

CONTENTS

Organizing Committees	xii
List of Participants	xiii
Preface	xvii
Atomic Processes and Overview	1
UV and X-Ray Spectroscopy in Astrophysics	
C. McKee	3
X-Ray Spectroscopy of Laboratory Plasmas	
W. Goldstein	15
Methods of Calculation the Electron-Atom Cross-Sections for Kinetics Applications	
I. Beigman	32
Line Ratio Diagnostics for Astrophysical Plasmas	
F. Keenan	44
X-Ray Spectroscopy with EBIT	
P. Beiersdorfer, R. Cauble, S. Chantrenne, M. Chen, N. DelGrande, D. Knapp, R. Marrs, A. Osterheld, K. Reed, M. Schneider, J. Scofield, B. Wargelin, K. Wong, D. Vogel, R. Zasadzinski	59
X-Ray Transfer	
J. Castor	69
Laboratory Plasma Experiments Using X-Ray Heating	
J. Edwards	79
Dielectronic Recombination Versus Charge Exchange: Electron Capture by Metastable Ne-like Argon	
S. Bliman, M. Cornille	89
Some Remarks on the use of the Two State Models in Heavy Ion Collisions	
S. Bougouffa, P. Faucher	93
Atomic Data for the SOHO Mission	
A. Burgess, H. Mason, J. Tully	97
UV and Soft X-Ray Lines from Fe XVI Observed in Solar and Stellar Spectra	
M. Cornille, J. Dubau, H. Mason, C. Blanchard, W. Brown	101
Electron Correlation in Ionization-Excitation of Helium by Electron and Proton Impact	
S. Fülling, R. Bruch, P. Neill, E. Rauscher, M. Bailey, J. Thompson, E. Träbert, P. Heckmann, J. McGuire	106
Hydrogen Ions (H^+ , H_2^+ , and H_3^+) in Collisions with Helium: Target Ionization-Excitation Cross Sections	
S. Fülling, R. Bruch, P. Neill, E. Rauscher, M. Bailey, H. Wang, E. Träbert, P. Heckmann, J. Thompson	110
Projectile-Charge Dependence of Ionization-Excitation of Helium Following Collisions of MeV Bare Ions with $Z_p = 1$ To 6	
S. Fülling, R. Bruch, P. Neill, E. Rauscher, E. Träbert, P. Heckmann, J. Thompson	114
Measurement of the $1s2s\ ^3S_1$ - $1s2p\ ^3P_{2,0}$ Intervals in Helium-Like Neon	
W. Hallet, D. Dietrich, J. Silver	118
Energy Levels and Oscillator Strengths for Transitions in Helium-like Fe XXV and Ni XXVII	
L. Harra, A. Boone, P. Norrington, F. Keenan, A. Kingston	122
The K- and L-shell Absorption Spectra of CIV	
E. Jannitti, M. Gaye, P. Nicolosi, G. Tondello, P. Villoresi, F. Xianping	126
Electron-Impact Excitation of Hydrogenic Ions in Dense Plasmas	
Y. Jung	130
Multiple Auger Ionisation and Fluorescence Processes for Be to Zn	
J. Kaastra, R. Mewe	134

