

Monday July 26

SUBJECT

Opening / Invited Talks

Main Hall

9.45–10.15

Opening by

Dr. A. J. Pikaar (Directeur-generaal voor de Wetenschappen) Ministry of Education and Sciences

Professor Dr. J. Kistemaker (representative Netherlands Physical Society) N.N.V.

Dr. L. M. Branscomb (President ICPEAC)

10.15–11.00

Elastic Scattering of Ions, Atoms in the eV, keV Region, Review of Amdur's Work in the Field of the Repulsive Potential

F. T. Smith (Invited Talk)

11.30–12.15

Non-Adiabatic Theory in Atom-Atom Collisions

E. E. Nikitin (Invited Talk)

12.15–13.00

Reactive Scattering Neutral-Neutral (Chemical Processes)

Y. T. Lee (Invited Talk)

SUBJECT

Molecular Beams

Inverse Predissociation

Main Hall

14.30–15.40

Reactive Scattering (Theory and Calculations) Propagation Techniques in Reactive Scattering Calculations

A. Kuppermann 3

Long-Lived Collision Complexes and the Statistical Model, the K + CO₂ System

A. Bjerre 6

Scattering of Oxygen Atoms by Carbon Monoxide

P. G. Burke and A. J. Taylor 9

The Classical S-Matrix: Linear Reactive Collisions of H + Cl₂

C. C. Rankin and W. H. Miller 12

Total Reaction Cross-Section for the Reaction K + HBr → KBr + H in the eV Region

A. van der Meulen 15

Analysis of Symmetry in Chemical Reactions

T. F. George and J. Ross 18

Initial Vibrational and Rotational Population Distributions Predicted by Statistical Model Including Angular Momentum Conservation for Splitting of Four-Atomic Intermediate into Two Diatomic Species.

M. Kimura, S. Watanabe and T. Horie 21

16.30–17.30

Reactive Scattering (Experiment) Panel

Reactive Scattering of Alkali Dimers

G. M. Kendall, P. B. Foreman and R. Grice 23

Reactive Scattering of Hydrogen and Deuterium Atoms from Halogens

H. Haberland and J. Grosser 27

Monday

Vibrational Energy Distribution of CsF
Produced by Reactive Beam Scattering
H. G. Bennewitz, R. Haerten, O. Klais
and G. Müller

Cross-Sections for the Alkali-Metal-
Halogen Molecule Reactions: Na, K, Rb
and Cs with I_2
S. A. Edelstein and P. Davidovits

Energy Dependence of the Differential
and Total Reaction Cross-Sections for
 $K + CH_3I$

R. B. Bernstein, M. E. Gersh and
A. M. Rulis

Reactive Scattering of Ba by O_2 in a
Crossed Beam Experiment
J. Fricke, B. Kim and W. L. Fite
17.30–18.00

Recombination by Inverse Predissociation

Formation of $N_2(B^3\Pi_g, v = 13)$ by
Inverse Predissociation from $N(^4S_0)$
Atoms

K. H. Becker, W. Groth, W. Jud, and
D. Kley

Recombination of Nitrogen Atoms Via
the $N_2(a'^1\Pi_g)$ and $N_2(a'^1\Sigma_u^-)$ States

K. H. Becker, E. H. Fink and
W. Groth

OH Formation Through Inverse
Predissociation

P. S. Julienne and M. Krauss

SUBJECT

Electrons

Section Room I + II

12.15–13.15

31 **Many-Body Methods for Inelastic and
Elastic Scattering of Electrons by
Atoms**

Panel

34 Generalized Green Functions in the
Inelastic Scattering of Electrons on
Atoms

Dj. Zivanovic and R. K. Janev

45

37 Many-Electron Correlations in the
Elastic Scattering of Electrons on the
Closed Shell Atoms

R. Janev, Dj. Zivanovic,

V. Radopevic and L. Rupnik

48

39 Many-Body Methods for Determining
Stationary Properties, Time-Dependent
Responses, Excitation Energies and
Electron Scattering Cross-Sections for
Atomic and Molecular Systems

G. Csanak, H. Taylor and R. Yaris

51

41 Low Energy Electron Scattering in the
Random Phase Approximation

B. Schneider

53

43 Systematic Computation of Correlation
Effects in Electron-Atom Scattering

R. K. Nesbet and J. D. Lyons

55

Many-Body Calculations of Elastic and
Inelastic e^- -H and e^- -He Scattering
J. D. Lyons and R. K. Nesbet

