué, G. Wendin, F. Wulleumier</i>	
High Resolution Study of the $\text{Ne}(2p^5_{1/2}ns', nd')$ Autoionization Resonances	28
<i>J. Ganz, A. Siegel, W. Bussert, K. Harth, M.-W. Ruf, H. Hotop</i>	
Multistep Excitation of Autoionizing States of Ba	29
<i>T.F. Gallagher, N.H. Tran, P. Pillet, R. Kachru</i>	
Investigation of Autoionising Levels in Ga I, In I and Tl I	30
<i>M. Müller, M. Schmidt, P. Zimmermann</i>	
Resonant Photoemission Study of the Xenon - 4d - Excitations	31
<i>U. Becker, E. Schmidt, B. Sonntag, H.E. Wetzel, A. Winogradov</i>	

Theoretical Study of the Shake-up in the Core Photoelectron Spectra of Atoms <i>G. De Alti, P. Decleva, A. Lisini</i>	32
Photoionization of Aligned $6snd\ ^1,^3D_2$ Rydberg States in Atomic Barium: The Role of the $5d7d$ Perturbing State <i>S.J. Smith, E. Matthias, P. Zoller, D.S. Elliott, N.D. Piltch, G. Leuchs</i>	33
Photoionization of Molecules	
Application of the Reaction Matrix Method to Molecular Photoionization Treatment of Final-State Correlation in $3\sigma_g$ and $2\sigma_u$ Photoionization of N_2^* <i>Jeffrey Stephens, Dan Dill</i>	34
Ab-Initio Approach to the Multichannel Quantum Defect Calculation of the Electronic Autoionization in the Hopfield Series of N_2 <i>M. Raoult, H. Le Rouzo, G. Raseev, H. Lefebvre-Brion</i>	35
A Continuum Spectrum Multichannel Finite Volume Variational Method <i>G. Raseev, H. Le Rouzo</i>	36
On the Influence of Electron-Electron Correlations in H_2 Molecule on the Characteristics of the $(\gamma, 2e)$ Process <i>V.G. Levin, V.G. Neudatchin, A.V. Pavlitchenkov, Yu.F. Smirnov</i>	37
Manifestations of the Optical Activity of Molecules in the Dipole Photoeffect <i>N.A. Cherepkov</i>	38
Absolute Dipole Oscillator Strengths for the Photoabsorption, Photoionization and Fragmentation of HCl , HBr and NO <i>C.E. Brion, F. Carnovale, S. Daviel, Y. Iida</i>	39
Multi-Photon Electron Spectroscopy of Nitric Oxide <i>J. Kimman, M. Lavollée, M. Spruit, M.J. van der Wiel</i>	40
Ultrahigh Resolution Photodetachment Study of C_2^- <i>U. Hefter, R.D. Mead, P.A. Schulz, W.C. Lineberger</i>	41
Triply Differential Photoelectron Studies of Molecular Photoionization <i>J.L. Dehmer, A.C. Parr, S.H. Southworth, D.M.P. Holland</i>	42
Fluorescence Polarization as a Probe of Molecular Autoionization <i>E.D. Poliakoff, J.L. Dehmer, A.C. Parr, G.E. Leroi</i>	43
Experimental and Theoretical Study of CO Photoionization in the 15-40 eV Energy Range <i>B. Leyh, G. Raseev, M.-J. Hubin-Franskin, J. Delwiche, I. Nenner, H. Lefebvre-Brion, P. Morin, M.-Y. Adam</i>	44
Photoionization Cross Sections of the Valence Orbitals of CO <i>E.P. Leal, Lee Mu-Tao, F.J. da Paixao, R.R. Lucchese, V. McKoy</i>	45

Theoretical Studies of Photoexcitation and Ionization in Molecules of Astrophysical Interest	46
<i>G.H.F. Diercksen, P.W. Langhoff</i>	
Photodissociation of Neutral Molecules	
Semiclassical Theory of Predissociation Induced by Rotational (Coriolis) Coupling	47
<i>Hiroki Nakamura</i>	
Photodissociation of OH Through Non-Adiabatic Interaction	48
<i>Ewine F. van Dishoeck, Marc C. van Hemert, A.C. Allison, A. Dalgarno</i>	
The Photodissociation of H ₂ O at 157 nm: Full Internal State Distributions and Alignment of Nascent OH($X^2\Pi$) Radicals	49
<i>P. Andresen, G.S. Ondrey, E.W. Rothe, B. Titze</i>	
The Photodissociation of Cyanogen	50
<i>Joshua B. Halpern, Xiao Tang, William M. Jackson</i>	
Fluorescence Excitation Spectra of Neutral Fragments from Photodissociation of OCS Molecules by VUV Incident Photons	51
<i>J. Delwiche, M.-J. Hubin-Franskin, A. Tabché-Fouhaile, H. Frohlich, K. Ito, P.-M. Guyon, I. Nenner</i>	
Laser Multiphoton Ionization and Dissociation of Polyatomic Molecules	52
<i>I. Dimicoli, J. Jaraudias, J. Lemaire, R. Botter</i>	
Photodissociation of Molecular Ions	
Dissociation of Energy Selected States of O ₂ ⁺ and CO ⁺ by Threshold Photoelectron-Photoion Coincidence	53
<i>M. Richard-Viard, O. Dutuit, T. Govers, P.M. Guyon, H. Frohlich, M. Lavollée</i>	
Photofragment Spectroscopy of Molecular Ions	54
<i>E. Solarte, V. Hermann, R. Anselmann, F. Linder</i>	
Photofragment Spectroscopy of Cs ₂ ⁺	55
<i>H. Helm, R. Möller, P.C. Cosby, D.L. Huestis</i>	
Photodissociation of N ₂ ⁺⁺	56
<i>P.C. Cosby, R. Möller, H. Helm</i>	
UV-Laser Photodissociation of Molecular Ions	57
<i>R.E. Kutina, A.K. Edwards, J. Berkowitz</i>	
Laser Photodissociation of CO ₃ ⁻ and its Hydrates	58
<i>A.W. Castleman, Jr., D.E. Hunton, M. Hofmann, T.G. Lindeman</i>	
Fast Neutral Beam Measurements of Molecular Photodissociation	59
<i>L.D. Gardner, J.L. Kohl</i>	

Multiphoton Ionization of Atoms

A Basis Set Approach to Multiphoton Ionization Including Free-Free Transitions <i>John T. Broad</i>	60
Semiclassical Many-Mode Floquet Theory <i>Shih-I Chu, Tak-San Ho, James V. Tietz</i>	61
Influence of the Dynamic Stark Effect on Electron Angular Distributions in Multiphoton Ionization <i>W. Ohnesorge, F. Diedrich, D.S. Elliott, G. Leuchs, H. Walther</i>	62
Angular Distribution of Photoelectrons from Multiphoton-Ionization ($\lambda = 532$ nm) <i>R. Hippler, H.-J. Humpert, H. Schwier, H.O. Lutz</i>	63
Ponderomotive Force and A.C. Stark Shift in Multiphoton Ionization by Strong Fields <i>H.G. Muller, P. Kruit, A. Tip, M.J. van der Wiel</i>	64
Photoelectron Energy and Angular Distributions from Multiphoton Ionization of Cesium Beams <i>J.A.D. Stockdale, R.N. Compton, C.D. Cooper</i>	65
Microwave Ionization of Highly Excited Helium Atoms <i>W. van de Water, D.R. Mariani, P.M. Koch</i>	66

Multiphoton Processes in Molecules and Clusters

Double Resonance Multiphoton Ionization Studies of High Rydberg States in NO <i>M. Seaver, W.A. Chupka, S.D. Colson, D. Gauyacq, Ch. Jungen</i>	67
A Multiphoton Ionization Photoelectron Spectroscopic Study on Autoionization Processes of NO Molecule <i>Y. Achiba, K. Sato, K. Kimura</i>	68
Photoelectron Studies of Resonant Multiphoton Ionization of CO via the A $^1\Pi$ State <i>S.T. Pratt, E.D. Poliakoff, P.M. Dehmer, J.L. Dehmer</i>	69
Resonant Multiphoton Ionization of H ₂ via the B $^1\Sigma_u^+$, $v=7$, $J=2$ and 4 Levels with Photoelectron Energy Analysis <i>S.T. Pratt, P.M. Dehmer, J.L. Dehmer</i>	70
One- and Two-Color Multiphoton-Ionization-Experiments on Molecular Clusters <i>W. Bronner, P. Oesterlin, M. Schellhorn</i>	71
Raman Analysis of SF ₆ Molecular Beams Excited with a CW CO ₂ -Laser <i>G. Luijks, S. Stolte, J. Reuss</i>	72
Spectroscopy of Fluorobenzene van der Waals Clusters by Resonant Two-Photon Ionization <i>K. Rademann, B. Brutschy, H. Baumgärtel</i>	73
Multiple Photon Excitation of CF ₃ Br <i>A. Giardini-Guidoni, E. Borsella, R. Fantoni</i>	74

Two-Photon Dissociation of Vibrationally Excited H_2^+ and HD^+ Molecules	75
<i>Cecil Laughlin, Shih-I Chu, Krishna K. Datta</i>	
Two-Photon "Dissociation" to the Quasicontinuum	76
<i>E. Kyrölä, J.H. Eberly</i>	
A-Doublet Populations of $CH(A^2\Delta)$ from CH_3 Radicals Produced by the UV Multiphoton Dissociation of CH_3 -Containing Molecules	77
<i>Takashi Nagata, Mutsumi Suzuki, Kaoru Suzuki, Tamotsu Kondow, Kozo Kuchitsu</i>	

Elastic Electron-Atom Collisions: Differential Scattering

Measurements of Differential Cross Sections for e-Ar, Kr, Xe Scattering at $E = 50 \text{ meV} - 2 \text{ eV}$	78
<i>M. Weyhreter, B. Barzick, F. Linder</i>	
On the Elastic Electron-Neon Scattering in the 16 eV Region	79
<i>E. Naslenas, P. Zvirblis</i>	
Elastic Scattering of Electrons from Neon at Intermediate Energies	80
<i>B.B. Srivastava, S.S. Dhal</i>	
Elastic Small-Angle Electron Scattering by Helium	81
<i>Ortwin Müller, J. Geiger</i>	
Pseudostate Model of Electron Shadow Scattering	82
<i>S. Geltman, R.K. Nesbet</i>	
Small Angle (e^- , Na) Scattering	83
<i>B. Jaduszliwer, P. Weiss, A. Tino, B. Bederson</i>	
Absolute Measurements of Small Angle Elastic Scattering of Electrons	84
<i>R.W. Wagenaar, T. v. Tubergen, F.J. de Heer</i>	
Relative Differential Cross Sections for Elastic and Inelastic Scattering of Electrons by Xenon in the Energy Range of 15 to 80 eV	85
<i>B. Marinkovic, V. Pejcev, D. Filipovic, L. Vuskovic</i>	
Elastic Scattering of Electrons by Sodium Atom	86
<i>S.N. Singh, A.N. Tripathi, M.K. Srivastava</i>	
Relativistic Phase Shift Analysis for Elastic Scattering of Electrons by Xenon below the First Inelastic Threshold	87
<i>D. Register, L. Vuskovic, L.T. Sin Fai Lam, S. Trajmar</i>	

Elastic Electron-Atom Collisions: Integral Cross Sections

Electric Polarizability of Neon Atom and Electron-Neon Scattering Length from Electron Cyclotron Resonance Absorption Spectrum	88
<i>A.P. Kabilan</i>	
Low Energy Scattering from Krypton and Xenon	89
<i>R.P. McEachran, A.D. Stauffer</i>	

Precision Measurements of Ramsauer Minima in Electron Total Cross Sections	90
<i>J. Ferch, C. Masche, W. Raith</i>	
Total Cross Sections for Electron Scattering from N ₂ , Xe, Kr and Ar	91
<i>K. Jost, P.G.F. Bisling, F. Eschen, M. Felsmann, L. Walther</i>	
Total Collisional Cross-Sections for e [±] Scattering from Li Atoms	92
<i>S.P. Khare, Vijayshri</i>	
Total Electron Scattering Cross Sections for He, Ne, Ar, Xe, and Selected Molecules: 4-300 eV	93
<i>J.C. Nickel, K. Imre, D.F. Register, S. Trajmar</i>	
Total Cross Sections for Electrons Scattered by Ar in the Intermediate Energy Range	94
<i>J.C. Nogueira, I. Iga, E. Chaguri, M.T. Lee</i>	
Theoretical Cross-Sections for Electron Scattering from C, N and O-Atoms	95
<i>H.S. Desai, K.N. Joshipura</i>	

Elastic Electron-Atom Collisions: Theoretical Methods

Scattered Wave Function Using Extended Numerov Algorithm	96
<i>Joseph M. Paikeday</i>	
A Treatment of the Elastic Scattering of Electrons on H and He ⁺ Using Hyperspherical Coordinates and Incorporating the Fock Expansion	97
<i>Steven Alston</i>	
Functional Analysis in the e-H Scattering Problem	98
<i>P.A. Massaro</i>	
Inclusion of the Fock Expansion in Hyperspherical Coordinate Calculations	99
<i>Jim Feagin, Joseph Macek, Anthony F. Starace</i>	
Eikonal Exchange Amplitudes for Electron-Helium Collisions	100
<i>B. Padhy, R. Srivastava, D.K. Rai</i>	

Resonances in Electron-Atom Collisions

Hilbert Space Representation of Resonance Wavefunctions	101
<i>A. Macias, A. Riera</i>	
Complex Virial Theorem and Complex Scaling	102
<i>B.R. Junker</i>	
The 6s6p ² Resonances in e-Hg Scattering	103
<i>N.S. Scott, P.G. Burke, K. Bartschat</i>	
High Resolution Electron Impact Studies of Mercury: Threshold Excitation and the Measurement of Metastable Excitation Functions	104
<i>D.S. Newman, G.C. King, M. Zubek</i>	

Wannier-Ridge He ⁻ Resonances <i>S.J. Buckman, P. Hammond, G.C. King, F.H. Read, C.D. Warner</i>	105
Grandparent and Non-valence Resonances in Electron-Impact Excitation of the Noble Gases <i>S.J. Buckman, P. Hammond, G.C. King, F.H. Read</i>	106
Resonances in Electron Scattering by Neon <i>K.T. Taylor, W.C. Fon, C.W. Clark</i>	107
An Eleven State Electron-Helium Scattering Calculation <i>P.G. Burke, L.C.G. Freitas, A.E. Kingston, K.A. Berrington</i>	108
Hyperspherical Description of Electronic Correlations in Atomic Systems I - Bound and Continuum States of Two-Electron Systems H ⁻ , He <i>L. Pelamourgues, S. Watanabe, M. Le Dourneuf</i>	109
Hyperspherical Description of Electronic Correlations in Atomic Systems II - Graphical Representation of Radial and Angular Correlations in Doubly-Excited Atoms <i>M. Le Dourneuf, S. Watanabe, L. Pelamourgues</i>	110
Hyperspherical Description of Electronic Correlations in Atomic Systems III - Radial and Angular Correlations of Triply-Excited States <i>S. Watanabe, M. Le Dourneuf</i>	111

Inelastic Electron-Atom Collisions: Low Energies

Variational Linear Algebraic Equations Method <i>B.L. Moiseiwitsch</i>	112
A Comparative Study of Multiple Scattering Approximations to the Excitation of Atomic Hydrogen by Electron Impact <i>H.E. Fargher, M.J. Roberts</i>	113
Pseudostate Expansions in Electron Hydrogen Scattering <i>D.H. Oza, J. Callaway</i>	114
Applications of the Coupled-Channels Optical Calculation for Electron-Atom Scattering <i>B.H. Bransden, I.E. McCarthy, A.T. Stelbovics</i>	115
Differential Cross Sections of e ⁻ + H(1s) → e ⁻ + H(2p) <i>S.N. Tiwary</i>	116
High Resolution Total Electron Impact Excitation of Individual He 2 ³ S and 2 ¹ S States <i>David Spence, Dorothy Stuit, M.A. Dillon, R.-G. Wang</i>	117
Low Energy Electron Scattering from Interstellar Gas Molecules <i>V.M. Chhaya, H.S. Desai</i>	118
Analytical Calculation of Mean Excitation Energies of Hydrogen and Other Light Atoms <i>S. Rosendorff</i>	119
Inelastic Differential Electron Scattering from Metastable Helium Atoms <i>R. Müller-Fiedler, P. Schlemmer, K. Jung, H. Hotop, H. Ehrhardt</i>	120

Electron-Impact Excitation from 2^1S and 2^3S States of Helium <i>David C. Cartwright, George Csanak, Fernando J. da Paixao</i>	121
2^3S Excitation of Heliumlike Ions by Electron Impact <i>C.S. Singh, D.K. Rai</i>	122
Scattering of Slow Electrons by Li Atoms <i>D.L. Moores</i>	123
Stepwise Electron/Laser Excitation Studies of Atomic Collisions <i>C.J. Webb, W.R. MacGillivray, M.C. Standage</i>	124
Electron Impact Photoemission Cross Sections for the VUV Light Standard Project <i>Armon McPherson, N. Rouze, W.B. Westerveld, J.S. Risley</i>	125