A UTA Approach to the Collisional Radiative Model for Ionization Balance M. Klapisch	138
Artificial Neural Networks for Plasma X-Ray Spectroscopic Analysis J. Larsen, W. Morgan, W. Goldstein	142
Effect of Excitation-Autoionization on Fractional Abundances of Highly Ionized K ⁺ - To NiI-Like Heavy Elements in Coronal Plasmas D. Mitnik, P. Mandelbaum, J. Schwob, J. Oreg, A. Bar Shalom, W. Goldstein	146
Radiative Lifetime of the 3s3p ³ (⁵ S ₂ ⁰) Metastable Level of P ⁺ W. Parkinson, A. Calamai, X. Han	150
Proton and Heavy Particle Excitation of the 2s ² p ⁵ 2P _{3/2} - 2s ² 2p ⁵ 2P _{1/2} Transition in Fluorine-Like Zn XXII, Kr XXVIII and Mo XXXIV R. Reid, V. Foster, F. Keenan	154
Spectra of Laser-Produced Rare-Earth Ions and Theoretical Survey of Nickel-Like Resonance Lines from Br VIII to U LXV P. Renaudin, C. Back, C. Chenais-Popovics, J. Geindre, J. Gauthier, C. Bauche-Arnoult, E. Luc-Koenig, J. Wyart	157
Model Potential Method for the Calculation of the Atomic Characteristics of Ne-Like System U. Safranova, J. Wyart	161
Laboratory Absorption Spectra of Interstellar Molecules: Measurements on CO and N ₂ at ~ 30 and 295 K G. Stark, P. Smith, K. Yoshino, W. Parkinson, K. Ito, M. Stevens	165
The Effect of Fast Electrons, Penning and CX Processes on the XUV to VUV Emission of Al, Y and Zn Ions from a PID Plasma D. Stutman, M. Finkenthal, A. Bathia, J. Schwob, S. Regan, M. May, H. Moos	169
Pair Function Calculations with Screened Coulomb Potentials Z. Wang, J. Morrison, P. Winkler	174
Study of Heliumlike Neon Using an Electron Beam Ion Trap B. Wargelin, P. Beiersdorfer, S. Kahn	178
Electron Impact Ionization of Lithiumlike Ions: Ti ¹⁹⁺ , V ²⁰⁺ , Cr ²¹⁺ , Mn ²²⁺ and Fe ²³⁺ K. Wong, P. Beiersdorfer, M. Chen, R. Marrs, K. Reed, J. Scofield, D. Vogel, R. Zasadzinski	182
Toward Realistic Electron-Ion Potentials in Plasmas Y. Yan, H. Zhan, Y. Zhang, P. Winkler	186
UV Spectroscopy	191
Astronomical Observations with Normal Incidence Multilayer Optics II: Images of the Solar Corona and Chromosphere A. Walker, T. Barbee, R. Hoover	193
Issues in Solar EUV Observations J. Raymond	203
Tokamak Spectroscopy in the UV - Is This the Golden Age? A. Ramsey	210
FUV Plasma Diagnostics Available to the Hopkins Ultraviolet Telescope W. Blair, K. Long, C. Bowers, G. Kriss, A. Davidsen	224
Stellar Chromospheric and Transition Region Studies Using the Goddard High Resolution Spectrograph A. Brown	234
Lyman the Far Ultraviolet Spectroscopic Explorer W. Moos	244
The IMAPS Instrument: A New Horizon for Recording the Real Shapes of Interstellar Absorption Lines in the Far UV E. Jenkins	254
Ultraviolet Spectroscopic Instrumentation W. Cash	270
Nonequilibrium Absorption Line and Emission Spectrum Diagnostics for the Galactic Fountain R. Benjamin, P. Shapiro	280
An Imaging Extreme Ultraviolet Spectrometer P. Bergamini, T. Berger, G. Giaretta, M. Huber, G. Naletto, G. Timothy, G. Tondello	285