57

14.30–16.10

Theory of Elastic Electron Scattering

Elastic Scattering of Electrons by
Hydrogen Atom in Plane Wave
Approximation

S. P. Khare and P. Shobha

59

Elastic Electron-Atom Scattering at
Intermediate Energies

C. J. Joachain and M. H. Mittleman

62

Monday

Application of a Simplified Second Born Approximation to the Scattering of Electrons and Protons by Helium Atoms A. R. Holt, J. Hunt and B. L. Moiseiwitsch	65	Inelastic Scattering of Electrons by Lithium Atoms D. E. Burgess, M. A. Hender, T. Shuttleworth and A. C. H. Smith	96
Elastic Scattering of Fast Electrons by He Atoms C. R. Garibotti	68	Electron Impact Studies of Cadmium Vapour W. R. Newell, K. J. Ross and J. B. P. Wickes	99
Polarized Orbital Calculations of Electron and Positron Scattering by Alkali Atoms Bui Tien Dai and A. D. Stauffer	71	Differential Cross-Sections for the Electron Impact Excitation of Hg W. Eitel, F. Hanne and J. Kessler	102
Elastic Scattering of Slow Electrons by Neon and Argon M. R. C. McDowell	74		
Elastic Scattering of Low Energy Electrons by Atomic Oxygen R. J. W. Henry and S. P. Rountree	76		
Qualitative Treatment of Electron-Heavy Atom Scattering in a "Bohr-Pauli Model" L. Spruch, A. R. P. Rau and R. O. Mueller	79		
The Elastic Scattering of Low Energy Electrons in Thomas-Fermi Theory T. Tietz	81		
Scattering Resonances in Algebraic Expansion Methods F. E. Harris and H. H. Michels	84		
16.40-17.50			
Elastic and Inelastic Scattering of Electrons by Atoms (Experiment)			
Scattering of Low Energy Electrons on He, Ne and A D. Andrick and A. Bitsch	87		
Elastic Scattering of 100, 90 and 80 eV Electrons on Argon Atom M. V. Kurepa and L. D. Vuškovic	89		
An Experimental Method for Obtaining the Limiting Value of the Total Cross-Section and the Differential Elastic Cross-Section, at Zero Degrees K. Rubin, P. Visconti and J. Slevin	91		
Time-of-Flight Beam Measurements of the Total Electron-Helium Atom Cross-Section G. C. Baldwin	94		

Monday

SUBJECT

Ions

Blue Room

11.30–12.00

Coincidence Study of Elementary Processes in Collisions of Hydrogen Particles with Atoms and Molecules

V. V. Afrosimov (Progress Report)

14.30–16.00

Dynamic Coupling in Heavy Particle Collisions I

(Theory and Experiment)

Panel

Dynamic Coupling in Proton-Hydrogen Atom Collisions

H. Rosenthal

105

Strong Coupling and Adiabatic Complex Degeneracies

D. S. F. Crothers

108

Differential Inelastic Scattering of He^{++} by Ne, Including Single Charge Exchange

Y. H. Chen, M. W. Siegel,

R. R. Humphris and J. W. Boring

110

Determination of the ($3p,^3P$) Excitation Differential Cross-Section, in He^+-He Collision, using a Ion-Photon Coincidence Method

G. Rahmat, G. Vassilev, J. Baudon and M. Barat

113

Inelastic Differential Scattering Cross-Sections for He^++He Leading to the $\text{He}^++\text{He}(2^3S)$ Final State

R. E. Olson and D. C. Lorents

115

MO Calculations on Inelastic Ne^+-Ne Collisions

E. W. Thulstrup and H. Johansen

118

Some Diabatic States of the ($\text{He}-\text{Ar}$) System

V. Sidis

120

Oscillation of Differential Cross-Section Due to Inelastic Process

L. P. Kotova and M. Ya. Ovchinnikova

123

Interpretation of Curve-Crossing in Ion-Atom Differential Scattering with Capture

J. B. Hasted, S. M. Iqbal and

M. M. Yussouf

126

16.30–18.00

Dynamic Coupling in Heavy Particle Collisions II

(Theory and Experiment)

Panel

Rotational Coupling Effects on the Differential Elastic and Inelastic Cross-Sections in He^+-He Collisions

R. McCarroll and R. D. Piacentini

128

Excitation in Li^++He Collisions

D. C. Lorents and G. Conklin

130

Excitation of He by Li^+ ions

R. McCarroll and R. D. Piacentini

133

Differential Cross-Section Measurements for Ionization Processes in He-He Collisions in the keV Energy Range

R. Francois, D. Dhucq and M. Barat

135

Structure of Cross-Section for Charge Exchange in Li^+-He Collisions

Z. Z. Latypov, A. A. Shaporenko

138

Experimental and Landau-Zener Cross-Sections for Electron Capture by B^{3+} from Rare Gas Atoms

P. G. Cable and H. J. Zwally

141

Inelastic Transitions and Scattering in the Collisions of Na^+ and K^+ Ions with Atoms of Noble Gases

V. V. Afrosimov, Yu. S. Gordeev,

V. M. Lavrov, V. K. Nikulin

143

Inelastic Small Angle Scattering of Rare Gas Ions in Rare Gases in the keV Energy Range

D. J. Bierman and W. C. Turkenburg

146

Investigations of Peculiarities in Scattering at Violent Atomic Collisions

V. V. Afrosimov, Yu. S. Gordeev,

V. K. Nikulin, A. M. Polyansky and

A. P. Shergin

149

Monday

SUBJECT

Photons

Section Room III + IV

11.30–12.55

Photoionization (Experiment)

Photoionization of N_2 , O_2 , NO , CO and CO_2 by Soft X-Rays at 0.28 keV and 1.49 keV