Electron-Atom Collisions: Alignment and Orientation

Measurement of Complex Scattering Amplitudes for Electron Impact Excitation of the 3^1P and 3^1D States of Helium <i>H.B. van Linden van den Heuvell, E.M. van Gasteren, J. van Eck, H.G.M. Heideman</i>	126
The Orbital Angular Momentum Transfer in the Excitation of the 2^1P State of Helium by Electrons <i>H.B. van Linden van den Heuvell, M.A.M. de Jong, J. van Eck, H.G.M. Heideman</i>	127
Scattering Parameters for the Electron Impact Excitation of the 3^1P State of Sodium <i>J.E. Furst, J.L. Riley, S.J. Buckman, P.J.O. Teubner</i>	128
Stokes Parameter Analysis of Electron Photon Coincidence Experiments in Sodium <i>P.J.O. Teubner, J.E. Furst, J.L. Riley</i>	129
Electron-Photon Angular Correlation with Spin-Orbit Interaction in the Excitation of Kr and Xe <i>H. Nishimura, A. Danjo, T. Koike, K. Kani, H. Sugahara, A. Takahashi</i>	130
Orientation and Alignment for $1s \rightarrow 2p$ Excitation of Hydrogen by Electrons and Differential Cross Sections for $1s \rightarrow 2p$ and $1s \rightarrow 2p(m=0)$ and $2p(m=\pm 1)$ Excitation <i>J.F. Williams</i>	131
Symmetry Properties of Electron-Photon Angular Correlations <i>J.F. Williams</i>	132
The λ -Parameter of the 3^1P State of Helium Using the 5016 Å Photon <i>C.R. Hummer, Donal J. Burns</i>	133
Orientation of the 2^1P State of Helium Excited by Electron Impact <i>N.C. Steph, W.H. Kloepping, D.E. Golden</i>	134
Excitation and Decay of Stark Mixed $n = 2$ States of Hydrogen Observed in an Electron Photon Coincidence Experiment <i>S. Watkin, C.G. Back, M. Eminyan, K. Rubin, J. Slevin, J.M. Woolsey</i>	135

Electron-Photon Angular Correlations for the 2^1P State of Helium within 1 eV of Threshold <i>P.A. Neill, A. Crowe</i>	136
Alignment of the $2p_{3/2}$ Shell of Argon by Electron Impact <i>E.C. Sewell, A. Crowe</i>	137
Angular Correlations for Excitation of the Lowest Excited States of Krypton by Electron Impact <i>S.J. King, A. Crowe</i>	138
Superelastic Electron Scattering on Sodium Atoms in the Distorted-Wave Born Approximation <i>V.V. Balashov, A.N. Grum-Grzhimailo, O.I. Zaitseva</i>	139
An Investigation of Superelastic Electron Scattering by Laser-Excited Ba Atoms <i>S. Trajman, D.F. Register, Gy. Csanak</i>	140
Attractive and Repulsive Forces in Electron Impact Excitation of Atoms <i>H.-J. Beyer, H. Kleinpoppen</i>	141
Electron-Electron Coincidence Studies of the L_3 -Shell Alignment Tensor in Argon <i>M. Völkel, W. Sandner</i>	142

Electron-Atom Collisions: Spin-Dependent Processes

Determination of Spin Exchange Scattering Amplitudes for e-Li Elastic Scattering <i>H.S. Desai, N.S. Rao</i>	143
Ionization and ns-np Excitation Asymmetry in Polarized Electron - Polarized Alkali Atom Collisions <i>G. Baum, M. Moede, W. Raith, W. Schröder</i>	144
Spin Dependent Effects in Electron-Hydrogen Scattering with Polarized Beams: A Status Report <i>A. Vasilakis, A. Anan, C. Back, M. Eminyan, M.S. Lubell, K. Rubin, J. Slevin, W. Stirling, F.C. Tang, M. Turner</i>	145
"Triple" Electron Scattering on Mercury and Xenon for Complete Evaluation of the Scattering Amplitudes <i>O. Berger, B. Kessler, J. Kessler, W. Wübker</i>	146
The Polarization of 254 nm Mercury Line Radiation after Impact Excitation by Polarized Electrons <i>A. Wolcke, J. Goeke, W. Vollmer, G.F. Hanne, J. Kessler</i>	147
Impact Excitation of the 7^3S_1 -State of Mercury by Polarized Electrons <i>H. Wolf, E. Reichert</i>	148
Excitation of Hg-Atoms by Electron Impact <i>K. Bartschat, N.S. Scott, K. Blum, P.G. Burke</i>	149
Electron Impact Excitation of Polarized Na-Atoms <i>W. Jitschin, S. Osimitsch, H. Reihl, H. Kleinpoppen, H.O. Lutz</i>	150

Inelastic Electron-Atom Collisions: High Energies

How Do We Decide Whether the First Born Approximation Applies to Inelastic Collisions of Charged Particles with an Atom or Molecule?	151
<i>Mitio Inokuti, S.T. Manson</i>	
Absolute Triple Differential Cross Sections for High Energy Electron Impact Ionization of Helium	152
<i>A. Lahmam-Bennani, H.F. Wellenstein, A. Duguet</i>	
Absolute Triple Differential Cross Sections for High Energy Electron Impact Ionization of Argon 3p and 2p	153
<i>A. Lahmam-Bennani, H.F. Wellenstein, A. Duguet, A. Daoud</i>	
Differential Cross Sections for the $1s \rightarrow 1s$, $3s$ Transitions in He by Electron Impact	154
<i>T. Takayanagi, K. Wakiya, H. Suzuki, S. Ito, K. Hoshiba, S. Kano, H. Takuma</i>	
Measurements of Inner Shell Excitation Cross Sections in Ne by Means of Auger Electron Spectroscopy by Electron Impact	155
<i>S. Kihara, Y. Iketaki, T. Takayanagi, K. Wakiya, H. Suzuki</i>	
Electron Impact Excitation of Lithium 3s State in the Intermediate Energy	156
<i>Mukesh Kumar, S.S. Tayal, A.N. Tripathi</i>	
Cross Sections of Inert Gases for VUV Emissions Following Inner-Shell or Subshell Ionization by Electron Impact	157
<i>Y. Akagi, K. Morita, T. Takayanagi, K. Wakiya, H. Suzuki</i>	
K-Shell Ionization Cross Sections of Si and Ar by Electrons with Impact Energies 4 to 10 keV	158
<i>H. Platten, G. Schiwietz, N. Stolterfoht, G. Nolte</i>	

Inelastic Electron-Atom Collisions: Bremsstrahlung

Energy Dependence of the High Energy Tip of the Bremsstrahlung Spectrum of La, W, and Co	159
<i>F. Riehle</i>	
Electron Bremsstrahlung - Effect of Electron Screening and Vacuum Polarisation	160
<i>Lali Chatterjee, Sujata Bhattacharyya</i>	
Validity of Classical Approach to the Characterization of the Electron Bremsstrahlung Spectrum: Extension of its Applicability to Screened Atomic Cases	161
<i>M. Lamoureux, R.H. Pratt</i>	
Atomic-Field Bremsstrahlung from Uranium	162
<i>L. Estep, J. Altman, R. Ambrose, S. Salehkoutahi, G. Westbrook, C.A. Quarles</i>	
Two Photon Processes in Electron-Atom Collisions	163
<i>J.C. Altman, C.A. Quarles</i>	

Electron Impact Ionization of Atoms: General, Threshold Studies

Eikonal Exchange Amplitude for Electron-Impact Ionization of Atomic Hydrogen <i>A.C. Roy, N.C. Sil</i>	164
Ionization of Atomic Hydrogen and Helium by Fast Electron Impact <i>B. Piraux, C.J. Joachain, F.W. Byron, Jr.</i>	165
Interferences Due to Competing Mechanisms for Double Excitation and Ionization of Atoms by Charged Particles at High Velocities <i>J.H. McGuire</i>	166
Direct Contributions to Electron Induced Multiple Ionization of Inner Shells <i>W. Löw, H. Genz, A. Richter</i>	167
Collapse of 3d Orbital in Ca Observed in Anomalies of the <u>2p</u> Auger Spectrum <i>B. Breuckmann, R. Huster, W. Menzel, W. Weber, W. Mehlhorn, K.W. Dyall</i>	168
Electron Impact Excitation of the $nsnp(n+1)p$ Configurations of Autoionizing States in Indium and Thallium Vapour Atoms <i>M. Wilson, G.K. James, K.J. Ross</i>	169
Branching Ratios and Cross Sections for Ion and Electron Impact Produced $2s^m 2p^n$ - Configurations of Ne Using Synchrotron Radiation as a Radiometric Standard <i>H.-J. Flaig, M. Eckhardt, K.-H. Schartner, H. Kaase</i>	170
The K-Shell Electron Double Ionization Cross Section of Sodium. A Power Law Z-Dependence <i>O. Keski-Rahkonen, J. Lahtinen</i>	171
Threshold Behaviour of Ar-K and Xe-L ₃ Inner Shell Ionisation by Electron Impact <i>R. Hippler, K. Saeed, I. McGregor, A.J. Duncan, H. Klar, H. Kleinpoppen</i>	172
Threshold Law for the Triple Ionization Function <i>P. Grujic</i>	173

Electron Impact Ionization of Atoms: (e,2e) Processes, Post-Collision Interactions

Coulomb Interaction in Final State of (e,2e) Reaction on Atoms in Terms of Three-Body Formalism <i>A.R. Ashurov, G.V. Avakov, V.G. Levin, A.M. Mukhamedzhanov</i>	174
The Observation of an Even Parity 1D_2 Autoionizing Level in Cd Using (e,2e) Spectroscopy <i>N.L.S. Martin, K.J. Ross</i>	175
(e,2e) Cross Sections for Helium <i>A.C. Roy</i>	176
"Energy-Sharing" in Relation to Double Differential Cross-Sections for Electron Impact Ionization of Helium <i>J. Kimman, Pan Guang-Yan, C.W. McCurdy, F.J. de Heer</i>	177

(e,2e) Experiments on He in Asymmetric Conditions at Intermediate Energy <i>A. Giardini-Guidoni, V. Di Martino, R. Fantoni, R. Tiribelli</i>	178
Observation of the Helium Ion $n=1,2,3$ States in (e,2e) Collisions <i>J.P.D. Cook, E. Weigold</i>	179
Triple Differential Cross Section Measurements for the Electron Impact Ionization of Atomic Hydrogen: Comparison with Theory <i>B. Lohmann, E. Weigold</i>	180
Corrections to the Impulse Approximation for (e,2e) Reaction <i>Yu.V. Popov</i>	181
Exchange Effects in Resonance Ionization of Atoms by Intermediate-Energy Electrons <i>V.V. Balashov, A.N. Grum-Grzhimailo, A.I. Magunov</i>	182
Triple Differential Cross Section for the Electron Impact Ionization of Hydrogen <i>A.S. Ghosh, P.S. Mazumder, Madhumita Basu</i>	183
Energy Exchange between Two Outgoing Electrons in the Post Collision Interaction Processes <i>J. Mizuno, T. Ishihara, T. Watanabe</i>	184
Threshold Excitation of Rydberg States of Atoms and Diatomic Molecules <i>P. Hammond, G.C. King, F.H. Read, J. Jureta</i>	185
Angular Momentum Exchange in Post Collision Interaction <i>A. Niehaus, C.J. Zwakhalen</i>	186

Electron-Ion Collisions: Excitation

Angular Distribution for Electron Excitation of the $4\ ^2S \rightarrow 4\ ^2P$ Transition in Zn II: Comparison of Experiment and Theory <i>A. Chutjian, A.Z. Msezane, R.J.W. Henry</i>	187
Experimental Electron Energy-Loss Spectra and Cross Sections for the $5\ ^2S \rightarrow 5\ ^2P$ Transition in Cd II <i>A. Chutjian</i>	188
Calculation of Electron-Ion Scattering Cross-Sections: A Perturbative Treatment of Exchange <i>M.A. Hayes</i>	189
Excitation of Hydrogenlike Ions in Modified Glauber Approximations <i>T.T. Gien</i>	190
Electron-Impact Excitation Collision Strengths and Excitation Rates for He-Like Ions <i>S.S. Tayal, A.E. Kingston</i>	191
Electron-Impact Excitation of O V <i>S.S. Tayal, K.A. Berrington, A.E. Kingston</i>	192

Angular Distributions for Electron Impact Excitation of Mg II, Zn II, and Cu I	193
<i>Alfred Z. Msezane, Ronald J.W. Henry</i>	
Excitation of Positive Ions in Coulomb-Born Approximation	194
<i>N.C. Sil, N.C. Deb</i>	
Measurement of the Electron Impact Excitation Cross Section for $C^+(2p^2\ ^2P^o - 2p^2\ ^2D)$	195
<i>John L. Kohl, Gregory P. Lafyatis</i>	
Electron Impact Excitation of Fine Structure Transitions in C-Like Ions	196
<i>K.M. Aggarwal</i>	
Resonant Excitation Double Autoionization in Xe^{6+}	197
<i>K.J. LaGattuta, Y. Hahn</i>	

Electron-Ion Collisions: Ionization

Electron-Impact Ionisation of Rare Gas Ions	198
<i>A. Matsumoto, S. Ohtani, A. Danjo, H. Hanashiro, T. Hino, Y. Kondo, H. Suzuki, H. Tawara, K. Wakiya, M. Yoshino</i>	
Electron-Impact Double-Ionization of Xenon Ions	199
<i>M.S. Pindzola, D.C. Griffin, C. Bottcher</i>	
Cross Section Measurements of Single and Multiple Ionization of Xe^{i+} ($i=1,2,3,4$) Ions and Double Ionization of J^+ Ions by Electron Impact	200
<i>C. Achenbach, A. Müller, E. Salzborn, R. Becker, J. Peschina, H. Klein</i>	
Cross Sections for Single and Multiple Ionization of Alkali Ions and Alkaline-Earth Ions by Electron Impact	201
<i>T. Hirayama, K. Oda, T. Ono, Y. Morikawa, K. Wakiya, H. Suzuki</i>	
Auger Ionization Cross Section for Ions of the Li and Be Sequences	202
<i>K.J. LaGattuta, D.J. McLaughlin, Y. Hahn</i>	
Electron Impact Ionisation of Boron-Like Ions	203
<i>K. Butler, D.L. Moores</i>	
Absolute Cross Section Measurements for Electron-Impact Ionization of Twice Charged Ions Ti^{2+} , Fe^{2+} , Ar^{2+} , Cl^{2+} and F^{2+}	204
<i>D.W. Mueller, T.J. Morgan, Gordon H. Dunn, D.C. Gregory, D.H. Crandall</i>	
Ionization of Singly-Charged Metallic Ions by Electron Impact	205
<i>R.G. Montague, M.J. Diserens, M.F.A. Harrison, A.C.H. Smith</i>	
Electron Impact Excitation-Autoionization of Ni Ions	206
<i>S.N. Tiwary, P.G. Burke, A.E. Kingston</i>	
Classical Binary-Encounter Collision Theory for Ionization in Electron-Ion Scatterings	207
<i>Y.T. Lee</i>	

Electron-Ion Collisions: Dielectronic Recombination

Observation of KLL Dielectronic Recombination Resonance in Ar^{14+} <i>J.P. Briand, P. Charles, H. Arianer, H. Laurent, C. Goldstein, J. Dubau, M. Loulergue, F. Bely-Dubau</i>	208
Dielectronic Recombination Measured with a Crossed Electron and Calcium Ion Beams Coincidence Technique <i>J.F. Williams</i>	209
Dielectronic Recombination: A Crossed Beams Observation and Measurement of Cross Section <i>D.S. Belic, Gordon H. Dunn, T.J. Morgan, D.W. Mueller, C. Timmer</i>	210
Dielectronic Recombination of B^{2+} and C^{3+} via $1s^2 2s \rightarrow 1s^2 2p$ Excitation <i>S. Datz, P.F. Dittner, P.D. Miller, C.D. Moak, N. Nescovic, P.H. Stelson, C. Bottcher</i>	211
Effect of Extrinsic Electric Fields upon Dielectronic Recombination <i>K.J. LaGattuta, Y. Hahn</i>	212
Electron Scattering with Very Highly Charged Ions: Effects of Relativistic Deviation, Autoionization and Dielectronic Recombination on Cross Section for Fe^{24+} , Se^{32+} and Mo^{40+} <i>A.K. Pradhan</i>	213
The Effect of Resonances on the He-Like Electron Ion Scattering Cross Sections <i>L. Steenman-Clark, P. Faucher, J. Dubau</i>	214
Dielectronic Recombination Process for Highly Ionised Argon <i>F. Bely-Dubau, J. Dubau</i>	215

Electron-Molecule Collisions: General Aspects of Electronically Elastic Processes