Contents

ix

HiRES: High Resolution Extreme Ultraviolet Spectroheliometer T. Berger, P. Bergamini, H. Kirby, G. Timothy, A. Walker, J. Bhattacharyya, S. Jain, A. Saxena, M. Huber, G. Naletto, G. Tondello	289
A Search for Argon in the Atmosphere of Titan R. Gladstone, S. Bowyer, T. Owen, M. Hurwitz	293
A Very High Resolution Spectrometer for EUV Astrophysics D. Cotton, B. Bush, J. Vickers, S. Chakrabarti	297
First Flight of an Extreme-Ultraviolet Spectrometer with a Multilayer Grating J. Davila, R. Thomas, W. Thompson, R. Keski-Kuha, W. Neupert	301
A New Method for Analysing Spectra Observed from Low Density and Optically Thin Plasmas P. Faucher, J. Dubau, M. Cornille, F. Bely-Dubau	305
Astronomy with the Deep UV Explorer Observatory D. Ferguson, M. Giampapa	309
Two-Dimensional Helical Delay-Line Readout of Large-Format Microchannel-Plate Detectors for Astronomy P. Friedman, J. Fleischman, C. Martin	316
EUV Lines of Mg IX as n_e -Diagnostics for High Density Flares L. Harra, F. Keenan, K. Widing, E. Conlon	320
Methods for Absolute Intensity Calibration of Survey Spectrometers in the 5nm - 150nm Spectral Region N. Hawkes, K. Lawson, N. Peacock	324
C IV Emission Lines in an Active Region Spectrum Obtained with SERTS F. Keenan, R. Thomas, W. Neupert, E. Conlon, V. Burke	337
Electron Density Diagnostics Applicable to IUE Spectra of Gaseous Nebulae F. Keenan, W. Feibelman, L. Harra, E. Conlon, K. Aggarwal	341
Solar O IV and S IV Lines from the High Resolution Telescope and Spectrograph (HRTS) and the S082B Spectrograph on Board Skylab F. Keenan, J. Cook, J. Doyle, P. Dufton, M. Hayes, A. Kingston	345
Far and Extreme Ultraviolet Spectrophotometry of the Hot DA White Dwarfs G191-B2B and HZ43 with the Hopkins Ultraviolet Telescope R. Kimble, A. Davidsen, K. Long, C. Bowers, G. Kriss, D. Finley, D. Koester	349
Temperature Diagnostic in the EUV with Broad Band Photometry M. Landini, B. Monsignori Fossi	353
Design of Compact High-Resolution Far-Ultraviolet Spectrographs Equipped with a Spherical Grating Having Variable Spacing and Curved Grooves T. Namioka, M. Koike	357
Extreme Ultraviolet Observation of Mass Flow in the Low Corona Over a Large Sunspot W. Neupert, J. Brosius, R. Thomas, W. Thompson	361
A Vacuum Ultraviolet Fourier Transform Spectrometer W. Parkinson, A. Thorne, P. Smith, K. Yoshino	365
High Spectral Resolution O VI Emission Line Mapping of the Cygnus Loop Supernova Remnant A. Rasmussen, C. Martin	369
The Cleanliness Control Program for SUMER/SOHO U. Schühle	373
Planar Delay Line Readouts for High Resolution Astronomical EUV/UV Spectroscopy O. Siegmund, J. Stock, R. Raffanti, D. Marsh, M. Lampton	383
Performance Characteristics of High-Gain Curved-Channel Microchannel Plates D. Slater, H. Kirby, M. Pertsova, J. Timothy, B. Laprade	387
Calibrated Solar EUV Spectrum from SERTS R. Thomas, W. Neupert, W. Thompson	391
Imaging Detector Systems for use at Ultraviolet and Soft X-ray Wavelengths J. Timothy	395
Modeling of UV Lines from Cataclysmic Variable Winds P. Vitello, I. Shlosman	389
Spectral Imaging of the Chromosphere of AR Lacertae F. Walter, J. Neff, I. Pagano, M. Rodonò	403