F. W. Powell, R. J. van Brunt, and W. D. Whitehead 152

Photoionization of Excited Cesium Atoms

K. J. Nygaard and R. E. Hebner Jr. 155

Photoionization Spectrum of Vibrationally Excited N_2

G. R. Cook, R. A. Klingberg Jr., and R. J. McNeal 157

Studies of Kinetic Processes Involving Vibrationally Excited Nitrogen using a Photoionization Technique

R. J. McNeal and G. R. Cook 160

Laser Triple Quantum Photoionization of Cesium

E. J. Robinson, R. A. Fox and R. M. Kogan 163

Isotope Effects on Molecular Ionization Yields

J. C. Person 165

Variation of Angular Distributions of Photo-electrons with Energy, Rare Gas Atoms and Diatomic Molecules

R. Morgenstern, A. Niehaus and M. W. Ruf 167

Vacuum Ultraviolet Photoelectron Spectroscopy of Transient Species

N. Jonathan, A. Morris, M. Okuda, D. J. Smith and K. J. Ross 170

Bismuth Photoionization

Cross-Sections between 250eV and 40eV

P. Dhez, P. Jaegle 173

14.30–16.00

Photodissociation and -Detachment

14.30–14.50

O_3^- Photodetachment Study Using a Tunable Dye Laser

G. Sinnott and E. C. Beaty 176

Molecular Photodetachment

Spectrometry

R. J. Celotta, R. A. Bennett and J. L. Hall 179

14.50–16.00

Rapporteur

Comparison of a Quasidiatomic Photodissociation Model with Experiment

G. E. Busch, M. Okuda and K. R. Wilson 182

Vacuum-Ultraviolet Photodissociation and Time-of-Flight Spectroscopy of Metastable Fragments

R. Gilpin and K. H. Welge 185

An Effect in the Photodissociation of CO_2

G. M. Lawrence 187

Photodissociative Excitation of CO_2

E. P. Gentieu and J. E. Mentall 188

Photodissociation of He_2^+

E. C. Beaty and J. C. Browne 190

The O_2 Schumann-Runge

Photodissociation Continuum

A. C. Allison 192

16.30–18.00

Theory of Photoionization and -Absorption

Collective Effects and Screening in the Photoabsorption Spectrum of the $5p^6$ Shell in Xenon

G. Wendin 194

Influence of Many-Electron Correlations on Photoionization

M. Ya. Amusia, N. A. Cherepkov and L. V. Chernysheva 196

Monday

Effects of Intrachannel Interactions
upon Photoionization Calculations for
Heavy Atoms

F. Combet Farnoux

198

Photoionization Cross-Sections of Na
and K: Model Potential Calculations

J. C. Weisheit

201

R-Matrix Theory of Atomic
Polarizabilities and Photoionization
Cross-Sections

D. C. S. Allison, P. G. Burke and
W. D. Robb

203

Frequency Dependent Polarizability of
H₂

A. Dalgarno, A. L. Ford and
J. C. Browne

206

The Translational Absorption of HeH

B. Ulrich, A. L. Ford and J. C. Browne

208

Photodetachment of the Negative
Hydrogen Ion

J. J. Matese and R. S. Oberoi

210

Tuesday July 27

SUBJECT

morning:

Symposium on Innershell Excitation

Leader: A. Russek

afternoon:

Scattering Theory

Main Hall

9.00–9.30

Introduction of Excitation and Deexcitation Processes

M. E. Rudd (Invited Talk)

9.30–10.00

Innershell Excitation in Ion-Atom Collisions

Q. Kessel (Progress Report)

10.00–10.30

Innershell Excitation by Photons or Electrons

M. J. van der Wiel (Progress Report)

11.00–11.45

A Review to Fluorescence and Auger Electron Emission

H. Mark (Invited Talk)

11.45–12.15

Auger Electron Spectroscopy

W. Mehlhorn (Progress Report)

12.15–12.45

X-Ray Emission in Ion-Atom Collisions

F. W. Saris (Progress Report)

16.30–17.40

Scattering Theory I (General)

Eikonal Formulation of the Three Body Problem

R. K. Janev and A. Salin 215

Dynamics of Three Interacting Monovalent Atoms in the Faddeev Formalism

D. A. Micha 217

The On-Shell Coulomb T-Matrix

M. R. C. McDowell and D. Richards 220

e-H Scattering by Faddeev Approach

N. C. Sil and A. S. Ghosh 221

Calculation of $J = 0$ binding Energies of Trimers Weakly Bound by Three Mutual Morse Potentials

H. Krüger 224

Analytic Continuation of Scattering Information via the Fredholm Determinant (Jost Function)

W. P. Reinhardt and T. S. Murtaugh 225

Standing-Wave Modification of Regge Trajectories and its Application to Ion-Atom Scattering

S. Tani and M. Inokuti 228

Tuesday

SUBJECT**Molecular Beams / Ions****Section Room III**

9.00-10.20

Theory of Vibrational and Rotational Energy Transfer in Heavy Particle Collisions

Computer-Graphics Studies of Dipole-Dipole Collisions

J. V. Dugan, Jr. and R. W. Palmer 231

Heavy Particle Collision Theory

R. D. Levine 233

Multi-Channel WKB Theory: Solution of a Set of Coupled Phase Equations for Molecular Inelastic Scattering