Ab-Initio Optical Potentials Applied to Low Energy Electron-Molecule Collisions in the Linear Algebraic Approach <i>B.I. Schneider, L.A. Collins</i>	216
A Linear Algebraic Approach to Electron-Molecule Scattering <i>L.A. Collins, B.I. Schneider</i>	217
Variational R-Matrix Calculations of Electron-Molecule Scattering <i>C.J. Noble, R.K. Nesbet, L.A. Morgan</i>	218
Vibrational Excitation of Positive Molecular Ions by Electron Impact. Exactly Solvable Model <i>A.K. Kazansky, V.V. Ponomarenko</i>	219
Exactly Solvable Models in Theory of Vibrational Excitation of Molecules by Electron Impact <i>A.K. Kazansky</i>	220
Electron Hydrogen Molecule Scattering at Low Energies <i>Sukanya Sur, A.S. Ghosh</i>	221

Integral Cross-Sections for e-N ₂ and CO Elastic Scattering at Intermediate and High Energies: A Coherent-Renormalized-Multicentre-Potential-Model (CRMPM) Approach <i>L.C.G. Freitas, Ashok Jain, Lee Mu-Tao</i>	222
Electron Scattering by N ₂ : Calculations Using MCSCF Target Wavefunction <i>John Rumble, Jr., Donald G. Truhlar, Walter J. Stevens</i>	223
Vibrational-Rotational Excitation of N ₂ by Electrons at 5-50 eV <i>John Rumble, Jr., Donald G. Truhlar</i>	224
Independent United Atom Model for Electron-Molecule Scattering <i>S.P. Khare, B.L. Jhanwar</i>	225

**Electron-Molecule Collisions:
Resonances in Electronically Elastic Processes**

Quantum Chemical Study of the $^2\Sigma_u^+$ Resonance of H ₂ ⁻ <i>Eric A. Gislason, Nora H. Sabelli</i>	226
The Adiabatic Partial Wave Method in Electron Molecule Processes I - Developments in Fixed Nuclei Electronic Continuum Processes <i>Vo Ky Lan, M. Le Dourneuf, J.M. Launay, S. Hara</i>	227
The Adiabatic Partial Wave Method in Electron Molecule Processes II - Eigenphase Analysis of Electronuclear Correlations in Resonant Vibrational Excitation <i>J.M. Launay, M. Le Dourneuf, Vo Ky Lan</i>	228
The Adiabatic Partial Wave Method in Electron Molecule Processes III - Eigentime Analysis of Electronuclear Correlations in Dissociative Attachment <i>M. Le Dourneuf, J.M. Launay, Vo Ky Lan</i>	229
Nuclear Dynamics in Resonant Electron-Molecule Scattering Beyond the Local Approximation <i>Hernán Estrada, Michael Berman, L.S. Cederbaum, W. Domcke</i>	230
Electron-Molecule Scattering Using the Optical Potential Approach: Surpassing Second Order <i>Michael Berman, O. Walter, L.S. Cederbaum</i>	231
Wave Packet Formulation of the Boomerang Model for Resonant Electron-Molecule Scattering <i>C. William McCurdy, Julia L. Turner</i>	232
Improved Semiclassical Approximation for Vibrational Excitation of Molecules by Slow Electrons <i>A.K. Kazansky, I.S. Yelets</i>	233
Electron Scattering by Diatomic Molecules <i>S. Salvini, C.J. Noble, P.G. Burke</i>	234
Absolute Cross Sections for Resonant Vibrational Excitation Processes of N ₂ Molecules by Electron Impact <i>K. Onda, A. Temkin</i>	235
Comparison of the 2 and the 20 eV Resonances in Vibrational Excitation of N ₂ and CO by Electron Impact <i>Edward S. Chang</i>	236

Vibronic Excitation of CO ₂ by Electron Resonant Scattering <i>Edward S. Chang</i>	237
Decay of the 22 eV Shape Resonance in N ₂ <i>L. Malegat, M.F. Fontaine, A. Colin, M. Tronc</i>	238
Observation of Inner Shell Resonance in Elastic Scattering of Electrons from N ₂ <i>D. Mathur, F.A. Rajgara, A. Roy</i>	239

**Electron-Molecule Collisions:
Electronically Elastic Processes in Polyatomics**

Threshold Behaviour in the Cross Section of Electron Scattering on CO ₂ <i>W. Sohn, K.-H. Kochem, N. Hebel, K. Jung, H. Ehrhardt</i>	240
Rotational and Vibrational Excitation of CO ₂ by Slow Electrons <i>K. Jung, T. Antoni, R. Müller, H. Ehrhardt</i>	241
Absolute Total Electron Scattering Cross Sections for Triatomic Molecules in Low Energy Region <i>Czesław Szmytkowski</i>	242
Non Adiabatic Effects in Low Energy e ⁻ -Molecule Scattering <i>E. Ficocelli Varracchio, U.T. Lamanna</i>	243
Elastic Differential Scattering and Vibrational Excitation of CH ₄ and C ₂ H ₆ by Low Energy Electrons <i>P.J. Curry, W.R. Newell, A.C.H. Smith</i>	244
Rotational Excitation of Methane by Electron Impact <i>H. Tanaka, N. Onodera, L. Boesten</i>	245
Low Energy Electron Scattering by Hydrogen Sulphide (H ₂ S) <i>Ashok Jain, D.G. Thompson</i>	246
Elastic Scattering of Electrons and Positrons by CH ₄ at Intermediate Energies <i>Ashok Jain</i>	247
(e ⁻ ,CsBr) Scattering: A Benchmark Experiment <i>B. Jaduszliwer, A. Tino, P. Weiss, B. Bederson</i>	248
Electron-Polar-Molecule Collisions: Spherically Symmetric Approach <i>B. Stefanov</i>	249
The Electron Gas Correlation Model: Applications to HCl and Other Molecules <i>N.T. Padial, D.W. Norcross</i>	250
Effective Hamiltonian Approach to Electron-Molecule Collisions <i>N. Chandra</i>	251
Small-Angle Elastic Scattering of Electrons from NH ₃ Molecule at 300, 400 and 500 eV <i>Ashok Jain</i>	252
The Elastic Electron Scattering Cross Section of SF ₆ by Ab Initio SCF Calculation <i>Péter Pulay, Richard Mawhorter, D.A. Kohl, M. Fink</i>	253

Elastic High Energy Electron Scattering as a Tool to Study Bonding and Correlation in Atoms and Molecules	254
<i>M. Fink, R. Mawhorter, J.J. McClelland</i>	
Electron-Molecule Collisions: Excitation and Ionization of Diatomics	
Calculated Cross Sections for Resonant Electron Scattering by Metastable Nitrogen	255
<i>Iztok Cadež</i>	
Rotational Branch Structure in the Electronic Excitation of O ₂ by Electron Impact	256
<i>Edward S. Chang</i>	
Resonances in Low-Energy e-H ₂ ⁺ Collisions	257
<i>B.I. Schneider, L.A. Collins</i>	
Threshold Electron Spectrum of I ₂	258
<i>J. Jureta, V. Bocvarski, S. Cvejanovic, M. Kurepa</i>	
Electron Impact Excitation of the B and C States of Deuterium	259
<i>K. Becker, W. van Wijngaarden, J.W. McConkey</i>	
Electron-Photon Coincidence Experiments with Diatomic Molecules	260
<i>K. Becker, H.W. Dassen, J.W. McConkey</i>	
Electron Energy-Loss Spectroscopy of Nitric Oxide Using a Position-Sensitive Multidetector	261
<i>Richard J. Stubbs, Trevor A. York, John Comer</i>	
Electron Energy-Loss Studies of N ₂ Using a Spectrometer with a Position Sensitive Detector	262
<i>Tim Reddish, John Comer</i>	
Theoretical Studies of Bethe Surfaces in Small Molecules	263
<i>K. Greenwald, P.W. Langhoff</i>	
The Electron Energy-Loss Spectrum of Hydrogen Chloride in the Region 12.748 eV to 16.254 eV	264
<i>Trevor York, John Comer</i>	
Electron Energy Loss Spectroscopy in Molecular Chlorine	265
<i>David Spence, R.-G. Wang, M.A. Dillon</i>	
Vibrational Excitation and Associative Detachment in the e ⁻ -HF System	266
<i>J.P. Gauyacq</i>	
Studies of Vacuum Ultraviolet Emission from Rydberg Series of H ₂ by Electron Impact	267
<i>J.M. Ajello, D. Shemansky</i>	

**Electron-Molecule Collisions:
Excitation and Ionization of Polyatomics**

Threshold Excitation of H ₂ O, D ₂ O and H ₂ S	268
<i>J. Jureta, S. Cvejanovic, D. Cvejanovic, D. Cubric</i>	
Excitation of Optically Forbidden States in CO ₂	269
<i>S. Cvejanovic, J. Jureta, D. Cvejanovic, Dj. Srajer</i>	

Electron Scattering by Methane <i>L. Vuskovic, S. Trajmar</i>	270
Photoabsorption Spectrum of CF ₃ I Generated by Electron Impact <i>S.K. Srivastava, S. Trajmar</i>	271
Electron Impact Excitation Cross Sections for Excitation of Electronic States in UF ₆ for Incident Electron Energies of 10, 20 and 40 eV <i>David C. Cartwright, S. Trajmar, A. Chutjian, S. Srivastava</i>	272
The Rydberg Series of CO ₂ in the Energy Range 11-14 eV <i>D. Roy, B. Leclerc, J. Delwiche, M.-J. Hubin-Franskin</i>	273
DCS for the Excitation of OCS Molecules by Electron Impact <i>S. Ito, K. Hoshiba, S. Kano, H. Takuma, T. Takayanagi, K. Wakiya, H. Suzuki</i>	274
Electron Attachment of CO ₂ Clusters <i>K. Stephan, A. Stamatovic, H. Helm, T.D. Märk</i>	275
Absolute Partial and Total Electron Impact Ionization Cross Section Functions for CF ₄ and CCl ₄ <i>K. Stephan, K. Leiter, H. Deutsch, T.D. Märk</i>	276
(e,2e) Reaction in Monoaloderivatives of C ₂ H ₄ Molecule: Comparison between Experiments and Theory <i>A. Giardini-Guidoni, V. Di Martino, I.E. McCarthy, R. Fantoni</i>	277
The Use of Electron Impact Excitation to Excite Electric-Dipole Forbidden Transitions in Atoms and Molecules <i>David A. Shaw, George C. King, F.H. Read</i>	278
Probing of Orbitals by Binary (e,2e) Spectroscopy and Orbital Density Topography: A View of Chemical Bonding in Momentum Space <i>K.T. Leung, C.E. Brion</i>	279
A New High Performance Electron Energy Loss Spectrometer for Valence and Inner-Shell Molecular Electronic Spectroscopy <i>C.E. Brion, S. Daviel, A.P. Hitchcock</i>	280
Measurement of Partial Generalized Oscillator Strengths for Ionization of Nitrogen Molecule by 1-keV Electron Impact <i>H. Shibata, K. Kuroki, F. Nishimura, N. Oda</i>	281

Electron-Molecule Collisions: Dissociation

Studies of Dissociative Excitation of N ₂ and O ₂ by Electron Impact with Extreme Ultraviolet Emission <i>J.M. Ajello</i>	282
Angular Distribution of Balmer- α Emission Excited by Electron Impact on H ₂ <i>N. Kouchi, N. Takahashi, S. Arai, M. Morita, N. Oda, Y. Hatano</i>	283
Translational Energy and Angular Distributions of H* and D* Produced in e-H ₂ , D ₂ Collisions <i>Teiichiro Ogawa, Junichi Kurawaki</i>	284

Angular Distributions of High-Rydberg Nitrogen Atoms Produced by Electron Impact on Nitrogen Molecule <i>T. Kondow, S. Ohshima, T. Fukuyama, K. Kuchitsu</i>	285
Threshold Capture Widths Determined from Bound Rydberg States <i>Steven L. Guberman</i>	286
Semiclassical Calculations of Dissociative Attachment in Collisions of Electrons with H ₂ , HD, D ₂ <i>I.S. Yelets, A.K. Kazansky</i>	287
Transition State Effects in the Rotational Predissociation of H ₂ ⁺ Ions of Different Precursor Origins <i>Gareth Brenton, Paul G. Fournier, Elizabeth G. Richard, John H. Beynon</i>	288
The Kinetic Energy Spectrum of Protons Produced by the Dissociative Ionization of H ₂ by Electron Impact <i>M.A. Khakoo, S.K. Srivastava</i>	289
The O ⁺ and N ⁺ Formation by Low-Energy Electron Impact on Nitrous Oxide <i>J.L. Olivier, R. Loch, J. Momigny</i>	290
Metastable Dissociations of Small Cluster Ions <i>K. Stephan, A. Stamatovic, A.W. Castleman, Jr, J.H. Futrell, T.D. Märk</i>	291
Electron-Molecule Collisions: Dissociative Attachment	
Production of O ⁻ Ions by Dissociative Electron Attachment to CO ₂ <i>O.J. Orient, S.K. Srivastava</i>	292
Negative Ions Observed in Electron Transmission and Electron Attachment Spectroscopy <i>M. Heni, G. Kwiatkowski, E. Illenberger</i>	293
Na ⁻ Formation by Electron Impact in Na ₂ <i>D. Teillet-Billy, L. Bouby, J.P. Ziesel</i>	294
Dissociative Electron-Attachment Processes in HgBr ₂ <i>M. Tronc, R. Azria, R. Abouaf, L. Bouby, J.P. Ziesel</i>	295
Dissociative Attachment in Highly Polar Molecules : Sodium Halides <i>J.P. Ziesel, R. Azria, D. Teillet-Billy, R. Abouaf, P. Girard</i>	296
Dissociative Attachment to Polar Molecules : Angular Distribution <i>D. Teillet-Billy, J.P. Gauyacq</i>	297
Formation and Dissociation of Negative Ions under Low Energy Electron Impact <i>S. Süzer, E. Illenberger, H. Baumgärtel</i>	298
Thermal Electron Attachment to van der Waals Molecules as Studied by the Pulse Radiolysis Microwave Conductivity Technique <i>M. Toriumi, E. Suzuki, Y. Hatano</i>	299
Dissociative Attachment of H ₂ and its Isotopes by Low Energy Electron Impact <i>S. Bhattacharyya, L. Chatterjee</i>	300

Positron-Atom(Molecule) Collisions

Electron and Positron Total Cross Sections on H ₂ <i>A. Deuring, J. Ferch, K. Floeder, D. Fromme, B. Granitza, J. Krug, C. Masche, W. Raith, A. Schwab, G. Sinapius, P.W. Zitzewitz</i>	301
Measurements of Total Scattering Cross Sections for Positrons and Electrons Colliding with Potassium <i>T.S. Stein, R.D. Gomez, Y.-F. Hsieh, W.E. Kauppila, Ch.K. Kwan, S.J. Smith</i>	302
Positron and Electron Total Scattering by N ₂ O, CH ₄ , and SF ₆ <i>W.E. Kauppila, M.S. Dababneh, Y.-F. Hsieh, Ch.K. Kwan, S.J. Smith, T.S. Stein, M.N. Uddin</i>	303
Application of the Kohn Variational Method to the Calculation of Cross Sections for Low Energy Positron Hydrogen Molecule Scattering <i>E.A.G. Armour, M. Lavender</i>	304
Elastic Scattering of Positron by Lithium Atom at Intermediate Energies <i>R.S. Pundir, K.C. Mathur</i>	305
A Close Coupling Study of Positron Scattering by Nitrogen Molecule <i>A.K. Pande, D.N. Tripathi</i>	306
Rotational Excitation of CH ₄ Molecules by Low-Energy Positrons <i>Ashok Jain, D.G. Thompson</i>	307
An Investigation of the Use of Inexact Wave Functions in Calculations of Positronium Formation in Positron-Atom Scattering <i>J.W. Humberston, C.J. Brown</i>	308
Ideal Space Theory of the $e^+ + H \rightarrow Ps + H^+$ Process <i>E. Ficocelli Varracchio, M.D. Girardeau</i>	309
One-Positron Triple Escape Threshold Behaviour <i>P. Grujic</i>	310
Application to $\mu^+e^-e^+$ and $p\mu^-e^+$ of a New Method for Taking into Account Finite Nuclear Mass in the Determination of the Absence of Bound States <i>E.A.G. Armour</i>	311

Atom-Atom Collisions: Theory

Use of l-Dependent Pseudopotentials in Molecular-Structure Calculations of Alkali-He Systems <i>J. Pascale</i>	312
Total Cross Sections for $j_1m_1 \rightarrow j_2m_2$ Transitions within the First n^2P States of Alkali Atoms Induced in Collisions with He <i>J. Pascale</i>	313
Model Potential Calculations for the Ground and Excited (Rydberg) States of the NaAr and KAr Molecular Systems <i>A. Chebanier de Guerra, F. Masnou-Seeuws</i>	314

