

CONTENTS

ELECTRON-MOLECULE COLLISIONS

Strong excitation of nuclear motions in electron-molecule collisions A. Herzenberg.....	1
Dissociative attachment - A review (Abstract) P.J.Chantry.....	23
Recent experiments concerning dissociative resonant states in electron-molecule collisions R.Hall.....	25
Experimental studies of autoionizing states in molecules J.Comer.....	43
Electron scattering by polar molecules F.Linder.....	51

ELECTRON-ATOM COLLISIONS

The scattering of fast electrons and positrons by atoms C.J.Joachain.....	71
Analytic behaviour of forward scattering amplitudes for electron (positron) scattering from atoms A.Tip.....	95
Resonances observed on the optical excitation functions O.B.Shpenik.....	99
Electron scattering by metal vapors S.Trajmar.....	113
Electron scattering with 1 meV resolution R.J.Van Brunt and A.Gallagher.....	129

COLLISIONS INVOLVING ELECTRONS, PHOTONS, IONS

Correlation effects in low energy electron scattering and in photoabsorption M.Le Dourneuf.....	143
Free-free photoabsorption of electron-atom systems O.M.Gavrila.....	165
Post collision interactions in atomic excitation processes A.Niehaus.....	185

THE R-MATRIX METHOD

Basic concepts of the R-matrix method and relationship to other theories P.G.Burke.....	201
R-matrix theories I.Shimamura.....	213
The R-matrix method "Application to atoms and ions" W.D.Robb.....	231
The R-matrix method "Application to electron-molecule collisions" B.I.Schneider.....	257
Perspectives and prospectives U.Fano.....	271

ELECTRON-ION, ION-ION COLLISIONS

Collisions between charged particles	
K.T.Dolder.....	281

HEAVY PARTICLE COLLISIONS AT VERY HIGH ENERGIES

Interaction of swift molecular ions with thin solid targets	
J.Remillieux.....	295

INNER SHELL EXCITATION PHENOMENA

Inner shell ionization by relativistic electron, positron and proton impact	
H.Tawara.....	311
Diabatic molecular orbitals for inner shell excitation	
J.Eichler and U.Wille.....	331
Coulomb ionization of inner shells	
E.Laegsgaard, J.U.Andersen, and M.Lund.....	353
Auger-Process in atomic collisions	
E.S.Parilis.....	373
Three-electron Auger transitions in atoms with two inner shell vacancies	
A.P.Shergin, Yu.S.Gordeev.....	377

HIGHLY CHARGED IONS

Impact excitation of dielectronic satellites in X-ray spectra of highly charged ions	
L.A.Vainstein.....	393
Charge exchange of highly charged ions in neutral atoms	
L.P.Presnyakov.....	407
Atomic collisions and spectroscopic diagnostics of superdense plasmas	
I.I.Sobelman, A.V.Vinogradov and E.A.Yukov.....	421

HEAVY PARTICLE COLLISIONS AT MEDIUM ENERGIES

Diabatic molecular orbitals in atomic collisions (outer shell excitation)	
J.P.Gauyacq.....	431
Long-range interaction in atomic collisions : polarization of emitted light	
S.V.Bobashev and V.A.Kharchenko.....	445
Differential scattering measurements on alkali ion-alkali atom systems	
R.L.Champion.....	459
Metastable rare gas collisions at intermediate energies (5-3000 eV)	
K.T.Gillen.....	473

HEAVY PARTICLE COLLISIONS AT LOW ENERGIES

Scattering experiments with laser excited Na beams	
R.Düren.....	493
Scattering of electronically excited metastable rare gas atoms	
H.Haberland.....	507
Ionization by metastable atoms	
C.Manus, A.Pesnelle and G.Watel.....	525
Collision processes for atoms in high Rydberg states (experiment)	
R.F.Stebbing.....	549

Theory of collisions with highly excited atoms	
I.C.Percival	569
Total collision cross section measurements with state selected beams	
J.Reuss	579
Proton-hydrogen (H_2, D_2) differential inelastic and reactive scattering at low energies	
E.Teloy	591

REACTIVE COLLISIONS

Dynamics of reactive and charge transfer collisions between ions and molecules	
Z.Herman	605
The dynamics of ion-pair forming collisions	
J.Los	617
Chemiluminescence in ion-molecule reactions	
Ch.Ottinger	639
Kinetic processes in rare gas halide lasers	
D.C.Lorents	663

PHOTO DISSOCIATION

Ion photodissociation and photofragment spectroscopy	
J.T.Moseley	681

MULTIPHOTON PROCESSES

Laser temporal coherence effects and very high laser intensity effects in multiphoton ionization of atoms	
G.Mainfray	699
Polarization effects in two-photon ionization	
M.J.Van der Wiel and E.H.A.Granneman	713
Model calculation of resonant multiphoton ionization	
L.Armstrong Jr and B.L.Beers	727
Recent progress in the study of molecular dissociation and isotope separation by high power infrared lasers	
K.L.Kompa, W.Fuss, D.Proch, W.E.Schmid	737

<u>AUTHOR INDEX</u>	747
---------------------------	-----