A. B. Ritchie 235

Angular Distributions for the Vibrational Excitation of Diatomic Molecules by Atoms: Results for $H_2 + He$ in the eV Region

D. A. Micha, M. Rotenberg 238

The Vibrational Excitation of CO by Collision with Helium

R. Marriott 241

Close Coupling Equations in the Quasiclassical Approximations

I. Berson 244

Thermal Energy $Li^+ - H_2$ Collisions

W. A. Lester, Jr. 247

Exact Quantum Mechanical Calculations of Vibrationally and Rotationally Inelastic Differential Cross-Sections for $He-H_2$

H. Fremerey and J. P. Toennies 249

11.00-11.40

Experimental Determination of Vibrational Excitation and Dissociation in Ion-Hydrogen Collisions Panel

Experimental Inelastic Differential Cross-Sections for Defined Vibrational

Quantum Transitions in Backward Scattering of Li^+ on H_2

R. David, M. Faubel, P. Marchand and J. P. Toennies 252

Vibrational Excitation in Collisions of H^+ with H_2 and D_2

H. Udseth, C. F. Giese and W. R. Gentry 255

Energy Loss Measurements of K^+ Ions in Head-on Collisions with He, H_2 and D_2

H. van Dop, A. J. H. Boerboom and J. Los 257

Dissociation of Hydrogen Molecules by Alkali Ion Impact

J. Schöttler and J. P. Toennies 259

11.40-12.30

Differential Elastic Cross-Sections of H^+ Incident on Various Gases at Superthermal Energies Panel

The Inversion Problem for Proton-Rare Gas Atom Elastic Scattering

R. L. Champion, L. D. Doverspike, W. G. Rich and S. M. Bobbio 261

Elastic Scattering of H^+ by Ar and N_2 : Quenching of the Quantum Undulations in the Differential Cross-Section by an Anisotropic Potential

H. Udseth, C. F. Giese and W. R. Gentry 264

Elastic Scattering of Protons by Molecular Nitrogen

L. D. Doverspike and R. L. Champion 267

Differential Cross-Section Measurements of Slow Protons on Rare Gas Atoms

H.-U. Mittmann, H. P. Weise, A. Ding and A. Henglein 271

Differential Cross-Section Measurements for Large Angle Collisions of Protons with Atoms and Determination of the Interaction Potentials

W. Löster 274

Tuesday

14.30–16.10

Collisional Ionization and Associated Phenomena Panel

The Chemi-Ionization Differential Cross-Section for $K + Br_2$
G. A. L. Delvigne and J. Los 277

Chemi-Ionization in Collisions Between Alkali Atoms and Atomic Iodine
A. M. C. Moutinho, J. A. Aten and J. Los 280

Mass Analysis of the Negative Ions Formed in Collisions Between Alkali Atoms and Bromine Molecules
A. P. M. Baede, D. Auerbach and J. Los 283

Threshold Behavior of Collisional Ionization Processes
R. W. Fenstermaker, W. M. Jackson, C. B. Leffert and E. W. Rothe 285

Ions from Collisions of Cs with O_2 , NO_2 and N_2O
R. N. Compton, S. J. Nalley, H. C. Schweinler and V. E. Anderson 288

Electronic Excitations in Collisions of Na with SO_2 and NO_2 in the 1-30 eV Range
P. R. LeBreton, W. Mecklenbrauck, A. Schultz and Ch. Schlier 291

Formation of CHO^+ by Associative Ionization of $CH + O$
M. MacGregor and R. S. Berry 293

$Na^+ + O^-$ Mutual Neutralization Cross-Section Obtained with Superimposed Beams
J. T. Moseley, W. H. Aberth and J. R. Peterson 295

Numerical Calculation of Inelastic Cross-Sections for Curve Crossing Phenomena in the Two State Approximation
A. E. de Vries and A. Kuppermann 297

Charge Exchange in Collisions Between Oxygen and Alkali Atoms
J. van den Bos 299

16.40–17.40

Reactive Scattering of $H + H_2$ (Theory and Calculations)
Panel

Quantum-Mechanical Treatment of $H + H_2$ Reactive Scattering
G. Wolken and M. Karplus 302

Cross-Sections for Planar Reactive Collisions of $H + H_2$
J. C. Light and R. P. Saxon 305

London Surface Pseudocrossings and Some Dynamical Features of Reactive Collisions
P. McGuire and C. R. Mueller 307

Comparison of Exact Classical and Quantum Mechanical Reaction Probabilities
J. M. Bowman and A. Kuppermann 309

Quantum Mechanics of Collinear Reactive Collisions of the Type $A + BC \rightarrow AB + C$. $H + H_2 \rightarrow H_2 + H$.
D. J. Diestler 312

Monte-Carlo Simulation of Hydrogen Atom Recombination
A. Jones and J. L. J. Rosenfeld 314

Tuesday

SUBJECT

Electrons

Section Room I + II

11.00-11.50

Resonances in Electron-Atom Collisions (Experiment)