Two Electron Model Potentials and Two Center Basis Sets <i>O. Mo, A. Riera</i>	315
Model-Potential Calculations as Extended Multiproperty Analysis <i>R. Dören, E. Hasselbrink</i>	316
A Two Electron Correlated Model for the Theoretical Determination of the Na ₂ , Li ₂ and K ₂ Potential Energy Curves <i>A. Henriët, M. Aubert-Frécon, C. Le Sech, F. Masnou-Seewss</i>	317
^{1,3} Σ _{u,g} Excited States of Na ₂ and K ₂ (Hellmann Modified Pseudo-Potential) <i>A. Valance</i>	318
Diabatic Potential Terms He(2 ¹ S) - Rare Gas <i>H. Rahal, S. Runge, A. Valance</i>	319
Atomic Fues Potential in He*: Oscillator Strengths and He ₂ * Potentials <i>S. Runge</i>	320
A Simple Model for the van der Waals Potential between Two Closed Shell Atoms <i>K.T. Tang, J.P. Toennies</i>	321
Wave Packet Solution of the Time-Dependent Hartree-Fock Equation for Atomic Collisions <i>Eberhard Teubner, Norbert Grün, Werner Scheid</i>	322
On Ground States, at Potential Minima, of Neutral Quasi-Molecules Formed from Neutral Atoms or Ions <i>Ray Hefferlin, Ken Parker, Rosalie Parrish, Henry Kuhlman, Kevin Shaw, Ken Priddy, Mike Seaman</i>	323
Quantum and Semi-Classical Calculations of the Phase-Shift in the Three Turning Points Case for Analytical Potential <i>O. Vallée, J. Picart, S. Avrillier, N. Tran Minh</i>	324

Atom-Atom Collisions: Ionization

Associative Ionization of Hornbeck-Molnar Type in Thermal Energy Collisions between Laser Excited He(5 ³ P) and He Atoms <i>A. Pesnelle, S. Runge, G. Watel</i>	325
Autoionization Width for He(3 ¹ P)+Ne: Penning and Associative Ionization Cross Sections <i>A. Pesnelle, S. Runge</i>	326
Associative Ionization and 2-Photon Laser Induced Collisional Ionization in Crossed Beam Alkali and Alkaline Earth Systems <i>J. Weiner, J. Boulmer, J. Keller, R. Bonanno</i>	327
Collisional Ionisation and Energy Pooling Process in Rb Vapour <i>L. Barbier, M. Cheret</i>	328
Product Angle-Velocity Distribution for Ionization of Argon Atoms by Triplet Metastable Helium <i>P.R. Jones, K.T. Gillen, M.J. Coggiola</i>	329
Energy Transfer and Associative Ionization in Na(3P) + Na(3P) Collisions <i>J. Huennekens, S. Davidson, A. Gallagher</i>	330

Investigation of Ionization Processes in Excited Atoms Slow Collisions by Using the Methods of Plasma Electron Spectroscopy <i>A.Z. Devdariani, V.I. Demidov, N.B. Kolokolov, V.I. Rubtsov</i>	331
Calculation of Penning Ionization for $\text{He}(2^1, ^3\text{S}) + \text{Na}$ <i>James S. Cohen, Richard L. Martin, Neal F. Lane</i>	332
Collisional Ionization of $\text{H}(3\text{p})$ Atoms on Rare Gas Atoms and H_2 Molecules <i>A. Cornet, W. Claeys, V. Lorent, J. Jureta, D. Fussen</i>	333
Ion Pair Production in $\text{H}(1\text{s}) + \text{H}(2\text{s})$ Collisions <i>D. Fussen, W. Claeys, A. Cornet, J. Jureta, P. Defrance</i>	334

Atom-Atom Collisions: Excitation and Excimer Formation

Excitation of Hydrogen Atoms to the $n = 3$ and 4 Levels in Collisions with Rare-Gas Atoms <i>B. Van Zyl, M.W. Gealy, H. Neumann, R.C. Amme</i>	335
Theory of $\text{Li}(2\text{s}-2\text{p})$ and $\text{Na}(3\text{s}-3\text{p})$ Excitation in $\text{Li}-\text{Na}$ High Energy Collisions <i>Svend Erik Nielsen, Martin Larsen, John S. Dahler</i>	336
Hydrogen Atom Excitation in $\text{H} + \text{He}, \text{Ne}, \text{Ar}$ Collisions below 1 keV <i>J. Grosser, W. Krueger</i>	337
Simultaneous 2^1P Excitation of Two Colliding He Atoms to Various Substate Combinations <i>L. Moorman, K.P.J. Linnartz, J. van Eck, H.G.M. Heideman</i>	338
Emission from Outer Turning Points of High Vibrational States of the Krypton Excimer after keV-Electron Impact Excitation <i>P. Wollenweber, K. Barzen, H. Schmoranzer</i>	339
Emission of the Krypton Excimer at Small Interatomic Distances after keV-Electron Impact Excitation <i>K. Barzen, P. Wollenweber, H. Schmoranzer</i>	340

Atom-Atom Collisions: Fine Structure Transitions and Polarization

Polarization Effects in Alkali Atoms Fine Structure Transitions (F.S.T.) Induced by He and Ar <i>J.M. Mestdagh, J. Pascale</i>	341
Quantum-Mechanical Calculations of Cross Sections for Transitions within the Second and Third $n^2\text{P}$ Levels of Rb and Cs, Induced in Collisions with He <i>J. Pascale</i>	342
Coherence Observed in Thermal $\text{K}(4^2\text{P})$ -Rare Gas Collisions <i>R. Dören, E. Hasselbrink, H. Tischer</i>	343
Scattering of State Selected, Electronically Excited Neon Atoms <i>W. Beyer, H. Haberland, D. Hausmann</i>	344

Atom-Atom Collisions: Excitation Transfer

- Nonresonance Excitation Transfer in $\text{He}(2^1\text{S}, 2^3\text{S}) + \text{Ne}$ Collisions 345
A.Z. Devdariani, A.L. Zagrebin
- Spectroscopic Investigation of Inelastic Scattering Channels in $\text{He}^m - \text{He}$ Collisions 346
D.V. Elakhovsky, Yu.V. Zaitsev, A.D. Khakhaev
- Atom-Atom and Atom-Molecule Collisions in Sodium Vapour Excited by Laser Resonance Radiation at $3^2\text{S} - 3^2\text{P}$ Transition Wavelength 347
Zh.L. Shvegzhda, S.M. Papernov, M.L. Jansons
- New Approach to Multi-State Problem and Application to Laser Induced Transition: $\text{Sr}(5p^1\text{P}) + \text{Ca}(4s^2^1\text{S}) \rightarrow \text{Sr}(5s^2^1\text{S}) + \text{Ca}(4d^1\text{D})$ 348
H. Yagisawa

Ion-Atom Collisions: Elastic Scattering

- Elastic Scattering of Slow Hydrogen Atoms on Ions with Large Impulse Transfer 349
A.K. Kazansky, I.V. Komarov
- Elastic Differential Cross Sections for Proton Scattering by Atomic Hydrogen 350
J.T. Park, D.M. Blankenship, T.J. Kvale, J.L. Peacher, E. Redd, E. Rille
- Measurements of Orbiting Structures in Differential $\text{H}^+ - \text{He}$ and $\text{H}^+ - \text{Ar}$ Scattering 351
M. Konrad, F. Linder
- Semiclassical Regge-Pole Description of Low-Energy $\text{H}^+ - \text{He}$ Scattering 352
Karl-Erich Thylwe
- Elastic Scattering, Excitation and Ionisation of Helium by Proton Impact 353
C. Bergnes, D. Bordenave-Montesquieu, A. Boutonnet, R. Dagnac
- Elastic Scattering and Charge Exchange in $\text{He}^+ - \text{He}$, $\text{H}^+ - \text{Kr}$ and $\text{H}^+ - \text{Xe}$ Collisions at $E_{\text{cm}} = 0.5 - 30$ eV 354
P. Reinig, G. Bischof, F. Linder
- Potential Energy Surfaces for Di-atomic Molecules 355
H. Hartung, B. Fricke, W.-D. Sepp
- Development of an Accurate Numerical Dirac-Fock-Slater Program for Di-atomic Molecules 356
W.-D. Sepp, D. Kolb, H. Hartung, W. Sengler, B. Fricke

Ion-Atom Collisions: Outer-Shell Excitation

Correction Terms for the Bethe Straggling Expression <i>Hans Bichsel</i>	357
Proton Impact Excitation of Hydrogen Atom <i>S. Saxena, G.P. Gupta, K.C. Mathur</i>	358
Excitation of He I Triplet States by Proton Impact <i>A.S. Aynacioglu, G. von Oppen, G. Weber</i>	359
Light Ion + He Collisions in Time-Dependent Hartree-Fock Theory <i>K.R. Sandhya Devi, J.D. Garcia</i>	360
A Several-Electron Atomic-Basis Calculation of Be^+ (2s-2p) Excitation in $\text{Be}^+(2s)\text{-He}(1s^2)$ Collisions <i>Svend Erik Nielsen, John S. Dahler</i>	361
Resolution of the Glauber Inconsistency for Inelastic Scattering by Heavy Particles <i>J.H. McGuire</i>	362

Ion-Atom Collisions: Spectroscopy of Continuum Electrons

δ -Electron Spectroscopy of Multiple Ionization in $\text{H}^+\text{-Ar}$ Collisions <i>J. Bossler, R. Hippler, H.O. Lutz</i>	363
Study of Inner Quasiatomic Shells ($Z_U = 132\text{-}171$) by Means of δ -Electron Spectroscopy in Asymmetric Collisions <i>F. Güttner, W. Koenig, N. Lutz, B. Martin, H. Skapa, J. Soltani, H. Banda, A.V. Ramayya, F. Bosch, Ch. Kozhuharov</i>	364
Fast Electrons from Slow Atomic Collisions <i>Raul A. Baragiola, Eduardo V. Alonso</i>	365
Calculated Double Differential Ionization Cross-Sections for Molecules Bombarded by Protons <i>B. Senger</i>	366
Binary Encounter Approximations with Screening to DDCS of Electrons from Atomic Collisions <i>G. Hock</i>	367
Doubly Differential Ionization Cross Sections in Fast Ion-Atom Collisions <i>A.K. Kaminsky, M.I. Popova</i>	368
Electron Losses in H_2^+ , H_3^+ and He^+ Collisions with Ar <i>N. Oda, F. Nishimura, K. Komatsu, H. Shibata</i>	369
Collisional Electron Loss into the Continuum of Protons Using the $\text{H}^0\text{-He}$ System; a Comparison with Theory <i>R. Vidal, W. Meckbach, E. González Lepera</i>	370

Charge State Dependence of Electron Loss Peak Measured under 0^0 for Fast Argon Ions	371
<i>A. Itoh, T. Schneider, G. Schiwietz, Z. Roller, H. Platten, G. Nolte, D. Schneider, N. Stolterfoht</i>	
Origin of the Double Peak in Electron Loss in the Forward Direction	372
<i>Victor H. Ponce, Raul A. Baragiola</i>	
Stripping Cross Sections of Multi-Charged Ions by Neutral Atoms	373
<i>S. Karashima, T. Watanabe</i>	

Ion-Atom Collisions: Capture into the Continuum

Continuum-Electron Capture by Protons in Helium	374
<i>Poul Dahl</i>	
Effect of a Screened Electron-Projectile Interaction on the ECC Peak Shape	375
<i>R.O. Barrachina, C.R. Garibotti</i>	
A Comparison of Electron Capture and Electron Loss into the Continuum with H^+ and H^0 Projectiles Interacting with He	376
<i>R. Vidal, P. Focke, E. González Lepera, I.B. Nemirovsky, W. Meckbach</i>	
δ -Electron Emission in Strong Projectile Fields	377
<i>D.H. Jakubassa-Amundsen</i>	
The Linewidth of Electron Loss to Continuum Cusps	378
<i>J. Burgdörfer, M. Breinig, S.B. Elston, I.A. Sellin</i>	
Electron Capture to the Continuum at Asymptotically High Velocities	379
<i>S.D. Berry, I.A. Sellin, L.H. Andersen, M. Breinig, S.B. Elston, M.M. Schauer, K.-O. Groeneveld, D. Hofmann, N. Stolterfoht, H. Schmidt-Böcking, G. Nolte, G. Schiwietz</i>	
Description of Interaction in Final State on the Basis of the Faddeev-Merkuriev Equations in the Processes of Ionization and Charge Transfer	380
<i>A.L. Godunov, Sh.D. Kunikeev, V.N. Mileev, V.S. Senashenko</i>	
Convoy Electron Production and Total Electron Yield in High Velocity (24 au) Heavy Ion-Solid Collisions	381
<i>R. Latz, M. Burkhard, H.J. Frischkorn, D. Hofmann, P. Koschar, J. Schader, K.O. Groeneveld, M. Breinig, S.D. Berry, I.A. Sellin</i>	

Ion-Atom Collisions: Autoionization and Auger Spectroscopy

Auger Electron Emission Following Fast (MeV) Molecular- and Atomic-Ion Impact on Thin C-Foils	382
<i>D. Schneider, E.P. Kanter, B.J. Zabransky</i>	
Autoionization Spectra of He Excited by Fast (MeV) H^+ , He^+ , and Li^{n+} ($n=1,2,3$) Ions	383
<i>D. Schneider, P. Arcuni, R. Bruch, W. Stöffler</i>	

Autoionization of Fast (MeV) Li-Ions Incident on Gases and C-Foils	384
<i>D. Schneider, P. Arcuni, R. Bruch, W. Stöffler, C.F. Moore</i>	
Position and Widths of Autoionizing States in the Helium Isoelectronic Sequence above the $n=2$ Continuum	385
<i>H. Bachau</i>	
A Study of the Velocity Dependence of the Yield of the $(1s2s2p)^4P_{5/2}$ Metastable Fraction in MeV C, O and F Ions Following Excitation by C Foils	386
<i>J.K. Swenson, D. Brandt, M. Clark, S.M. Shafroth, J.R. Huddle</i>	
Ar L-MM Auger Spectra in $Ar^{3,4+} + Ar$ Collisions	387
<i>T. Matsuo, J. Urakawa, A. Yagishita, Y. Awaya, T. Kambara, M. Kase, H. Kumagai, J. Takahashi</i>	
Kr M-NN Auger Spectra in $Ar^{4+} + Kr$ Collisions	388
<i>J. Urakawa, T. Matsuo, H. Shibata, A. Yagishita, Y. Awaya, T. Kambara, M. Kase, H. Kumagai, J. Takahashi</i>	
Selective Production of Auger Electrons from Fast Ar^{q+} Ions Studied by Zero-Degree Auger Spectroscopy	389
<i>A. Itoh, T. Schneider, G. Schiwietz, Z. Roller, H. Platten, G. Nolte, D. Schneider, N. Stolterfoht</i>	
A Study of Auger Spectra from $Ne^{3+,10+}, Ar^{6+,17+}$ (5.6 MeV/amu) $\rightarrow$ Ne Collisions	390
<i>D. Berényi, G. Hock, I. Kádár, S. Ricz, V.A. Shchegolev, B. Sulik, D. Varga, J. Végh</i>	
Formation and Autoionization of Ne^{**} at Mg Surfaces	391
<i>G.E. Zampieri, F. Meier, R.A. Baragiola</i>	
The Barker-Berry Effect on the Ejected Electron Spectra in Rb^+-Ar and Cs^+-Kr Collisions	392
<i>K. Wada, A. Wada, K. Wakiya, H. Suzuki</i>	
Measurement of Forward Directed Electron Spectra in Coincidence with Emergent Charge States for Collisions of 20 MeV Au^{17+} with He	393
<i>L.H. Andersen, H. Cederquist, S. Datz, M. Frost, P. Hvelplund, H. Knudsen, L. Liljeby</i>	
Spectroscopy of Low-Energy Autoionization Electrons Emitted from the Ions in Highly Charged Ion-Atom Collisions	394
<i>L.H. Andersen, M. Frost, P. Hvelplund, H. Knudsen, L. Liljeby</i>	
Formation and Decay of Autoionization States in $Ar^{3+} - Xe$ Collisions	395
<i>V.M. Mikoushkin, I.P. Flaks, G.N. Ogurtsov</i>	
Calculations of the Excitation Cross Sections of the Parity Unfavored of Autoionizing States of He Atoms by Protons	396
<i>V.A. Sidorovich</i>	

