

5. LIST OF PUBLICATIONS

September 1997 – May 2000

- 1) “Double Differential Cross Sections for Soft Electron Emission in Ionization of Hydrogen by Bare Carbon Ions,”
Lokesh C. Tribedi, P. Richard, D. Ling, B. DePaola, Y. D. Wang, C. D. Lin, and M. E. Rudd
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- 2) “Inelastic Energy Loss in Low-Energy Ion-Surface Collisions,”
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- 3) “Highly Charged Ion-Molecule Collisions,”
I. Ben-Itzhak, E. Wells, K. D. Carnes, and Vidhya Krishnamurthi
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- 4) “Charge Dependence of One and Two Electron Processes in Collisions Between Hydrogen Molecules and Fast Projectiles,”
E. Wells, I. Ben-Itzhak, K. D. Carnes and Vidhya Krishnamurthi, Application of Accelerators in Research and Industry (AIP Press, NY, 1997) p. 193.
- 5) “Electron Capture and Fragmentation in $\text{Ar}^{11+} + \text{CO}$ Collisions,”
I. Ben-Itzhak, E. Wells, M. P. Stockli, H. Tawara, and K. D. Carnes
Physica Scripta T73, 270 (1997).
- 6) “Velocity Space “Snapshots” of Continuum Electrons Produced by Slow, Bare, Highly Charged Ions: Saddle-Point Electrons?”
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- 7) “Secondary Ion Enhancement in Slow Highly Charged Heavy Ion Bombardment,”
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- 10) “Energy Gain in Collisions of Highly Charged Ions with C_{60} ,”
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Phys. Rev. A 56, 4799 (1997).
- 11) “Mean Lifetime Measurements and Calculations of Long-Lived HeNe^{2+} Isotopes,”
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Phys. Rev. A 56, 1268 (1997).
- 12) “Intra-Atomic Double Scattering of Binary Encounter Electrons in Collisions of Fast Heavy Ions with Atoms and Molecules,”

- U. Bechthold, S. Hagmann, J. Ullrich, B. Bathelt, A. Bohris, R. Moshhammer, U. Ramm, C. Bhalla, G. Kraft, and H. Schmidt-Böcking
Phys. Rev. Letters 79, 2034 (1997).
- 13) “Projectile Charge Dependence of Ionization and Dissociation of CO in Fast Collisions,”
Vidhya Krishnamurthi, I. Ben-Itzhak, and K. D. Carnes
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 - 14) “Comparison of Single-Ionization of Hydrogen Molecules to That of Helium in Collisions with Fast Protons,”
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 - 15) “An Experimental Method for Evaluating the H₂ and D₂ Contamination Levels in a HD Bottle,”
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 - 16) “Production of the O⁵⁺(1s2s2p ⁴P_J) States by Electron Excitation in 10-34 MeV Collisions of O⁵⁺ Ions with H₂, He, Ne, Ar, Kr and Xe Targets,”
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 - 17) “Elastic and Inelastic Scattering Models in Ion-Atom Collisions,”
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 - 18) “Absolute Charge Capture Cross Sections from a Rydberg Target: Experimental Results and Comparison with Theoretical Models,”
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 - 22) “Reevaluation of Electron-Capture Cross Sections in C⁴⁺ + H Collisions,”
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 - 23) “Quantum Mechanical Calculation of Ejected Electron Spectra for Ion-Atom Collisions,”
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- 24) "Energy Transfer in Charge Exchange Collisions Between Slow Ions and Rydberg Atoms,"
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- 25) "Gain of Windowless Electron Multipliers 226EM and EMI 9643/2B for Highly Charged Ta Ions,"
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- 26) "Extended Classical Over-Barrier Model for Collisions of Highly Charged Ions with Conducting and Insulating Surfaces,"
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- 27) "Measurement of the Ratio of Differential Cross Sections for Double and Single Ionization of He by (4-10)-MeV Protons,"
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- 28) "Non-kinetic Damage on Insulating Materials by Highly Charged Ion Bombardment,"
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- 29) "Ionization of Excited Hydrogen Atoms Interacting with a Metal Surface under the Influence of an External Electric Field,"
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- 30) "Developments on the KSU-CRYEBIS, a User Facility for Low Energy, Highly Charged Ions,"
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- 31) "Production of Microbunched Beams of Very Highly Charged Ions with an Electron Beam Ion Source,"
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- 32) "Hybridization of Ionic Levels at Metal Surfaces,"
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- 33) "Double-Differential Distributions of Electron Emission in a Pure Three-Body Collision: Ionization of Atomic Hydrogen by Highly Charged Ions,"
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- 34) "The Effect of the First Dynode's Curvature on the Gain of a Type 226EM Electron Multiplier Used as a Detector of Highly Charged Ions,"
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- 35) “Angular Distributions of Projectiles Following Electron Capture from C_{60} by 2.5-keV Ar^{8+} ,”
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- 50) "A New Hemispherical Analyser with 2-D PSD and Focusing Lens for Use in 0° Electron Spectroscopy,"
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- 51) "Ionization Dynamics in Fast Ion-Atom Collisions. I. Energy and Angular Distributions of Low-Energy Electrons Emitted in Ionization of He by Bare Carbon Ions,"
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ABSTRACTS