Excitation of Atomic Hydrogen Near Threshold

P. D. Burrow

316

Resonance Excitation of Helium by Electrons and Polarization of the Resulting Radiation at Energies near 60 eV

H. G. M. Heideman and R. J. Reman
Electron Cadmium Atom Collisions in the Low Energy Range

318

I. P. Zapesochny, V. V. Souter,
O. B. Shpenik and A. N. Zvilopulo
Decay Modes of Elastic Resonances in Krypton

321

N. Swanson, J. W. Cooper and
C. E. Kuyatt

323

Resonance Structure in the He 2¹P
Inelastic Channel Excited by
Controlled Electron ImpactF. G. Donaldson, M. A. Hender,
J. A. Preston and J. W. McConkey

325

14.30-16.00

Resonances in Electron-Molecule Collisions

14.30-15.10

Rapporteur I

Angular Distribution Theory for
Resonant Electron Molecule Scattering
D. Andrick and F. H. Read

328

On the Parametric Resonance Effect in
the Electron Impact Vibrational
Excitations of a Diatomic Molecule
A. Ya. Temkin

329

Resonant Excitation of the B¹ Σ_u^+
State of H₂ by Electron Impact
K. F. Black and N. F. Lane

332

Low Energy e⁻ O₂ Collision Processes
and Negative Molecular Ion
Spectroscopy

F. Linder and H. Schmidt

336

15.10-16.00

Rapporteur II

Total Cross-Sections in the Inelastic
Excitation of Molecular HydrogenF. M. J. Pichanick, S. A. Lawton and
R. D. Dubois

339

The Potential Curve and Width of the
11.48 eV State of N₂⁻, and a New State
of CO⁻

J. Comer and F. H. Read

342

Resonance Excitation in N₂ and CO
N. Swanson, J. W. Cooper and
C. E. Kuyatt

344

Electron Scattering by O₂ (0-1.2 eV)R. L. Gray, H. H. Haselton, D. Krause Jr.
and E. A. Soltysik

347

A New Resonance in Electron Scattering
on COL. Sanche, Z. Pavlovic, M. J. W. Boness
and G. J. Schulz

350

16.30-17.00

Spin Polarization by Inelastic Electron Scattering and by Photoionization

J. Kessler (Progress Report)

17.00-17.40

Spin Polarization in Electron Atom Collisions

Differential Spin-Flip Cross-Sections
for Scattering of Electrons by
PotassiumB. Bederson, A. Kasdan and
M. Goldstein

352

Differential Direct Scattering
Cross-Section Measurements for Low
Energy e-K CollisionsD. Hils, M. V. McCusker, S. J. Smith
and H. A. Kleinpoppen

354

Tuesday

Electron Polarization by Spin-Exchange
Scattering on Polarized Atomic Target
G. F. Drukarev and V. D. Obédkov 357

Distorted-Wave Calculation of Electron
Spin Polarization Following Electron
Impact Excitation of the 6^1P_1 State of
Mercury
D. H. Madison and W. N. Shelton 359

SUBJECT**Ions****Blue Room**

11.00–12.40

**Excitation and Ionization of Molecules
by Ions**

Charge Transfer Reactions Including
Near-Resonant Ones in the Thermal
and Suprathermal Range
N. Kobayashi and Y. Kaneko 362

Dissociative Charge Exchange:
Differential Cross-Section
Measurements of $\text{He}^+ + \text{CO}_2$
M. A. Coplan and K. W. Ogilvie 365

The Mechanism of Charge-Transfer
Reactions at Low Energy
A. J. Masson and M. J. Henchman 366

The Apparent Charge Exchange
Reaction between N^+ and N_2
E. Murad and W. B. Maier II 369

Ionization and Dissociation of Molecular
Gases by 5 – 42 keV Na^+ Ions
C. J. Latimer, R. Browning and
H. B. Gilbody 372

Processes of Slow Negative Ion
Formation in Collisions of Fast
Hydrogen Particles (H^+ , H^0 , H^-) with
CO Molecules
V. V. Afrosimov, G. A. Leiko,
Yu. A. Mamaev, M. N. Panov and
M. Vujovich 374

Auger Dissociation of Molecules in
Collisions with Multiple-Charged Ions
E. S. Parilis, F. F. Umarov 377

Ion-Impact Excitation and Lifetime of
the $\text{C}^2\Sigma_u^+$ State of N_2^+
C. A. van de Runstraat, T. R. Govers,
P. G. Fournier and F. J. de Heer 382

Rotational Excitation in Li^+-N_2 , Na^+-N_2
Collisions
R. E. Mickle, H. I. S. Ferguson and
R. P. Lowe 384

Tuesday

Photon-Particle Coincidence
Measurement of Charge Transfer
Excitation of the N_2^+ First Negative
3914A Band by Protons
P. J. Wehrenberg and K. C. Clark

387

14.15–16.00

Innershell Excitation

Differential Investigation of the Velocity
Dependence of K-Shell Excitations in
Collisions Involving C, O, N, Ne and Na
B. Fastrup, G. Hermann and Q. Kessel

390

Emission of KLL Auger Electrons
Produced in Z_1 - N_2 and Z_1 -Ne
Collisions at keV Energies
B. Fastrup and G. A. Larsen