Ion-Atom Collisions: Electron Emission by Negative-Ion Impact

Energy Spectra of Detached Electrons Produced in $H^-(D^-)$ Collisions on Rare Gases and Diatomic Molecules <i>Y. Itoh, U. Hege, F. Linder</i>	397
Electrostatic versus Dynamical Coupling in Detachment Collisions of $H^-(D^-)$ Ions with Rare Gas Atoms <i>U. Hege, Y. Itoh, F. Linder</i>	398
A Scaling Law for Electron Detachment in keV Collisions of H^- , Li^- , Na^- , K^- with He, Ne, and Ar <i>N. Andersen, T. Andersen, L. Jepsen</i>	399
Electron Detachment in H^- - Na Collisions and Free Electron Scattering Approximation <i>I.T. Serenkov, V.I. Sakharov, R.N. Il'in</i>	400
Electron Detachment in Negative Ion - Molecule Collisions <i>M.S. Huq, L.D. Doverspike, R.L. Champion</i>	401
Born Cross Sections for H^- Collisional Electron Detachment Leading to H^0 in the 1s, 2s and 2p Final States <i>George H. Gillespie, Ralph S. Janda, David L. Moores</i>	402
Energy Distribution of Electrons Detached in Negative Ion Collisions <i>Y. Sato, T. Okamoto, H. Inouye</i>	403
Electron Detachment in Collisions of Cl^- and Ti^- Ions with Atoms Ar, Na and Mg <i>I.T. Serenkov, V.I. Sakharov, E.A. Solov'yev, R.N. Il'in</i>	404
Theory of Electron Detachment in Slow Anions Impact on Atoms <i>Fumihiko Koike</i>	405
Electron Detachment in Negative-Ion Collisions: New Theoretical Methods <i>T.S. Wang, J.B. Delos</i>	406
Electron Detachment in Negative-Ion Collisions: Cross Sections <i>T.S. Wang, J.B. Delos</i>	407
Electron Detachment in Collisions of H^- and Several Targets in the Energy Range from 500 to 2000 eV <i>P.E. van der Leeuw, W. Koot, A.W. Kleyn, J. Los</i>	408
Excitation of Autodetaching States in H^- -Kr Collisions <i>V. Esaulov, F. Pichou, C. Schermann, J.P. Grouard, R.I. Hall, M. Landau, J.L. Montmagnon</i>	409
F^- Collisions with Atomic and Molecular Targets <i>Vu Ngoc Tuan, V.A. Esaulov</i>	410
Charge Exchange to Shape Resonances in H^- -CO ₂ Collisions <i>Vu Ngoc Tuan, V. Esaulov, J.P. Gauyacq</i>	411
Observation of Electron Spectra Produced in F^- Collisions <i>J.P. Grouard, V. Esaulov, R.I. Hall, M. Landau, J.L. Montmagnon, F. Pichou, C. Schermann</i>	412

Ion-Atom Collisions: Multiple Ionization

- Ionization Cross Sections for 5-4000 keV Protons in Gases 413
M.E. Rudd, T.V. Goffe, R.D. DuBois, L.H. Toburen, C.A. Ratcliffe
- Double Ionization Mechanisms in H^+ - Ne Collisions 414
R.D. DuBois, L.H. Toburen, S.T. Manson
- Calculations of the Cross Sections for the Double Ionization of Helium by Light Nuclei 415
V.A. Sidorovich, V.S. Nikolaev
- Measurements of the Ratio between the Double- and Single-Ionization Cross Sections of Helium in Collisions with Fast, Bare Nuclei 416
H. Knudsen, L.H. Andersen, P. Hvelplund, G. Astner, H. Cederquist, H. Danared, L. Liljeby, K.-G. Rensfelt
- Coincidence Measurements of Recoil-Ion Charge-State Spectra Produced by Ionization and Charge Transfer in Collisions of 1.4 MeV/u Highly Charged Ions and Rare-Gas Atoms 417
B. Schuch, W. Groh, A. Müller, E. Salzborn, H.F. Beyer, W.A. Schönfeldt, P.H. Mokler
- Influence of the Projectile Charge State on Multiple Ionization of Rare Gas Atoms 418
H.-Ch. Werner, H. Schmidt-Böcking, N. Stolterfoht, G. Nolte
- Multiple Ionization of Slow Recoil Ions in Fast Heavy-Ion Atom Collisions 419
J. Ullrich, S. Kelbch, W. Schadt, H. Schmidt-Böcking, R. Schuch, H. Ingwersen
- Ionisation of Atomic Hydrogen by Fast Multiply Charged Ions 420
M.B. Shah, H.B. Gilbody
- Energies and Couplings for Infinitely Excited States of $He-Li^{3+}$ Quasi-molecule 421
A. Macias, R. Mendizabal, F. Pelayo, A. Riera, M. Yáñez

Ion-Atom Collisions: Direct Ionization of Inner Shells

- New Experimental Investigations of Density Effect in Inner-Shell Excitations 422
S.P. Møller, A.H. Sørensen, J.F. Bak, F.E. Meyer, J.B.B. Petersen, E. Uggerhøj, K. Østergaard
- Total K-Shell Ionisation Cross Sections for Heavy Elements Induced by Protons 423
S. Divoux, B. Raith, B. Gonsior
- Total K-Shell Ionisation Cross Sections for Elements $24 \leq Z_T \leq 60$ Induced by Li Ions 424
B. Raith, S. Divoux, B. Gonsior

Total K-Shell Vacancy Production Cross Sections for 200 to 1600 keV/amu ^3He on Ti and Cu <i>Donald G. Simons, David J. Land</i>	425
K-Shell X-Rays and Multiple Vacancy Production in ^{19}K , ^{22}Ti , ^{12}Mg , and ^{35}Br Resulting from 20 - 80 MeV ^{17}Cl Ion Bombardment <i>J.A. Tanis, S.M. Shafroth, T. McAbee, G. Lapicki</i>	426
Measurement of the K X-Ray Production Cross Section in 50-88 MeV $\text{Si}^{11+} + \text{He}$ Collisions <i>D. Brandt, M. Clark, T. McAbee, J. Swenson, S. Shafroth</i>	427
Ionization and Electron Transfer for the K-, L-, and M-Shells for 1.86 MeV/u Ions on Selected Target Systems <i>F.D. McDaniel, J.L. Duggan, R. Mehta, M.C. Andrews, A. Toten, J.D. Gressett, D. Johnson, S.R. Wilson, P.D. Miller, G. Lapicki, G. Basbas, L.A. Rayburn, A.R. Zander, R.M. Wheeler, R.P. Chaturvedi, R.S. Peterson</i>	428
L-Subshell Ionization of Au by Light Ion Impact <i>K. Finck, W. Jitschin, R. Hippler, H.O. Lutz</i>	429
L-Shell X-Ray Production Cross Sections of ^{48}Cd , ^{50}Sn , ^{52}Te , ^{53}I and ^{56}Ba for Protons and Alpha Particles <i>L. Avaldi, I.V. Mitchell, M. Milazzo</i>	430
Survey of M-Shell X-Ray Production for 19 Elements by H^+ and $\text{He}^{+,++}$ Ions <i>R. Mehta, J.L. Duggan, F.D. McDaniel, P.M. Kocur, J.L. Price, G. Lapicki</i>	431
Nonperturbative Effects in Inner-Shell Ionization <i>David J. Land</i>	432
The Binding Correction for Inner Shell Ionisation in Asymmetric Ion-Atom Collisions <i>L. Kocbach</i>	433
K-Shell Ionization at Large Scattering Angles with Light Projectiles <i>E. Morenzoni, R. Anholt, S. Andriamonje, W.E. Meyerhof, O.K. Baker, J.D. Molitoris</i>	434

Ion-Atom Collisions: Quasimolecular Excitation of Inner Shells I

Pair Creation in "Overcritical" Coulomb Fields <i>M. Clemente, E. Berdermann, P. Kienle, H. Tsertos, W. Wagner, F. Bosch, C. Kozhuharov, W. Koenig</i>	435
K-Shell Excitation by K- to L-Shell Charge Transfer in Slow $\text{Kr}^{q+}\text{-Kr}$ and $\text{Xe}^{q+}\text{-Xe}$ Collisions <i>R. Hoffmann, R. Schuch, E. Justiniano, W. Schadt, H. Schmidt-Böcking, P.H. Mokler, F. Bosch, W.A. Schönfeldt, Z. Stachura</i>	436
K-Ionization Probability in High Energy $\text{U} + \text{U}$ and $\text{U} + \text{Pb}$ Collisions <i>J.D. Molitoris, R. Anholt, S. Andriamonje, E. Morenzoni, W.E. Meyerhof, O.K. Baker</i>	437

X-Ray Emission Probabilities and Nuclear Time Delay in the Deep Inelastic Collision U+U at 7.5 MeV/amu	438
<i>Ch. Stoller, M. Nessi, W. Wölfl, W.E. Meyerhof, J.D. Molitoris, E. Morenzoni, E. Grosse, Ch. Michel</i>	
Influence of the Nuclear Reaction Time onto the δ -Electron Emission Studied by the Reaction J $\rightarrow$ Au, Bi at 795 and 840 MeV	439
<i>F. Güttner, W. Koenig, N. Lutz, B. Martin, H. Skapa, J. Soltani, H. Banda, A.V. Ramayya, F. Bosch, Ch. Kozhuharov</i>	
Charge Transfer and Simultaneous Excitation in Ion-Atom Collisions: A Comment on RTE	440
<i>Tricia Reeves, Jim Feagin, John Briggs</i>	
Double K Excitation Cross Section of Fe ²⁴⁺ Ions at Intermediate Velocity	441
<i>K. Wohrer, J.P. Rozet, A. Chetioui, A. Jolly, C. Stephan</i>	
Microscopic Analysis of Equilibrium Charge State Distribution for Ions in the MeV/u Range	442
<i>D. Vermhet, J.P. Rozet, P. Legagneux-Piquemal, A. Chetioui, L. Tassen-Got, C. Stephan</i>	
Vacancy Sharing Following Resonant-Transfer-and-Excitation in S+Ar Collisions	443
<i>J.A. Tanis, E.M. Bernstein, W.G. Graham, M. Clark, S.M. Shafroth, B.M. Johnson, K. Jones, M. Meron</i>	
Rotational Coupling in Asymmetric Ion-Atom Collisions	444
<i>D. Maor, Z. Stachura, P.H. Mokler, B. Liu, D. Liesen</i>	
Inner-Shell Vacancy Production in Asymmetric Heavy Ion - Atom Collisions	445
<i>A. Warczak, H.D. Dohmann, D. Liesen, B. Liu</i>	
Inner Shell Vacancy Transfer Studied with Highly Ionized, Decelerated Heavy Ions	446
<i>P.H. Mokler, D.H.H. Hoffmann, W.A. Schönfeldt, Z. Stachura, A. Warczak</i>	
The Electron's Path Through Phase Space During Heavy Ion Impact	447
<i>J. Krause, M. Kleber</i>	

Ion-Atom Collisions: Quasimolecular Excitation of Inner Shells II

L-Shell Excitation in Slow Ion-Atom Encounters	448
<i>R. Shanker, R. Hippler, R. Bilau, U. Wille, H.O. Lutz</i>	
Direct Ionization of Highly Promoted Molecular Orbitals in Slow Ion-Atom Collisions	449
<i>U. Wille</i>	
Observation of Al 2s Vacancy Production in 100 keV Al ⁺ on Ar Gas Collisions: Significance for MO Correlations	450
<i>M.L. Furst, H.C. Hayden, W.W. Smith</i>	
Electron Transitions from Discrete Levels into Continuum due to Radial Coupling in Slow Atomic Collisions	451
<i>A.N. Zinoviev, S.Yu. Ovchinnikov, Yu.S. Gordeev</i>	

Inner Shell Direct Ionization in Slow Atomic Collisions <i>S.Yu. Ovchinnikov, A.N. Zinoviev, Yu.S. Gordeev</i>	452
Coupled Multichannel Calculation for $\text{Ne}^+ + \text{Ne}$ Collisions in the Energy Range of 5-300 keV <i>A. Toepfer, B. Jacob, H.J. Lüdde, R.M. Dreizler</i>	453
Calculations of Coupling Matrix Elements for Di-atomic Systems in an Atomic Basis <i>W.-D. Sepp</i>	454
Semiclassical Approximation of the Time-Dependent Dirac Equation with First Order Perturbation Theory and Finite Difference Method <i>S.R. Valluri, U. Becker, N. Grün, W. Scheid</i>	455
Time Dependent Screened Potentials for Atomic Scattering Problems <i>A. Henne, R.M. Dreizler</i>	456
Bound Electron Energy of Superheavy Atom <i>Jiben Sidhanta, S.C. Mukherjee</i>	457

Ion-Atom Collisions: Alignment and Orientation

Coherence Study of $\text{He}(2\ ^1\text{P})$ and $\text{Li}(3\ ^2\text{D})$ Excitation in $\text{Li}^+ - \text{He}$ Collisions <i>H.-P. Neitzke, N. Andersen, T. Andersen</i>	458
Coherent Excitation of $L > 1$ States: Multipole Conversion in External Fields <i>H.-P. Neitzke, T. Andersen</i>	459
Alignment and Orientation Studies for the Ion-Impact Excitation of the $3\text{P} \rightarrow 3\text{D}$ Transition in $\text{Na}^+ - \text{Na}$ Collisions <i>A. Bähring, E. Meyer, I.V. Hertel</i>	460
A Study of the Excitation Mechanism of the $(2\text{p}^2)\ ^1\text{D}$ State Excited in $\text{He}^+ + \text{He}$ Collisions <i>E. Boskamp, R. Morgenstern, A. Niehaus, P. van der Straten</i>	461
Alignment of the 2p States of Helium-Like and Hydrogen-Like Ions <i>D.A. Church, R.L. Watson, R.A. Kenefick, D.-W. Wang, G. Pedrazzini</i>	462
Anisotropic L X-Ray Emission in Ion-Atom Collisions <i>W. Jitschin, R. Hippler, R. Schuch, H.O. Lutz</i>	463
The L_3 -Vacancy Alignment in 32 MeV $\text{S} + \text{Au}$ Collisions at Small Impact Parameters <i>A. Berinde, C. Ciorte, Al. Enulescu, Daniela Flueraşu, I. Piticu, V. Zoran</i>	464
Angular Distribution of Au L X-Rays by Heavy Ion Impact <i>J. Takahashi, Y. Awaya, T. Kambara, M. Kase, H. Kumagai, J. Urakawa, T. Matsuo, H. Shibata</i>	465
Effect of Screening by Projectile Electrons on the Alignment of a Vacancy in Ion-Atom Collision <i>N.M. Kabachnik, O.B. Maksimova</i>	466

Ion-Atom Collisions: X-Ray Spectroscopy

Wavelength of Transitions in Few Electron Spectra of Titanium <i>H.D. Dohmann, D. Liesen, E. Pfeng</i>	467
The Effect of Chemical Bonds on Fluorine K X-Ray Spectra Produced by 80 MeV Ar and 48 MeV Mg Ions <i>O. Benka, R.L. Watson</i>	468
High Resolution EUV Spectra of Core-Excited $(1s2pnp)^2P$, $(1s2pnd)^2D^0$ and $(1s2pnf)^2F$ States of Doubly Ionized Boron <i>R. Bruch, K.T. Chung, E. Träbert, P.H. Heckmann, B. Raith</i>	469
High Resolution Measurements of K X Rays from Ar Ions Impinging on Foils <i>Y. Awaya, T. Kambara, M. Kase, H. Kumagai, J. Takahashi, J. Urakawa, T. Matsuo, M. Namiki</i>	470
Target Gas Pressure Dependence of Relative Yield of K X-Rays from 110 MeV Ne Ions <i>T. Kambara, Y. Awaya, M. Kase, H. Kumagai, I. Kohno, T. Tonuma, A. Hitachi</i>	471

Ion-Atom Collisions: De-excitation of Quasimolecular States

Interference Effect in the Quasimolecular K-Radiation Induced by Hydrogenlike Low-Velocity Projectiles <i>R. Schuch, J. Barrette, R. Hoffmann, B.M. Johnson, K.W. Jones, M. Meron, H. Schmidt-Böcking, I. Tserruya</i>	472
Impact Parameter Dependence of $1s\sigma$ and $2p\sigma$ MO Radiation in 90 MeV Ni + Ni Collisions <i>H. Richter</i>	473
The Emission and Absorption of Light During Atomic Collisions <i>P.T. Greenland</i>	474
Molecular Autoionization Spectra in Low-MeV Kr^+ -Kr Collisions <i>P. Clapis, A. Antar, S. Kuptsov, R. Roser, R. Rubino, Q. Kessel</i>	475
Molecular-Autoionization Spectra from He^+ -He Collisions <i>N. Tokoro, S. Takenouchi, N. Oda</i>	476
3p-Vacancy Produced due to Two-Electron Transitions in Kr-Kr and Kr-Ar Collisions <i>N.A. Guschina, G.G. Meskhi, V.K. Nikulin, A.P. Shergin</i>	477

Ion-Atom Collisions:

Electron Exchange with Singly Charged Ions, Experiment I

Experimental Observation of the Thomas Peak in Electron Capture <i>E. Horsdal-Pedersen, C.L. Cocke, M. Stöckli</i>	478
---	-----