X-Rays of IC443 - Remnant of Tang Dynasty Supernova Z. Wang	407
Photographs from Colloquium	411
X-Ray Spectroscopy	413
Recent Results From X-Ray Spectroscopy of Tokamak Plasmas E. Rachlew-Källne	415
Highlights of the BBXRT Mission R. Petre, P. Serlemitsos, F. Marshall, K. Jahoda, E. Boldt, S. Holt, R. Kelley, J. Swank, A. Szymkowiak, K. Arnaud and the BBXRT Science Team	424
Spectroscopic Results from ROSAT B. Aschenbach	434
Iron K Line Diagnostics in Astrophysical Sources L. Piro	448
X-Ray Spectroscopy with AXAF T. Markert	459
Spectroscopy with XMM A.C. Brinkman	469
X-Ray Spectroscopy with the XSPECT/SODART Telescopes on SRG H. Schnopper, C. Budtz-Jørgensen, F. Christensen, R. Mewe, H. Norgaard-Nielsen, N. Westergaard	483
Applications of CCD Detectors to Spectral Analyses of the X-Ray Emission from Tokamaks A. Abbey, R. Barnsley, J. Dunn, S. Lea, N. Peacock	493
Measurement of Electron Density of Micropinch Plasma for Elements P Through Cu (Z = 15-29) E. Aglitsky, A. Panin	502
Bayesian Approach to Soft X-Ray Line Diagnostics D. Alexander, A. Garrett	505
Energy Levels $1s^2 2l nl$ ($n=2,3,4$) of NaVIII-SXIII Ions. Comparison of Two Calculation Methods: MCDF and MZ K. Ando, U. Safranova, I. Tolstikhina	509
Broadband (1-100 Å) Bragg Spectroscopy of Impurity Ions in Tokamak Plasmas R. Barnsley, S. Lea, A. Patel, N. Peacock	513
Experimental Study of X-Ray Emission from Laser Irradiated Planar Targets on "Mishen" Facility V. Bolotin, I. Burdonskii, V. Gavrilov, A. Gol'tsov, S. Zavyalets, E. Zhuzhukalo, V. Kondrashov, M. Koshevoi, M. Pergament, A. Rupasov, A. Shikanov	521
X-Ray Spectroscopic Diagnostics of the Hydrodynamics of Flares on M Dwarf Stars C. Cheng, R. Pallavicini	525
Xe L and M X-Ray Emission Following Slow Xe ⁴⁴⁺ to 48+ Ion Impact on Cu-surfaces M. Clark, D. Schneider, J. McDonald, R. Bruch, S. Tanaka, F. Hao, R. Schuch, U. Safranova	529
Diffusion Effects on Diagnostic X-Ray Emission Line Ratio Measurements in Laboratory Plasmas I. Coffey, R. Barnsley, I. Hughes, F. Keenan, K. Lawson, N. Peacock	533
Helium-like Ne IX in the JET Tokamaks I. Coffey, I. Barnsley, F. Keenan, K. Lawson, N. Peacock	537
Determination of Element Abundances Using the Yohkoh Bragg Crystal Spectrometer A. Fludra, J. Culhane, R. Bentley, G. Doschek, E. Hiei, K. Phillips, A. Sterling, T. Watanabe	542
Femtosecond Laser-Induced Plasma X-Rays and Ionization Dynamics of High-Z Materials J. Gauthier, J. Geindre, A. Rousse, F. Fallières, P. Audebert, A. Mysyrowicz, J. Chambaret, A. Antonetti, A. Mens, R. Verrecchia, R. Sauneuf, P. Schirrmann	543
ROSAT Observations of the Stellar Coronal Dividing Line B. Haisch, J. Schmitt	547

Contents

xi

The Determination of Solar Coronal Electron Temperatures From Mg XI Emission Lines in SMM-FCS Spectra of Flares and Active Regions L. Harra, K. Phillips, F. Keenan, E. Conlon, A. Kingston	551
Accretion Disk Corona Modelling Y. Ko, T. Kallman	555
Emission Line Polarization in SS433? J. Laming	559
Monte-Carlo Calculations of X-Ray Spectra For a Source with Spherical or Planar Circumstellar Matter D. Leahy, J. Creighton	563
Study of Micropinch Plasma Parameters with Temporal and Spatial Resolution by Measurements in Soft X-Ray Spectral Region B. Mironov	567
New Trends in Stark Broadening of Multicharged Ion Spectral Lines in Plasmas Y. Ispolatov, E. Oks	571
Spatially Resolved X-Ray Spectra of Micropinch Plasma A. Panin	575
Ar XVII X-Ray Lines Emitted by Solar Flares K. Phillips, F. Keenan, L. Harra, S. McCann	579
Gamma Ray and Neutron Spectroscopy with COMPTEL on the Compton Gamma Ray Observatory J. Ryan, H. Aarts, K. Bennett, H. Bloemen, R. Diehl, A. Connors, H. Debrunner, C. deVries, W. Hermse, G. Lichti, J. Lockwood, M. McConnell, D. Morris, V. Schönfelder, H. Steinle, A. Strong, B. Swanenburg, B. Taylor, W. Webber, C. Winkler	583
The Relative Coronal Abundance of Fe:Ne in Solar Active Regions Observed with the <i>Solar Maximum Mission</i> Flat Crystal Spectrometer J. Saba, K. Strong	587
Timing of Beginnings of Solar Fast-Drift Bursts by H-alpha and X-Ray Solar Flares A. Tlamicha, L. Krivsky	591
X-Ray Irradiation of Magnetic White Dwarfs A. van Teeseling, J. Heise	595
Relative Elemental Abundances of a Solar Active Region K. Waljeski, D. Moses	599
Flare Dynamics Observed in S XV D. Zarro	603
Carbon Transport Estimates in a Tokamak Plasma During Auxiliary Heating Experiments using Soft X-Ray CVI Emission A. Zwicker, M. Finkenthal, S. Lippmann, H. Moos	607