392

The Energy Distribution of Electrons
Resulting from Ion-Atom Collisions with
a Fixed Impact Parameter
D. C. Lorents and P. Dahl

395

Inelastic Energy Losses and Ionization
at Excitation of Outer and Inner
Electron Shells in Atomic Collisions
V. V. Afrosimov, Yu. S. Gordeev,
A. M. Polyansky, A. P. Shergin

397

Energy Spectra of Electrons Ejected in
 Ar^+-Ar Collisions
G. N. Ogurtsov

400

Non-relativistic Auger Rates, X-Ray
Rates and Fluorescence Yields for the
2p Shell
D. L. Walters and C. P. Bhalla

404

The Polarization of Characteristic
X-Radiation Excited by Electron Impact
S. C. McFarlane

407

Differentiation in $2p_{3/2}$ and $2p_{1/2}$
Vacancy Production in Iodine Ions in
Atomic Collisions at 15 to 60 MeV
S. Datz, C. D. Moak, B. R. Appleton,
M. D. Brown and T. A. Carlson

409

Multiple Inner Shell Ionization in
Non-Adiabatic Collisions
D. Burch, P. Richard and R. L. Blake

412

Impact Parameter Dependence of Inner
Shell Excitation by Protons
E. Lægsgaard, L. C. Feldman and
J. U. Andersen

414

K-Shell Ionization of Beryllium by Proton
and Heavy Ions
M. Terasawa, T. Tamura and H. Kamada

417

16.30–18.00

Dissociative Excitation and Predissociation of Ions (Experiment)

16.30–16.45

Dissociation Cross-Sections for 520- to
1025 keV HeH^+ Ions in Collisions with
 H_2 and N_2 Gases
J. W. Stearns, K. H. Berkner, R. V. Pyle,
B. Briegleb and L. Warren

419

Dissociation Cross-Sections for 410- to
1800 keV H_3^+ Ions in Collisions with H_2
and N_2 Gases
K. H. Berkner, T. J. Morgan, R. V. Pyle
and J. W. Stearns

422

16.45–18.00
Panel

Panel

Angular Dependence of $H(2p)$ and $H(2s)$
Formed in $H_2^+ - He$ Collisions
D. H. Jaecks, W. de Rijk and P. J. Martin

424

Collision-Induced Dissociation of
2-5 keV NO^+ Ions
Pham, D., M. Bizot, J. Durup,
B. Fourmann and J. B. Ozenne

427

The Unimolecular Dissociation of the
Isotopic Helium Hydride Molecular Ions
J. Schopman, P. G. Fournier and J. Los

430

Predissociation of N_2^+
P. G. Fournier, T. R. Govers,
C. A. van de Runstraat, J. Schopman
and J. Los

433

Kinetic Energies of Collision-Induced
Dissociations of 40-140 keV CH_n^+ Ions
J. Guidini, A. Julienne, M. Roussel,
F. P. G. Valckx

436

Collisional Reactions of 40 - 140 keV
 CH_n^+ Ions on Different Gases
J. Guidini, M. Roussel, F. P. G. Valckx

438

Tuesday

SUBJECT

Ions

Section Room IV

11.00–12.40

Theory of Ion-Atom and Atom-Atom Collisions

(Impact Parameter Method, Atomic Eigen States)

On the Effective Potential Method in Atom-Atom Collisions

S. A. Lebedeff 440

Exact Solution of Classical Scattering From a Repulsive Inverse Power Potential

E. A. Gislason 442

Approximation of the Classical Deflection Function

F. R. Woods, T. L. Huang and

G. D. Magnuson 445

Eikonal Approximation for Non-Adiabatic Electronic Transitions in Atomic Collisions

K. M. Watson and J. C. Y. Chen 448

Application of Model Potential Methods to Atomic Collision Problems

C. Bottcher and A. Dalgarno 451

Euler-La Grange Optimization of Plane Wave Factors

M. E. Riley and T. A. Green 453

The Impact Parameter Approximation for Charge Exchange in the Collisions of Protons with Ar, Kr and Xe

R. Shakeshaft and J. Macek 455

Electron Capture and Excitation in He^{++} -He Collision

S. C. Mukherjee, K. Roy and N. C. Sil 458

The Calculation of Atomic Collision Cross-Sections using Gaussian Functions

V. Dose and C. Semini 461

Electronic Translation Factor in Low Energy Proton-Hydrogen Atom Collisions

V. H. Ponce 464

14.30–16.00

Theory of Ion-Atom and Atom-Atom Collisions (Continued)

(Impact Parameter Method, Atomic Eigen States)

The Angular Momentum Distribution of Highly Excited Hydrogen Atoms in Charge Transfer Reactions and H + Atom Collisions

A. V. Vinogradov, A. M. Urnov, V. P. Shevelko 467

Near-Resonant Charge Exchange of He^+ Ion on Alkali Atoms

E. L. Duman 471

Electron Capture Processes by Energetic Heavy Ions From Neutral Atoms

N. Urata and T. Watanabe 475

Exchange Interaction in $(\text{AB})^-$ System. Application to Non-Resonant Charge Transfer of Negative Ions