Experimental Determination of the Density Matrix Describing Electron Transfer Collisions for H^+ on He to the $n=3$ State of H <i>C.C. Havener, N. Rouze, W.B. Westerveld, J.S. Risley</i>	479
Differential Cross Sections in Ion-Neutral Charge Exchange Collisions <i>J.H. Newman, Y.S. Chen, P.S. Gibner, K.A. Smith, R.F. Stebbings</i>	480
Angular Correlation Measurements of $He(3^3P)$ Resulting from $He^+ + Ne$ Collisions <i>M. Natarajan, A.L. Goldberger, O. Yenen, D.H. Jaecks</i>	481
Charge Exchange between H_2^+ and H^- <i>S. Szücs, M. Karemera, M. Terao</i>	482
Electron Capture, Loss and Excitation in Collisions of H^+ , $H(1s)$, $H(2s)$ and H^- in Atomic Oxygen <i>I.D. Williams, J. Geddes, H.B. Gilbody</i>	483
Excitation in Inelastic Collisions of H^+ (2 - 15 keV) with Li <i>F. Aumayr, A. Brazuk, U. Wutte, H. Winter</i>	484
Polarization Studies of $H(2p)$ Excitation in $H^+ - He, Ar$ Charge Changing Collisions <i>R. Hippler, M. Faust, R. Wolf, H. Kleinpoppen, H.O. Lutz</i>	485

Ion-Atom Collisions:

Electron Exchange with Singly Charged Ions, Experiment II

Charge-Transfer Collisions of Ne^+ and Metastable Helium <i>R.H. Neynaber, S.Y. Tang</i>	486
Multiple Ionization of Argon by Charge Transfer and Direct Ionization <i>R.D. DuBois, L.H. Toburen</i>	487
Charge Transfer and Fine Structure Transitions in 2-20 keV Xe^+ Collisions <i>R.F. King, C.J. Latimer</i>	488
The Charge Transfer Cross Section for $Kr^+ - Kr$ at Ion Energies between 0.08 and 2 eV <i>M.T. Elford, O.M. Williams</i>	489
Experimental Cross Sections for Lyman-Alpha Emission in Charge Transfer Collisions of H^+ with Cs, Rb, K and Na Atoms <i>T. Nagata</i>	490
Charge Exchange of (0.2 - 5.0) keV Protons and Hydrogen Atoms in Sodium-, Potassium- and Rubidium-Vapor Targets <i>F. Ebel, E. Salzborn</i>	491
Electron Capture by C^+ , O^+ , In^+ , Sn^+ and Pb^+ Ions in H_2 in the Energy Range 10 - 150 keV <i>F. Melchert, K. Rinn, A. Müller, E. Salzborn</i>	492
Ionization and Charge Exchange Processes in Collisions of Alkali Metal Ions with Rare Gas Atoms in the Energy Region 0.5-7.0 keV <i>B.I. Kikiani, R.A. Lomsadze, S.V. Martinov, N.O. Mosulishvili, M.R. Gochitashvili, V.M. Lavrov</i>	493

Differential Large Angle Scattering in Collisions of K^+ Ions with Ar Atoms	494
<i>S. Kita, M. Izawa, H. Inouye</i>	
Collisions between Li^+ Ions	495
<i>G.C. Angel, K.F. Dunn, M.F. Watts, H.B. Gilbody</i>	

Ion-Atom Collisions:
Electron Exchange with Singly Charged Ions, Theory I

Theory of Electron Capture in Intermediate-to-High-Velocity Collisions	496
<i>Knud Taulbjerg, John S. Briggs</i>	
Close Coupling Calculation of Electron Capture at High Energies	497
<i>K. Fujiwara, N. Toshima, T. Watanabe</i>	
Electron Capture by Fast Protons Scattered at Large Angles	498
<i>L. Kocbach, J.S. Briggs</i>	
Exact Second Born Calculations for Electron Capture	499
<i>J.H. McGuire, J. Eichler, P.R. Simony</i>	
A New Variational Principle for Charge Exchange at Arbitrary Energies	500
<i>Dz. Belkic</i>	
The 'Classical Deflection Function' in the Continuum Distorted Wave Approximation	501
<i>P.T. Greenland</i>	
Representation of Continuum Channels in the Description of Collisionally Induced Electronic Transitions	502
<i>W. Fritsch, C.D. Lin</i>	
Proton-Hydrogen Scattering at High Energies	503
<i>Roberto D. Rivarola</i>	
Electron Capture by Fast Protons in Gases	504
<i>A.M. Popova, Ya.A. Teplova, Yu.A. Shurigina, O.S. Erkovitch</i>	
Proton-Hydrogen Electron Capture in Second Order Brinkman-Kramers Approximation	505
<i>M.K. Srivastava, A.K. Sharma</i>	
Effect of Orthogonality of Initial and Final States on p-He Electron Capture	506
<i>A.K. Sharma, M.K. Srivastava</i>	
K-K Shell Electron Capture in Asymmetric Proton - Atom Collisions at High and Intermediate Energies	507
<i>Roberto D. Rivarola, Antoine Salin</i>	

Ion-Atom Collisions:**Electron Exchange with Singly Charged Ions, Theory II**

The Strong Potential Born Approximation for Charge Transfer at Large Scattering Angles <i>P.A. Amundsen, D.H. Jakubassa-Amundsen</i>	508
Electron Capture into Highly Excited States <i>S.C. Mukherjee, Shyamal Datta, C.R. Mandal</i>	509
Ion Atom Collision for Systems with Two Electrons <i>W. Stieh, H.J. Lüdde, R.M. Dreizler</i>	510
Electron Transfer and Excitation in p-H Collisions Using a Triple-Center Basis <i>T.G. Winter, C.D. Lin</i>	511
Charge Transfer and Ionization Processes in $\text{He}^+ + \text{He}^+$ and $\text{He}^+ + \text{H}$ Collisions <i>M.R.C. McDowell, G. Peach, S.L. Willis</i>	512
Electron Capture and Excitation in Proton-Sodium Collisions at Energies $E \leq 10$ keV <i>R.J. Allan, A.S. Dickinson, R. McCarroll</i>	513
Charge Transfer in Collisions between Protons and Lithium Atoms <i>A.M. Ermolaev</i>	514
Core-Independent Parameters for Charge Transfer Reactions <i>K. Bartschat, H.J. Andrä, K. Blum</i>	515
Phase Integrals and Perturbed Stationary States <i>A. Bárány, D.S.F. Crothers, J.G. Hughes</i>	516
Charge Exchange between He^+ -Ions and Lithium Atom <i>K. Roy, R. Shingal</i>	517
Molecular State Calculation of Charge Transfer in $\text{H}^+ + \text{Li}$ Collisions <i>M. Kimura, H. Sato, J. Pascale, R.E. Olson</i>	518
Molecular Treatment of Charge Transfer in $\text{Li}^+ + \text{Ca}$ Collisions <i>M. Kimura, H. Sato, R.E. Olson</i>	519
Dynamical-State Representation and its Application to the $(\text{Li-Na})^+$ Collision System <i>Reiko Hirokawa, Hiroki Nakamura, Eiichi Ishiguro</i>	520
A Theoretical Study of Coherence Effects in Charge Transfer Collisions: Application to Na-Li^+ <i>A.E. Orel, K.C. Kulander</i>	521
$\text{H}^+ + \text{H}^-$ Neutralization <i>F. Borondo, A. Macias, A. Riera</i>	522

Ion-Atom Collisions:**Electron Exchange with Multiply Charged Ions I**

A Quantum Electrodynamic Approach to Charge Transfer between Fully Stripped Light Ions and Hydrogen Atom <i>S. Bhattacharyya, L. Chatterjee, K. Sen Gupta</i>	523
--	-----

Charge Transfer for Completely Stripped Boron and Carbon Ions from Atomic Hydrogen	524
<i>S.C. Mukherjee, C.R. Mandal, Shyamal Datta</i>	
Electron Capture for Fast Highly Charged Ions in Gas Targets	525
<i>A.S. Schlachter, J.W. Stearns, W.G. Graham, K.H. Berkner, R.V. Pyle, J.A. Tanis</i>	
Applications of Variational Continuum Distorted Waves	526
<i>D.S.F. Crothers, J.F. McCann</i>	
Electron Capture and Loss Cross Sections for $\text{Si}^{11+} + \text{He}$ from 50 - 80 MeV	527
<i>M. Clark, D. Brandt, S. Shafroth, J. Swenson</i>	
Effects of an Off-Shell Coulomb Wavefunction on Radiative Electron Capture	528
<i>J.S. Briggs, M. Gorriz</i>	
Effect of L-Shell Non-Equilibrium on Radiative Electron Capture for 30 MeV S+C Collisions	529
<i>J.A. Tanis, E.M. Bernstein</i>	
A Study of the Charge-Exchange of Carbon and Oxygen Ions in Various Media	530
<i>I.S. Dmitriev, N.F. Vorobiev, G.E. Bugrov, Zh.M. Konovalova, E.A. Kral'kina, V.S. Nikolaev, Ya.A. Teplova, Yu.A. Fainberg</i>	
Experimental Study of the Formation of Metastable Lithium Ions in Collisions in Gases	531
<i>Ya.A. Teplova, I.A. Nevostrueva, Yu.A. Fainberg, I.D. Koshevoi</i>	
Delayed Emission of X-Rays after Electron Capture into Metastable Few-Electron Oxygen and Neon Ions	532
<i>F. Folkmann, B.J. Larsen, N.H. Eism, K.M. Cramon</i>	
Electron Capture into Highly Charged, Metastable S, Ar, and Kr Recoil Ions Studied by Delayed Auger-Electron Measurements	533
<i>Kurt M. Cramon, Finn Folkmann</i>	
Comparison of Various Multiple Scattering Approaches to Electron Capture	534
<i>L.J. Dubé, J.K.M. Eichler</i>	
Collisions of Multiply Charged Projectiles with Light Targets: I. Theory	535
<i>L.J. Dubé, R. Bruch</i>	
Collisions of Multiply-Charged Projectiles with Light Targets: II. Experiment	536
<i>R. Bruch, L.J. Dubé, E. Träbert, P.H. Heckmann, B. Raith</i>	
Capture Cross Sections in Highly Excited p States of Ar^{18+} in High Velocity Collisions of 250 MeV Ar^{18+} on N	537
<i>J.P. Rozet, P. Legagneux-Piquemal, A. Chetioui, P. Chevallier</i>	
Capture Cross Sections in High p Rydberg States by 400 MeV Bare Fe^{26+} and One-Electron Fe^{25+} Ions	538
<i>A. Chetioui, D. Vermhet, J.P. Rozet, P. Legagneux-Piquemal, C. Stephan</i>	

**Ion-Atom Collisions:
Electron Exchange with Multiply Charged Ions II**

Translational Spectroscopy of Electron Capture by Multiply Charged Ions <i>B.A. Huber, H.J. Kahlert, K. Wieseemann</i>	539
Energy Loss Spectra of Ar^{3+} - He Collisions <i>E.Y. Kamber, J.B. Hasted</i>	540
Final-State-Analysis of Electron Capture Processes in Collisions of Highly Stripped C, N and O Ions with He Atoms <i>M. Kimura, T. Iwai, Y. Kaneko, N. Kobayashi, A. Matsumoto, S. Ohtani, K. Okuno, S. Takagi, H. Tawara, S. Tsurubuchi</i>	541
Final-State-Analysis of Electron Capture Processes in Collisions of Highly Stripped F and Ne Ions with He Atoms <i>H. Tawara, T. Iwai, Y. Kaneko, M. Kimura, N. Kobayashi, A. Matsumoto, S. Ohtani, K. Okuno, S. Takagi, S. Tsurubuchi</i>	542
Low-Energy Electron-Capture in Ne^{2+} -He, Ar^{2+} -He and Kr^{2+} -He Collisions <i>Kazuhiko Okuno, Yozaburo Kaneko</i>	543
Ion Energy-Loss Spectroscopy of One Electron Capture Processes in the System Kr^{2+} - Ne <i>T. Nakamura, N. Kobayashi, Y. Kaneko</i>	544
Ion Energy Loss Spectroscopy for Transitions among Low-Lying States of Kr^{2+} in the Collisions with He and Ne <i>N. Kobayashi, T. Nakamura, Y. Kaneko</i>	545
Population of Electronic States of Multiply Charged Ar Ions Formed in Electron Capture from Hydrogen Atoms <i>V.V. Afrosimov, A.A. Basalaeu, K.O. Lozhkin, M.N. Panov</i>	546
State-Selective Electron Capture by C^{2+} , C^{3+} , N^{2+} and Ar^{2+} in Rare Gases <i>M. Lennon, R.W. McCullough, H.B. Gilbody</i>	547
State-Selective Electron Capture by Slow Multiply Charged Ions in Atomic Hydrogen <i>R.W. McCullough, M. Lennon, F.G. Wilkie, H.B. Gilbody</i>	548
Lyman Spectra of O^{7+} and N^{6+} Produced by Low Energy Charge Exchange Collision on H_2 <i>S. Bliman, M. Bonnefoy, J.J. Bonnet, S. Dousson, A. Fleury, D. Hitz, B. Jacquot</i>	549
Electron Capture into Different (n,l)-States in Slow C^{6+} , N^{6+} , O^{6+} , Ne^{6+} -He, H_2 Collisions <i>Yu.S. Gordeev, D. Dijkkamp, A.G. Drentje, F.J. de Heer</i>	550
State-Selective Electron Capture Cross Sections for Impact of C^{q+} ($q = 2,3,4$) and O^{q+} ($q = 2,3,6$) on Li <i>D. Dijkkamp, R.L. van der Woude, F.J. de Heer, A.G. Drentje, A. Brazuk, H. Winter</i>	551
Electron Capture into Excited Projectile States in 6-100 keV Ne^{4+} -Ne Collisions <i>D. Dijkkamp, V.K. Nikulin, Yu.S. Gordeev, A.V. Samoilov, F.J. de Heer</i>	552

**Ion-Atom Collisions:
Electron Exchange with Multiply Charged Ions III**

Extraction of Total Capture Probabilities in Atomic Many Electron Collisions <i>H.J. Lüdde, R.M. Dreizler</i>	553
Dynamics of Collective Charge Flow in Diatomic Collision Systems <i>J. Eichler, T.S. Ho</i>	554
Charge Capture by Multicharged Ions: Fully Quantal Calculations with Larger Basis Sets <i>C. Bottcher, T.G. Heil</i>	555
Molecular Calculations of the Cross Section for Charge Transfer $\text{He}^{2+} + \text{H}$ in the 20 eV to 10 keV E_{CM} Region <i>Marc C. van Hemert, Ewine F. van Dishoeck, Fumihiro Koike</i>	556
Impact Parameter Dependence of Charge Exchange in the Scattering of Li^{3+} on H at 10.5 keV (Direct Integration of the Schrödinger Equation) <i>Norbert Grün, Werner Scheid</i>	557
Theoretical Study of $\text{Li}^{2+} - \text{H}$ Collisions at the keV Energy Range <i>J. Hanssen, C. Harel</i>	558
Treatment of Charge Transfer Collisions with Translation Factors. $\text{Be}^{4+} + \text{H}$ <i>L.F. Errea, L. Méndez, A. Riera</i>	559
Stark Mixing of Sublevels in Multicharged Ion-Atom Collisions <i>R. Gayet, J. Hanssen, C. Harel, A. Salin</i>	560
A Simple Account of Core Electrons in the Theory of Electron Capture in Slow Collisions of Highly Charged Ions with Atomic Hydrogen <i>O.G. Larsen, K. Taulbjerg</i>	561
Coincidence Measurements of Electron Transfer in an Ion-Atom Crossed Beams Experiment <i>F.W. Meyer</i>	562
Electron Capture Cross Sections for Low Velocity Ne^{9+} and Ar^{9+} Ions on Atomic and Molecular Hydrogen (50 eV/q to 3000 eV/q) <i>Tom J. Gray, C. Can, L. Tunnell, J.M. Hall, S.L. Varghese</i>	563
Nonmonotonic Behaviour in the Charge Dependence of Total Electron-Capture Cross Sections for Medium-Velocity, Partly Stripped Ions on Atomic Hydrogen <i>P. Hvelplund, H. Knudsen, L.H. Andersen, S.K. Bjørnelund, L. Liljeby</i>	564
Electron Capture from Hydrogen Atoms by Multiply Charged C,N,O,Ne Ions at Low keV Energies <i>V.V. Afrosimov, A.A. Basalaeu, K.O. Lozhkin, M.N. Panov</i>	565
Multichannel Model Study of Collisions between Many-Electron Atoms and Highly Charged Ions <i>V.K. Nikulin, A.V. Samoylov</i>	566
Charge Transfer in $\text{He}^{++} + \text{Li}$ Collisions <i>A.M. Ermolaev, B.H. Bransden</i>	567