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- 8) "The KSU-CRYEBIS, a User Facility for Low Energy, Highly Charged Ions," M. P. Stockli, M. Abdallah, C. Y. Chen, C. L. Cocke, B. D. DePaola, D. Fry, U. Lehnert, P. Richard, T. N. Tipping, and B. Walch.
- 9) "Resonant Single Charge-Exchange in Ion-Ion Collisions," C. Y. Chen, C. L. Cocke, J. Giese, I. Reiser, M. Stockli, and F. Melchert.
- 10) "Hybridization of Ionic Levels at Metal Surfaces," Peter Kürpick and Uwe Thumm.
- 11) "Charge Transfer and Kinetik Energy Gain in Collisions of Highly Charged Ions with Conducting and Insulating Surfaces," Jens J. Ducrée and Uwe Thumm.
- 12) "State-Selective Electron Capture Processes in 0.5-50 keV/u C^{5+} - He Collisions," E. Y. Kamber, M. A. Abdallah, C. L. Cocke, and M. Stockli.
- 13) "A Multi-Hit Detector System for the Spectroscopy of the Complete Momentum Balance of Many Charged Particles Emitted in Multiple Ionization and Molecular Fragmentation Processes," I. Ali, S. Hagmann, P. Richard, L. Cocke, and H. Schmidt-Böcking.

- 14) "Energy and Angular Distributions of Fragments Emitted in the Dissociation of N_2 through the Coulomb-Explosion Induced by 0.5 MeV He^{1+} and 1 MeV F^{8+} Selected to the Charge State of the Fragments and Projectile," I. Ali, S. Hagmann, P. Richard, L. Cocke, and H. Schmidt-Böcking.
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- 18) "Superelastic Scattering of Quasi-free Target Electrons on Metastable He-like Fluorine Ions," P. A. Zavodszky, H. Aliabadi, P. Richard, G. Toth, and J. A. Tanis.
- 19) "Measurement of Inelastic Electron-Ion Differential Scattering Cross Sections in Fast Ion-Atom Collisions," G. Toth, J. A. Tanis, P. A. Zavodszky, S. R. Grabbe, T.J.M. Zouros, P. Richard, and C. P. Bhalla.
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- 30) "Differential Measurement of Low Energy Continuum Electrons from Collisions between Fast Projectiles and Aligned Deuterium Molecules," A. L. Landers, C. L. Cocke, M. J. Singh, and G. Moore.
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- 36) “Capture and Ionization Processes Studied with COLTRIMS,” C. L. Cocke (INVITED).
- 37) “Resonant Two-Electron Processes in Atomic Collisions,” P. A. Zavodszky (INVITED).
- 38) “Angular Distributions of Binary Encounter Electrons Emitted in Ion-Atom Collisions Using Atomic Hydrogen Target,” Lokesh C. Tribedi, P. Richard, S. Grabbe, C. P. Bhalla, C. D. Lin, and L. Gulyás.
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- 43) “Angular Differential Cross Sections for Slow Highly Charged Ions Interacting with C₆₀ Clusters,” Lotten Hägg, Anders Bárány, Henrik Cederquist, and Uwe Thumm.
- 44) “Hybridization, Neutralization, and Ionization of Ionic Levels at Metal Surfaces,” Peter Kürpick, Bogdana Bahrim, and Uwe Thumm.
- 45) “Improved Dynamic Simulation of Highly Charged Ion Surface Collisions,”