D. M. Davidovic and R. K. Janev 478

Charge Exchange Between Negative and Positive Ions

A. A. Radtsig and B. M. Smirnov 481

Charge Transfer and Fine Structure Transitions in Rare Gas Atom-Ion Collisions

R. E. Johnson 484

Excitation of Multicharged Ions by Proton Impact

L. P. Presnyakov, V. P. Shevelko and L. A. Vainshtein 485

(1s-3s) and (1s-3p) Excitation of Hydrogen Atom by Proton and α -Particle Impact

J. Chowdhury and D. M. Bhattacharya 488

Double Scattering of Ions on a Molecule

E. S. Parilis 491

16.30–18.05

Charge Exchange MeV

Production of Ultrahigh Charge States

Tuesday

in Heavy-Ion Collisions A. B. Wittkower, G. Ryding and P. H. Rose	495	Collisional Excitation of Metastable Autoionizing States of Lithium Like Ions in Fast Beams — Spectra and Yields W. W. Smith, M. Brown, I. A. Sellin, D. Pegg, B. L. Donnally	513
Equilibrium Charge State Distributions of Uranium Ions 2-15 MeV A. B. Wittkower and H. D. Betz	498	Electron Capture by Protons in High Velocity Atomic Collisions J. R. Macdonald, S. M. Ferguson, L. D. Ellsworth, T. Chiao, S. A. Savoy and W. W. Eidson	516
Charge Changing Cross-Sections for Heavy Ions in Complex Molecules: The Failure of an "Additive" Rule A. B. Wittkower and H. D. Betz	501	Maxima in Electron Capture by Fluorine Ions at High Velocity J. R. Macdonald, S. M. Ferguson, L. D. Ellsworth, T. Chiao, S. A. Savoy	519
Determination of Lifetimes for Multiply Charged Heavy Ions Excited in Collisions with Light Gases H. D. Betz and A. B. Wittkower	504	Cross-Sections for Electron Loss by Fast (.02-2 MeV) Helium Atoms in Hydrogen and Helium E. H. Pedersen and P. Hvelplund	522
On Electron Loss and Capture Cross-Sections for Multiply Charged Ions in Solid Matter Ya. A. Teplova, I. S. Dmitriev and V. S. Nikolaev	507	Charge Exchange of Fast Iodine Ions in a Dense Jet of Carbon Dioxide B. Franzke, N. Angert and Ch. Schmelzer	524
On the Probability of Electron Capture by Fast Multiply Charged Ions into Excited States I. S. Dmitriev, V. S. Nikolaev and Ya. A. Teplova	510		

Wednesday July 28

SUBJECT

Symposium on Continuum Processes
Leader: A. Temkin

Main Hall

9.00–9.30

Pseudo State Expansion (Theory)
R. Damburg (Invited Talk)

9.30–10.00

Pseudo State Expansion (Applications)
S. Geltman (Invited Talk)

10.00–10.30

Faddeev Equations
J. C. Y. Chen (Progress Report)

11.00–11.30

Glauber Approximation
E. Gerjuoy (Progress Report)

11.30–12.00

T-Matrix Extrapolation Methods
J. Nuttall (Progress Report)

SUBJECT

Molecular Beams

Section Room I + II

9.00–9.20

The Determination of Potential Parameters by Inversion of Elastic Differential Cross-Section Data

Determination of Interatomic Potentials by the Inversion of Elastic Differential Cross-Section Data

R. Klingbeil 529

Finding the Potential Directly from the Differential Cross-Section

D. E. Pritchard 531

9.20–10.20

Experimental Differential Elastic Cross-Sections and the Determination of Potential Parameters Panel

Scattering from Non-Spherical Intermolecular Potentials at Thermal Energies: N₂ and the Noble Gases
M. Cavallini, M. G. Dondi, G. Scoles and U. Valbusa

533

Quantum Undulations in the Differential Collision Cross-Section and the Intermolecular Potential of Argon
C. R. Mueller, S. Sheen, J. Searcy and K. Wendell

536

Differential Elastic Scattering Cross-Section by Crossed Molecular Beams

A. Grosser, F. Kalos and R. Brooks 539

High Resolution Differential Cross-Sections and Intermolecular Potentials

D. Auerbach, C. Detz, K. Reed and L. Wharton 541

Measurements of Differential Scattering Cross-Sections and the Resulting Potential Energy Curves for Several Alkali-Mercury Molecules

U. Buck, M. Kick and H. Pauly 543

Wednesday

A Multiparameter Potential for Kr + Kr
from Low Energy Differential
Cross-Section Measurements
T. P. Schafer, P. E. Siska and Y. T. Lee 546

10.50–11.10

Experimental Differential Elastic Cross-Sections and the Determination of Potential Parameters (continued)

The Angular Scattering of Superthermal
Potassium by Hg and I₂
B. S. Duchart, M. A. D. Fluendy and
K. P. Lawley 549

Elastic Scattering of D₂ and H₂ by O₂
in Crossed Molecular Beams
R. J. Gordon, M. J. Coggiola and
A. Kuppermann 552

11.10–12.00

Experimental Total Elastic Cross-Sections and the Determination of Potential Parameters Panel