Electron-Capture in $\text{He}^{2+} + \text{Li}$ Collision	568
<i>H. Sato, M. Kimura</i>	
Two Electron Capture in High Energy $\text{He}^{2+} + \text{Li}$ Collisions	569
<i>M. Sasao, A. Matsumoto, A. Nishizawa, K.N. Sato, S. Takagi, S. Amamiya, T. Masuda, Y. Tsurita, Y. Kanamori, Y. Haruyama, F. Fukuzawa</i>	
Ion-Atom Collisions:	
Electron Exchange with Multiply Charged Ions IV	
Exponential Distorted Wave Approximation in Charge Transfer	570
<i>H. Suzuki, N. Toshima, T. Watanabe</i>	
Continuous Energy State Model for Charge Transfer in Multiply Charged Ions Impact on Atoms	571
<i>Fumihiko Koike</i>	
Semiclassical Studies of Slow Charge Transfer Reactions	572
<i>Anders B��r��ny</i>	
Target Effect on the n Population for Electron Capture Processes Involving Multicharged Ions ($1 < E < 10 \text{ keV/q}$)	573
<i>M. Barat, M. Laurent, J. Pommier, S. Dousson, D. Hitz</i>	
Electron Capture by Multiply Charged Ions: Influence of Target Ionization Potential	574
<i>M. Gargaud, P. Duthoit, R. McCarroll</i>	
Interference Structure in the Impact Parameter Dependence of K-K Charge Transfer in Slow S-Ar Collisions	575
<i>E. Justiniano, R. Schuch, M. Schulz, H.J. Specht, H. Schmidt-B��cking, H. Ingwersen</i>	
Transfer Ionization and Coulomb Ionization in Collisions of Multiply Charged Ions with Atoms	576
<i>W. Groh, A. M��ller, B. Schuch, A.S. Schlachter, E. Salzborn</i>	
Charge Transfer Cross Sections for Multiply Charged Krypton and Xenon Ions on Various Gas Targets	577
<i>T. Kusakabe, H. Hanaki, T. Horiuchi, N. Nagai, I. Konomi, M. Sakisaka</i>	
Electron Capture into N-, O-, and F-Like Xe and Sm Ions at 3.6 MeV/u	578
<i>D.H.H. Hoffmann, P.H. Mokler, W.A. Sch��nfeldt, A. Warczak, Z. Stachura</i>	
M-Subshell Effects in Electron-Capture to Sm^{q+} Ions	579
<i>W.A. Sch��nfeldt, D.H.H. Hoffmann, P.H. Mokler, A. Warczak</i>	
Charge Equilibrium of Fast Heavy Ions Penetrating through Gaseous Media	580
<i>S. Karashima, T. Watanabe</i>	
Z_T Oscillation of Equilibrium Mean Charge of MeV He Ion	581
<i>F. Fukuzawa, Y. Haruyama, Y. Kanamori, A. Itoh</i>	
Collisions of Multiply Charged Neon Ions with Water Vapor	582
<i>C.-S. O, S.B. Elston, M. Breinig, B. Thomas, S. Berry, R.T. Short, I.A. Sellin, D.A. Church, R.A. Kenefick, W.S. Burns</i>	

Ion(Atom)-Molecule Collisions: Electronically Elastic Processes

Energy Dependence of Mode Resolved Vibrational Excitation in H^+ - CF_4 and SF_6 Collisions	583
<i>U. Gierz, M. Noll, J.P. Toennies</i>	
The Anisotropic Neon-Methane Interaction from Differential Energy Loss Spectra	584
<i>U. Buck, A. Kohlhasse, T. Phillips, D. Secrest</i>	
Time of Flight Analysis of Ar_n Cluster Scattering	585
<i>U. Buck, H. Meyer</i>	
Transitions between $K 4^2P$ Zeeman Substates Induced by Collisions with N_2 and H_2	586
<i>R. Berends, P. Skalinski, L. Krause</i>	
$He^0 + D_2$ Collisions at Low keV Energies	587
<i>J. Jakacky, Jr., V. Heckman, E. Pollack</i>	
Differential Cross Sections in Neutral-Neutral Collisions	588
<i>J.H. Newman, Y.S. Chen, K.A. Smith, R.F. Stebbings</i>	
Effects of Translational and Superfine Relaxation of I Atoms in Oxygen-Iodine Laser	589
<i>M.V. Zagidullin, V.I. Igoshin, N.L. Kuprianov</i>	

Ion(Atom)-Molecule Collisions: Theory of Rotational/Vibrational Excitation

Use of Ehrenfest's Principle for Inelastic Collisions	590
<i>W. Elberfeld, M. Kleber</i>	
Computed Vibrational and Rotational Inelasticity in Collisions via Realistic Interactions	591
<i>F.A. Gianturco, U.T. Lamanna, G. Petrella</i>	
Scattering of Rare Gas Atoms (Ne,Ar) by Alkali Halide Molecules ($KCl, CsCl, KF, CsF$)	592
<i>D.N. Tripathi, D.K. Rai</i>	
Ion-Molecule Differential Cross Sections and Energy Transfer Distributions	593
<i>F.E. Budenholzer, C.C. Lee</i>	
A Comparison of Close Coupled Scattering Results with Measurements on $He - CO$ at $E_{c.m.} = 27.7$ meV	594
<i>W. Dilling, J. Schaefer</i>	
Excitation Functions for Rotational Excitation in Atom Rigid-Rotor Collisions	595
<i>D. Poppe</i>	
On Rotational Excitation of Initially Rotating Molecules	596
<i>H.J. Korsch, Z.V. Lewis, D. Poppe</i>	
Determining Intermolecular Potentials from Atom-Molecule Scattering Data	597
<i>R. Snyder, A. Russek</i>	

Energy Loss Scaling in Ion-Molecule Scattering: 3, 10, 15, and 25 keV $\text{Ne}^+ - \text{H}_2$ <i>B. Fastrup, P. Dahl</i>	598
Ion(Atom)-Molecule Collisions: Fine-Structure Transitions and Quenching at Thermal Energies	
Emission Spectrum of the $\text{Na}^+ - \text{N}_2$ Collision Complex <i>W. Kamke, B. Kamke, I.V. Hertel, A. Gallagher</i>	599
Polarization Studies in the Nonadiabatic Quenching Process $\text{Na}^+(3p) + \text{H}_2$ <i>G. Jamieson, W. Reiland, C.P. Schulz, H.-U. Tittes, I.V. Hertel</i>	600
Nonresonant Electronic to Vibrational Energy Transfer in the Collision of Laser Excited $\text{Na}^+(3p)$ with Triatomic Molecules <i>G. Jamieson, C.P. Schulz, H.-U. Tittes, I.V. Hertel</i>	601
A Molecular Beam Study of Electronic to Electronic, Vibrational, and Rotational Energy Transfer (E-EVRT) in the Collision of Two Step Laser Excited Sodium with N_2 <i>G. Jamieson, C.P. Schulz, H.-U. Tittes, I.V. Hertel</i>	602
Influence of the Rotational Energy of Molecular Perturbers on $\text{Rb}(5P)$ Fine Structure Transition (FST) <i>J. Cuvellier, J.M. Mestdagh, M. Ferray, P. de Pujo, J. Berlande</i>	603
Collisional Quenching of Selectively Excited Rovibronic States of H_2^+ by H_2 , Ne, Ar, and Kr <i>H. Schmoranzner, J. Imschweiler, T. Noll</i>	604
Radiative Quenching of Vibronically Excited CO^+ at $T = 100^\circ\text{K}$ <i>D.H. Katayama, J.A. Welsh</i>	605
Temperature Dependence of De-excitation Rate Constants of $\text{He}(2^3\text{S})$, $\text{Ar}(1^1\text{P}_1)$, and $\text{Ar}(3^1\text{P}_1)$ by Atoms and Molecules <i>H. Koizumi, M. Ukai, Y. Tanaka, K. Shinsaka, Y. Hatano</i>	606
Ion(Molecule)-Collisions: Electronic Excitation at Suprathermal Energies	
Vibrational Interference Structures in Differential Cross Sections for Alkali-Atom Molecule Collisions <i>M.R. Spalburg, M.G.M. Vervaat, A.W. Kleyn, J. Los</i>	607
Non Adiabatic Processes in Alkali Metal - Alkyl Halide Molecule Collisions: Neutral Excitation and Ion Pair Production Channels <i>A.M.C. Moutinho, A. Praxedes, E. Cowan, M.A.D. Fluendy</i>	608
Electron Transfer in Alkali Atom- CH_3NO_2 Collisions <i>M.A.D. Fluendy, S. Lunt</i>	609
Emission Cross Sections and Polarization of the Resonance Radiation in $\text{H}^+, \text{H}_2^+, \text{H}_3^+ - \text{Na}$ Collisions at 2 - 14 keV <i>V.M. Lavrov, R.A. Lomsadze</i>	610

Excitation of Hydrogen Atoms in Collisions of Slow K^+ - Ions with H_2 - Molecules	611
<i>B.I. Kikiani, M.R. Gochitashvili, R.V. Kviszhinadze, V.A. Ankudinov</i>	
Excitation in Collisions of N_2^+ with He, Ne and Ar in the Energy Range 1 - 2000 eV (2000 - 8000 Å)	612
<i>Ingrid Kuen, Branislav Jelenkovic, Franz Howorka</i>	
Cross Sections for Excitation of Balmer Beta Radiation in an Equilibrated Beam of H and H^+ in O_2	613
<i>J. Roger Sheridan</i>	
Excitation in $He^0 + D_2$ Collisions at Low keV Energies	614
<i>J. Jakacky, Jr., A. Russek</i>	

Ion(Atom)-Molecule Collisions: Penning Ionization

Penning Ionization Processes Clarified by Electron-Ion-Coincidence Measurements	615
<i>Jürgen Baus, Arnulf Benz, Harald Morgner</i>	
A New Apparatus for the Measurement of Penning Electron Angular Distributions	616
<i>H. Morgner, G. Zimmermann</i>	
The Reaction of Metastable Helium with Molecules Investigated by Optical and Electron Spectroscopy	617
<i>Oskar Leisin, Harald Morgner, Hubert Seiberle, Joachim Stegmaier</i>	
Relative Orbital-Ionization Probabilities of Gaseous and Condensed Phase Molecules by Penning and Photo Processes	618
<i>Andrew J. Yench, Hiroyasu Kubota, Tomohiko Hirooka, Tsutomu Fukuyama, Tamotsu Kondow, Kozo Kuchitsu</i>	
Strong Variation in the Thermal Energy Ionization Cross Section of Argon Atoms Colliding with Different Laser-Excited $Ne(2p^5 3p J=1,2,3)$ Atoms	619
<i>W. Bussert, J. Ganz, M.-W. Ruf, A. Siegel, H. Hotop, H. Morgner</i>	
Penning Ionization of Ne and Ar by $He^-(1s2s2p) ^4P^0$ at 1-2 keV	620
<i>M.J. Coggiola, K.T. Gillen</i>	
Ionization of CS_2 Clusters in Collision with Electrons and Long-Lived Excited Rare-Gas Atoms	621
<i>Tamotsu Kondow, Koichiro Mitsuke, Kozo Kuchitsu</i>	

Ion(Atom)-Molecule Collisions: Electron Exchange

Charge Transfer Reaction between Ar^+ and Diatomic Molecules at the 10 eV Region	622
<i>T. Matsuo, N. Kobayashi, Y. Kaneko</i>	

Molecular Dynamics of Electron Transfer Reactions at Low Energy: $\text{Ar}^+ (\text{N}_2, \text{Ar}) \text{N}_2^+$, $\text{N}_2^+ (\text{N}_2, \text{N}_2) \text{N}_2^+$, and $\text{Ar}^+ (\text{Ar}, \text{Ar}) \text{Ar}^+$ <i>J.H. Futrell, B. Friedrich</i>	623
Ab Initio Calculations on the $(\text{ArN}_2)^+$ System <i>P. Archirel, B. Levy</i>	624
Vibronic and FS State Selected Charge Transfer Reactions: $\text{O}_2^+ + \text{Ar} \rightleftharpoons \text{Ar}^+ + \text{O}_2$ and $\text{NO}^+ + \text{Ar} \rightleftharpoons \text{Ar}^+ + \text{NO}$ Systems <i>Inosuke Koyano, Kenichiro Tanaka, Tatsuhisa Kato</i>	625
Charge Transfer Reaction between $\text{Ar}^+ (^2\text{p}_{3/2}, ^2\text{p}_{1/2})$ and N_2 below 0.1 eV <i>T. Tobita, N. Kobayashi, Y. Kaneko</i>	626
State Selected Ion-Molecule Reactions: $\text{N}_2^+ + \text{Ar} \rightarrow \text{N}_2 + \text{Ar}^+$ <i>T.R. Govers, P.M. Guyon, T. Baer, K. Cole, H. Frohlich, M. Lavollée</i>	627
Dissociative Charge Transfer in $\text{He}^+ - \text{O}_2$ Collisions: Energy Spectra and Angular Distributions of the O^+ Product Ions <i>G. Bischof, P. Reinig, F. Linder</i>	628
Dissociative Charge Exchange of H_2^+ , Studied with Translational Spectroscopy <i>D.P. de Bruijn, J. Neuteboom, J. Los, V. Sidis</i>	629
Theory of Near Resonant-Dissociative Charge Exchange Collisions at keV Energies <i>V. Sidis, D. De Bruijn</i>	630
Electron Transfer Processes between Electronically Excited Na and SO_2 <i>B. Auschwitz, K. Laermann</i>	631
Differential Cross Sections for Electron Transfer with Selection of the Ionic Exit Channel for K , $\text{Cs} + \text{CH}_3\text{I}$ Collisions <i>A.J.F. Praxedes, M.J.P. Maneira, A.M.C. Moutinho</i>	632

Ion(Atom)-Molecule Collisions: Dissociation and Recombination in Reactions

Alignment in Molecular Excitation in Dissociative States of H_2^+ and H_3^+ <i>O. Yenen, M. Natarajan, D.H. Jaecks</i>	633
Predissociation of the $c^3\Pi_u^-$ and $d^3\Pi_u^-$ States of H_2 , Studied with Translational Spectroscopy <i>D.P. de Bruijn, J. Neuteboom, J. Los, T.R. Govers</i>	634
Translational Spectroscopy of D_2^+ and HD^+ from D_3^+ and HD_2^+ Dissociation <i>C. Cisneros, I. Alvarez, A. Morales, J. de Urquijo, A. Russek</i>	635
Differential Positive-Fragment Cross Sections of HD_2^+ in H_2 at Energies in the Range 1.5 to 5 keV <i>A. Morales, J. de Urquijo, C. Cisneros, I. Alvarez, A. Russek</i>	636

Collisional Electron-Ion and Ion-Ion Recombination in a Dense Neutral and Ion Gas <i>M.R. Flannery</i>	637
Dissociative Recombination of $e + H_3^+$. An Analysis of Reaction Product Channels <i>H.H. Michels, R.H. Hobbs</i>	638
Vibrational Predissociation of Ne...I ₂ (B) van der Waals Molecule: A Quasiclassical Treatment <i>G. Delgado-Barrio, P. Mareca, P. Villarreal</i>	639
Vibrational Predissociation of the T-Shape He...I ₂ (B) van der Waals Molecule: A Close-Coupling Calculation <i>P. Villarreal, G. Delgado-Barrio, P. Mareca</i>	640
Complex-Coordinate Coupled-Channel Formalism to Vibrational and Rotational Predissociation of van der Waals Molecules <i>Shih-I Chu, Krishna K. Datta</i>	641

Ion(Atom)-Molecule Collisions: Reactive Scattering

Study of the Reaction of Na*(3P) + HCl by the Crossed Molecular Beam Method <i>H. Schmidt, M.F. Vernon, P.S. Weiss, M.H. Covinsky, Y.T. Lee</i>	642
M(IIa)-X ₂ Chemiionisation as a Function of Collision Energy <i>U. Ross, H.-J. Meyer, T. Schulze, D. Beck</i>	643
Collision Energy Dependence of Vibrational/Rotational Distribution of BaBr Produced in the Crossed Beam Reaction Ba + CH ₃ Br <i>Toshiaki Munakata, Yutaka Matsumi, Takahiro Kasuya</i>	644
Dynamics of van der Waals Bond Exchange <i>D.R. Worsnop, S.J. Buelow, D.R. Herschbach</i>	645
Chemiluminescence in Reaction of Potassium Dimers with Oxygen Molecules <i>J. Berlande, J. Cuvellier, P. de Pujo, J.M. Mestdagh</i>	646
A New Quantum Mechanical Theory of Chemical Reactions <i>E. Ficocelli Varracchio</i>	647
Resonances and Interferences in the Theory of Chemical Reactions <i>V. Aquilanti, S. Cavalli, G. Grossi, A. Lagana</i>	648
Dependence of State-to-State Reactive Scattering on Relative Angular Momentum <i>S.H. Suck, R.W. Emmons, C. Klein</i>	649
An Invariant Imbedding Approximate Solution - Type Algorithm for Solving Coupled Equations for Scattering <i>F. Mrugala</i>	650