The Velocity Dependence of the Total
Elastic Scattering Cross-Section for
Alkali Metals at Thermal Energy
G. C. Angel and R. A. Giles 555

Glory Scattering of He, HD and D₂
Beams by the Molecules CH₄, N₂, O₂,
NO, CO and CO₂
H. P. Butz, R. Feltgen, H. Pauly and
H. Vehmeyer 557

Absolute Total Scattering
Cross-Sections for the Rare Gases at
Thermal Energy
J. A. Phipps, J. E. Scott, Jr. and
J. L. Shinn 559

Energy Dependence of the Integral
Scattering Cross-Section of Atomic
Hydrogen by Mercury at Thermal
Energies
D. Bassi, A. Schutte, G. Scoles and
F. Tommasini 561

Velocity Dependence of the Total
Cross-Section for the Scattering of
Metastable Argon on Rare Gases
T. Nenner 564

SUBJECT

Electrons

Section Room III

11.00–12.00

Dissociation of Molecules by Electron Impact

Theory of the Angular and Energy
Distribution of Protons from Dissociative
Electron-Hydrogen Molecule Ion
Collisions
J. M. Peek and T. A. Green 567

Final States in the Dissociative
Excitation of Molecular Hydrogen
M. Misakian and J. C. Zorn 570

Translational Spectroscopy of
Metastable and Long-Lived
High-Rydberg Dissociation
Fragments from O₂ and CO₂
R. S. Freund 572

The Dissociative Ionization of O₂
L. J. Kieffer, G. M. Lawrence and
J. M. Slater 574

Production of Energetic Long-Lived
High-Rydberg States of Atomic Nitrogen
by Electron Impact Dissociation of N₂
W. C. Wells, W. L. Borst and E. C. Zipf 576

The Temperature Dependence of
Dissociative Ionization in CO₂
W. M. Jackson, R. T. Brackmann and
W. L. Fite 578

Wednesday

SUBJECT

Ions

Blue Room

9.00–10.30

Total Cross-Sections of Diabatic Processes (Experiment)

9.00–9.30

S. V. Bobashev (Progress Report)

9.30–10.30

Panel

Interference of Quasimolecular States Excited in Slow Inelastic Collisions and Total Cross-Section Structure
V. A. Ankudinov, S. V. Bobashev and V. I. Perel

581

Phase Interference Effects in Low-Energy Na^+-Ne^0 and Ne^0-Ne^0 Collisions

N. H. Tolk, C. W. White, S. H. Dworesky and D. L. Simms

584

Threshold Behavior of Excited Cross-Section of K^+ and Rb^+ Resonance Lines in Collisions with Argon Atoms
S. V. Bobashev

587

Excitation of Cs^+ Ions in the Slow Collisions with He, Ne and Ar Atoms
I. P. Zapesochny and S. S. Pop

591

Investigation of the Excitation Processes in Low-Energy Ion-Atom Collisions
A. N. Zvilopulo

594

Energy Dependence of the Cd I Resonance Line Excited in Low-Energy Cd + Zn Collisions
A. N. Zvilopulo, I. P. Zapesochny, O. B. Shpenik and I. F. Kirlik

597

11.00–12.00

Cross-Sections of Diabatic Processes (Experiment)

Cross-Sections for Electronic Excitation in Low Energy Collisions Between Alkali Ions and Alkali Atoms
V. Aquilanti, G. Liuti, F. Vecchio-Cattivi and G. G. Volpi

600

Charge Transfer Between Alkali Metal Ions and Rb Atoms
J. Perel and H. L. Daley

603

Differential Charge Transfer Measurements in H^+-Ne Collisions Leading to the Formation of $\text{H}(2p)$ and $\text{H}(2s)$

D. H. Jaecks, W. de Rijk and P. J. Martin

605

The Angular Distribution of Fast Metastable Hydrogen Formed by Charge Transfer and Dissociation Processes

R. L. Fitzwilson, I. Sauers and E. W. Thomas

608

Analysis of Electrons Ejected in Ion-Atom and Atom-Atom Collisions
G. Gerber, R. Morgenstern, A. Niehaus and M. W. Ruf

610

Wednesday

SUBJECT

General

Section Room IV

11.00–12.00

Elastic, Inelastic and Reactive Scattering (With Special Techniques)

Dependence of Cross-Sections for
Collisions of the Second Kind in
Helium on Different Experimental
Parameters

J. Bakos, A. Kiss, Zs. Sörlei and
J. Szigeti

Experimental Study of Atomic Second

Kind Collisions in Metal Vapour
Mixtures

E. Kraulinya, A. Lezdin, M. Jansons 615

Collisions Induced Energy Transfer
Within the $\text{Na}_2(\text{B}^1\Pi_u)$ State

K. Bergmann and W. Demtröder 619

Derivation of Ion-Atom Potentials from
Intermediate and Strong Electric Field

Mobility Data: K^+ -Ar Scattering
H. R. Skullerud and T. Berge 622

Cross-Sections of Broadening
Collisions for Resonance Lines and
Interatomic Potentials

N. P. Penkin, V. P. Ruzov and
L. N. Shabanova 624