Ion-Molecule Reactions

Atom Capture and Atom Loss at Asymptotically High Speeds <i>M. Breinig, G.J. Dixon, P. Engar, S.B. Elston, I.A. Sellin</i>	651
Proton-Oxygen Potential Hypersurfaces Relevant to Vibrational Energy Transfers During Collisions <i>F.A. Gianturco, V. Staemmler</i>	652
A New Method for the Measurement of Vibrational State Selected Ion-Molecule Reactions at Thermal Energies <i>D. van Pijkeren, J. van Eck, A. Niehaus</i>	653
B $^2\Delta$ -State NH^+ (ND^+) Emission from Reactions of Metastable N^+ Ions with $\text{H}_2(\text{D}_2)$: Spectroscopy and Dynamics <i>I. Kusunoki, Ch. Ottinger</i>	654
Collisional Relaxation and Reaction of Vibrationally Excited O_2^+ <i>H. Böhrringer, M. Durup-Ferguson, E.E. Ferguson</i>	655
Some Production and Destruction Reactions of Protonated Formic Acid, $\text{HC}(\text{OH})_2^+$ <i>H. Villinger, A. Saxer, E. Ferguson, H. Bryant, R. Richter, W. Lindinger</i>	656
Ion Molecules Association at Very Low Temperatures (20 K and 70 K): $\text{N}_2^+ + 2\text{N}_2 \rightarrow \text{N}_4^+ + \text{N}_2$ and $\text{O}_2^+ + 2\text{O}_2 \rightarrow \text{O}_4^+ + \text{O}_2$ <i>B.R. Rowe, J.B. Marquette, G. Dupeyrat</i>	657
Initialisation of Ion Reactions inside Methane Clusters by Electron Impact <i>A. Ding, J. Hesslich</i>	658
Product State Distribution of HF in the Reaction $\text{F} + \text{H}_2$ at Enhanced Collision Energies <i>J. Barnes, J.C. Polanyi, W. Reiland, D. Thomas</i>	659

Collisions Involving Rydberg Atoms I

Charge Transfer from Rydberg Atoms: M and L Dependence of Final State Distributions <i>Alan D. MacKellar, Richard L. Becker</i>	660
Charge Transfer from Rydberg Atoms: Velocity Dependence of Final-State Distributions <i>Keith B. MacAdam, Richard G. Rolfes</i>	661
Penning Ionization in Collisions of Rydberg Rb Atoms <i>M. Kimura, R.E. Olson</i>	662
Kinematics of Collisional Ionization in $\text{Xe}(\text{nf})\text{-SF}_6$ Interactions <i>C. Higgs, M.P. Slusher, K.A. Smith, F.B. Dunning, R.F. Stebbings</i>	663
Excitation and Ionization of High Rydberg Atoms in Collision with Polar Molecules -- Classical Calculations <i>S.C. Preston, N.F. Lane</i>	664

Detection of High-Rydberg Atoms and Molecules by CO ₂ -Laser Radiation	665
<i>A.A. Perov, A.Yu. Zayats, A.N. Stepanov, A.P. Simonov</i>	
Model Potential Calculations for the Ground and Excited (Rydberg) States of the Li ₂ ⁺ , Na ₂ ⁺ , K ₂ ⁺ Ions: Core Polarization Effects	666
<i>A. Henriët, F. Masnou-Seeuws</i>	
Electric Field-Ionization of Rydberg States of Fast Foil-Excited Sulfur Ions	667
<i>E.P. Kanter, D. Schneider, Z. Vager</i>	

Collisions Involving Rydberg Atoms II

Collisional Angular-Momentum Mixing of Na Rydberg States by a K ⁺ Ion Beam	668
<i>W.W. Smith, P. Pillet, R. Kachru, N.H. Tran, T.F. Gallagher</i>	
Collisional Transfers in Sodium Rydberg States	669
<i>A.L. Roche, P. Valiron, F. Masnou-Seeuws</i>	
Quasi-Elastic State-Changing Collisions of High-Rydberg Atoms with Heavy Rare-Gas Atoms	670
<i>Yutaka Sato, Michio Matsuzawa</i>	
Quenching of Rubidium Rydberg States : A Tool for Investigation of the Elastic Scattering of Ultra-Low Energy Electrons (E ≈ 0.01 eV) by Rubidium Atoms	671
<i>M. Hugon, F. Gounand, P.R. Fournier, J. Berlande</i>	
Application of the Faddeev Watson Expansion to Thermal Collisions of Rydberg Atoms with Neutral Particles	672
<i>E. de Prunelé</i>	
Sodium D State Fine-Structure in an Electric Field, and Fine-Structure Quantum Beat Echoes	673
<i>T.H. Jeys, M.C. Copel, G.B. McMillian, F.B. Dunning, R.F. Stebbings</i>	
Collisions of Rydberg Atoms in an Electric Field: Calculations Using Hydrogenic Wave Functions in Parabolic Coordinates	674
<i>A.P. Hickman</i>	
Analytical Expressions for Born Electron Impact Excitation Cross Sections between Rydberg States nl - nl'	675
<i>I. Beigman, L. Bureyeva, M. Syrkin</i>	
Quantum State Distributions in Rydberg Atomic Beams Created by Electron Impact	676
<i>R. Barbe, J.-P. Astruc, A. Lagreze, J.-P. Schermann</i>	

Electron-Atom Collisions in Radiation Fields

Electron Scattering from a Potential in a Radiation Field	677
<i>Robin Shakeshaft</i>	

Electron-Atomic-Hydrogen Elastic Exchange Collisions in the Presence of a Laser Field	678
<i>F. Trombetta, C.J. Joachain, G. Ferrante</i>	
Elastic Electron-Helium Collisions in Electric Field	679
<i>C. Foglia</i>	
Effect of the Laser Polarization on Electron-Atom Collisions	680
<i>P. Cavaliere, C. Leone, G. Ferrante</i>	
Particle Atom Scattering in the Presence of a Nonresonant Laser Field	681
<i>S. Bivona, D. Valenza, G. Ferrante</i>	
Electron Atom Scattering in the Field of a CO ₂ Laser	682
<i>P.J. Curry, W.R. Newell, A.C.H. Smith</i>	
Radiative Electron-Atom Collision Cross Sections	683
<i>L. Dimou, F.H.M. Faisal</i>	
Simultaneous Electron-Photon Excitation of Atoms	684
<i>S. Jetzke, F.H.M. Faisal, R. Hippler, H.O. Lutz</i>	
Quadrupole Effect in the Excitation of He by Electron Impact in the Presence of Laser	685
<i>R.S. Pundir, K.C. Mathur</i>	
Laser Assisted Electron Impact Ionization	686
<i>M. Zarcone, D.L. Moores, M.R.C. McDowell</i>	
Laser Modified Electron Scattering from a Slowly Ionizing Atom	687
<i>Emilio Fiordilino, Marvin H. Mittleman</i>	

Laser-Assisted Collisions and Collision-Assisted Radiative Transitions

Theory of Laser-Induced Chemi-ionization	688
<i>H.P. Saha, J.S. Dahler, S.E. Nielsen</i>	
Electron Spectroscopy Study of Ionization in an Alkali Vapor Resonantly Excited with a C.W. Laser	689
<i>J.M. Bizau, B. Carré, P. Dhez, D. Ederer, J.C. Keller, P. Koch, J.L. Le Gouet, J.L. Picqué, G. Spiess, F. Wuilleumier</i>	
Electron Spectroscopy Study of Ionization in an Alkali Vapor Excited with a High Intensity Laser	690
<i>J.M. Bizau, B. Carré, P. Gérard, J.C. Keller, J.L. Le Gouet, J.L. Picqué, F. Roussel, G. Spiess, F. Wuilleumier</i>	
He ²⁺ + H Collisions in Presence of a Laser Field	691
<i>L. Méndez, L.F. Errea, A. Riera</i>	
Charge Transfer in the Presence of a Magnetic Field	692
<i>S. Bivona, B. Spagnolo, G. Ferrante</i>	
Application of the Eigenvalue Method to CARE and RAIC	693
<i>E.J. Robinson</i>	

Optical Collisions in Strong Laser Fields <i>D.S. Bakaev, Yu.A. Vdovin, V.M. Yermachenko, S.I. Yakovlenko</i>	694
Nonadiabatic Theory of Final State Distributions in Laser Assisted Atomic Collisions <i>P.S. Julienne, F.H. Mies</i>	695
Phase Control of Atomic Scattering States in Two-Photon Radiative Collisions <i>Munir H. Nayfeh, G.B. Hillard</i>	696
Dipole Moments and Interaction Potentials in Collision-Induced Absorption <i>A. Raczyński</i>	697
Multiphoton-Assisted Radiative Collisions in a Strong Field Regime <i>P. Pillet, R. Kachru, N.H. Tran, W.W. Smith, T.F. Gallagher</i>	698
Temperature Dependence of the Collision Induced Absorption of CO ₂ at 0.091 cm ⁻¹ <i>G. Kouroupetroglou, G. Boudouris</i>	699
Dynamics of Positronium in a Laser Field <i>F.H.M. Faisal, P.S. Ray</i>	700
Soft-Photon Interactions Generating Symmetry-Broken Pre- and Postcollision States of Molecules <i>Peter Pfeifer</i>	701
Collision Induced Dipole Radiation of Normal Hydrogen Gas in the Frequency Range of the Cosmic Background <i>Joachim Schaefer, Wilfried Meyer</i>	702

Experimental Techniques

A New Electron-Electron Multi-Conicidence Apparatus <i>M. Völkel, W. Sandner</i>	703
Reduction of Kinematic Line Broadening in the Auger Electron Spectra of Fast Ion Beams <i>R. Bruch, A. Gutenkunst, K.H. Müller</i>	704
A Compact High Current Pulsed Electron Gun with Sub-Nanosecond Electron Pulse Widths <i>M.A. Khakoo, S.K. Srivastava</i>	705
ACO: A Source of Monoenergetic Electrons for Collisions with Atoms and Molecules <i>J.P. Ziesel, D. Field, P.M. Guyon, T.R. Govers, M. Lavollée, O. Dutuit</i>	706
A New, Intermediate Energy, Electron Energy Loss Spectrometer <i>G. Gerson B. de Souza, A.C. de A. e Souza, R. de B. Faria</i>	707
Use of a Soft X-Ray Diagnostic for Highly Charged Ion Current Measurement <i>J.J. Bonnet, M. Bonnefoy, A. Fleury, S. Bliman, S. Dousson, D. Hitz, B. Jacquot</i>	708

Compact Plane-Crystal X-Ray Spectrometer <i>W. Jitschin, B. Wisotzki, U. Werner, H.O. Lutz</i>	709
X-Ray Spectroscopy of Tokamak Plasmas: An Experimental and Theoretical Study <i>E. Källne, J. Källne, A.K. Pradhan</i>	710
A New Technique for the Study of Charge Changing Collisions Using Recoil Ions <i>L. Liljeby, H. Cederquist, H. Danared, G. Astner, A. Bárány, A. Johnson</i>	711
Construction Performance of a Position-Sensitive Particle Detector with Delay Line Readout <i>B. Liu, W. Enders, D. Liesen, R. Schulze</i>	712
An Alternative Method for the Measurement of the Efficiency of an Ion Detector <i>F. Brouillard, S. Chantrenne, W. Claeys, A. Cornet, P. Defrance</i>	713
Measurement of Dissociation Fraction in an Electron Impact Heated Atomic Hydrogen Oven <i>G.A. Glass, L.H. Andersen, R. Holmes, J.-P. Rozet, D.A. Taylor, R.S. Thoe, S.B. Elston, M. Breinig, I.A. Sellin</i>	714
Total Electron-Atom and Electron-Molecule Scattering Cross-Sections by Photoelectron Spectroscopy <i>Vijay Kumar, E. Krishnakumar, K.P. Subramanian</i>	715

Theoretical Methods

New Concepts for Treating Relativistic Collisions <i>Felix T. Smith</i>	716
A Fast Asymptotic Package <i>H.E. Saraph, M.J. Seaton</i>	717
On the Calculation of Quantal Matrix Elements of a Function between Unbound States <i>Staffan Yngve</i>	718
The Normalized Wavefunction Close to the Centre of Force for Bound and Unbound States <i>Nanny Fröman, Per Olof Fröman, Staffan Yngve</i>	719
Asymptotic Expansions of Coulomb Wavefunctions Obtained by Means of the Saddle-Point Method <i>Staffan Yngve</i>	720
Recent Results on the Multiplets $\text{He-}2p^3\ ^4\text{S}^0$, $\text{Be-}3d^5\ ^6\text{S}$, and $\text{C-}4f^7\ ^8\text{S}^0$ Belonging to the Half Capacity Configurations <i>Erling Holøien</i>	721
Atomic and Molecular Properties from Finite Element Method Calculations <i>W. Schulze, D. Kolb</i>	722

Adiabatic and Diabatic Molecular States of H_2 at Small Internuclear Distances	723
<i>F. Borondo, A. Macias, A. Riera</i>	
Large Order Perturbation Theory for Ion H_2^+ and for Stark Effect in Hydrogen	724
<i>R.J. Damburg, R.Kh. Propin</i>	
Threshold Breakup of Three Coulomb-Interacting Particles: Analysis with Wannier Theory and Jacobi Coordinates	725
<i>Jim Feagin</i>	
Stieltjes Methods for Photoabsorption and Ionization - A Merging of Spectral and Collision Theories	726
<i>M.R. Hermann, P.W. Langhoff</i>	

Miscellaneous

Classical-Trajectory Monte Carlo Calculation of Negative-Muon Capture	727
<i>James S. Cohen</i>	
Positronium Formation from Muonium	728
<i>Lali Chatterjee, S. Bhattacharyya</i>	
Mesomolecule Formation Studied Quantum Electrodynamically	729
<i>Lali Chatterjee, Sujata Bhattacharyya</i>	
Mesic Molecules and Muon Catalyzed Fusion	730
<i>A.K. Bhatia, Richard J. Drachman</i>	
The Atomic and Molecular Data Base at Belfast and Daresbury	731
<i>K.M. Aggarwal, K.A. Berrington, J.G. Hughes, F.J. Smith, M. Elder</i>	
Ion and Electron Collision Processes of Importance in the Jovian and Saturnian Magnetospheric Plasmas	732
<i>R.E. Johnson</i>	

Post-Deadline Papers

Resonant Photoemission Near 3d Thresholds in Lanthanum: Theoretical Predictions	733
<i>F. Combet Farnoux</i>	
Threshold Cross Sections of Excited Atomic States	734
<i>N.B. Avdonina, A.Z. Devdariani</i>	
Observation of λ -Structure in Hydrogenic States of High-Z Four-Electron Ions Produced by Ion-Solid Collisions	735
<i>A.E. Livingston</i>	
Charge Transfer and Fine-Structure Excitation in Collisions of O^{3+} with Atomic Hydrogen at Thermal Energies	736
<i>S. Bienstock, A. Dalgarno, E. Roueff</i>	

Radiative Decay of Li-Like Ions Following Charge Exchange of 3.3 keV/amu Ions with H ₂ <i>S. Bliman, M. Bonnefoy, J.J. Bonnet, S. Dousson, A. Fleury, D. Hitz, E. Knystautas, M.F. Politis, F. Zadworny</i>	737
Study of the H ₃ Molecules Produced by Collision of Fast H ₃ ⁺ Beams with Argon <i>M.J. Gaillard, A.G. de Pinho, J.-C. Poizat, J. Remillieux, R. Saoudi</i>	738
A Method for Estimating Properties of Small Clusters: Theoretical Aspects <i>Ray Hefferlin, G.V. Zhubikin, Ken Caviness, Penny Duerksen</i>	739
The Role of the Tilt Angle in Fluorescent Measurements of the Guest-Host System in Anisotropic Molecular Liquids <i>J. Fisz, H.W. Kunert</i>	740
Calculation of Collision Strengths for Fine-Structure Transitions in the Spectra of Rare Gas Atoms <i>F. Alan Bayes</i>	741
Anomalous Effects in Very Small Angle Electron Potassium Differential Scattering Measurements <i>K. Rubin, I. Efremov</i>	742
Excitation of the Mg II Resonance Doublet by Monoenergetic Electrons <i>I.P. Zapesochnyi, A.I. Imre, V.I. Frontov, A.N. Gomonaj, A.I. Dashchenko</i>	743
Near Threshold Electron Impact Excitation of Potassium Atom Lower Levels <i>F.F. Papp, N.I. Romanjuk, O.B. Shpenik</i>	744
Ultrasoft X-Ray Emission of Barium Study in Electron-Atomic Collisions <i>V.S. Vukstich, Yu.V. Zhmenyak, I.P. Zapesochnyi</i>	745
Electron Impact Excitation of Thulium and Gadolinium Atoms <i>L.L. Shimon</i>	746
Excitation of Metastable Levels of Noble Gas Atoms by Electron Impact in Intersecting Beams <i>O.B. Shpenik, A.N. Zaviopulo, A.V. Snegursky, I.I. Fabricant</i>	747
The Calculation of Excitation of 2S and 2P Levels of He ⁺ Ion by Electron Impact <i>M.I. Haysak, V.I. Lengyel, V.T. Navrotsky, E.P. Sabad</i>	748
Calculation of Di-electron Recombination Cross-Section on He ⁺ -Ion <i>O.I. Zatsarinny, V.I. Lengyel, E.P. Sabad</i>	749
The Influence of Electron Capture on the Elastic Cross-Section of Electron - Mg ⁺ -Ion Scattering <i>V.I. Lengyel, V.T. Navrotsky, E.P. Sabad</i>	750
The Autoionizing States of a Magnesium Atom <i>O.I. Zatsarinny, V.I. Lengyel, V.T. Navrotsky, E.P. Sabad, M. Salak</i>	751