- J. Ducreé, H. J. Andrä, and U. Thumm.
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 - 49) “Doubly Differential Recoil-Ion Longitudinal Momentum Distributions from Electron DDCS Measurements in Ion-Atom Ionization,” Lokesh C. Tribedi, P. Richard, C. D. Lin, R. Olson, and L. Gulyas.
 - 50) “Hemispherical Analyser with 2-D PSD for 0° Auger Projectile Spectroscopy,” E. P. Benis, T.J.M. Zouros, and P. Richard.
 - 51) “A Multi-Hit-Detector-System for the Spectroscopy of the Complete Momentum Balance in Multiple Atomic and Molecular Fragmentation Processes,” I. Ali, S. Hagmann, P. Richard, C. Cocke, R. Dörner, O. Jagutzki, and H. Schmidt-Böcking.
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- 53) Atomic Physics with Highly Charged Ions: Low Velocity
JRML Group (B. D. DePaola, I. Ben-Itzhak, C. P. Bhalla, K. D. Carnes, C. L. Cocke, T. J. Gray, S. Hagmann, C. D. Lin, P. Richard, M. P. Stöckli, and U. Thumm).
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- 56) Ion Molecular Collision Measured with a Multi-Hit Detector
Imad Ali (INVITED).
In collaboration with S. Hagmann, C. L. Cocke, P. Richard, R. Dörner, H. Bräuning, and H. Schmidt-Böcking
- 57) Quasi-free Electron Scattering from Ions
Peter A. Zavodszky (INVITED).
In collaboration with H. Aliabadi, C. P. Bhalla, S. R. Grabbe, P. Richard, J. A. Tanis, G. Toth, and T.J.M. Zouros

- 58) Low Energy Electron Emission in Ion-Atom Collisions
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- 59) Secondary Ions, Secondary Electrons, and X-Rays Emitted by Highly
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- 60) Ion-Atom and Ion-Electron Collision Dynamics
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- 61) Charge Exchange at Very Low Collision Energies
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- 62) The KSU-CRYEBIS, a User Facility for Low-Energy, Highly-Charged Ions
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**12th International Workshop on Inelastic Ion-Surface Collisions, South Padre Island, TX,
January 24-29, 1999**

- 63) X-ray Emission for Ar Ions Impacting on SiO₂
U. Lehnert, M. P. Stöckli, and C. L. Cocke.
- 64) Momentum Imaging of Secondary Electrons from Grazing Angle
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D. Fry, U. Lehnert, and M. P. Stöckli.
- 65) Charge Transfer and Electron Emission in Ions – Surface Interactions
Uwe Thumm (INVITED).

Annual Meeting of the American Physical Society, Atlanta, GA, April 21-26, 1999

- 66) Heavy Ion Irradiation of Solids: Projectile Charge and Target Dependence
of Electron Emission Between 0° and 180°
H. Rothard and S. Hagmann.
- 67) New Close Coupling approach for Ion-Surface Interactions
B. Bahrim and U. Thumm.
- 68) Broadening of Hydrogenic Levels near Thin Metallic Films
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- 69) Neutralization of Slow Highly Charged Ions at Surfaces: Comparison
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- 70) Many Electron Continua in Strongly Perturbing Collisions of Heavy Ions
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S. Hagmann and I. Ali.
- 71) Angular Differential Cross Sections for Slow Highly Charged Ions
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- L. Hagg, A. Barany, H. Cederquist, and U. Thumm.
- 72) Tracking Electron Current in Ion-Atom Collisions
Emil Sidky and Chii-Dong Lin.
- 73) High Precision Resonance for One Dimensional Potentials
Emil Sidky and Itzik Ben-Itzhak.
- 74) Ion-Molecular-Ion Collisions
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- 75) Molecular Fragmentation in $H^+ + CO$ Collisions Above and Below the Ionization Threshold
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- 76) Evidence for Triply Excited Hollow Ionic States
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- 77) Comparative Study of Recoil-Ion Momentum in Ionization of and Capture from He by Partially and Fully Stripped Carbon Ions at Low to Intermediate Velocities
M. A. Abdallah, W. Wolff, H. E. Wolf, C. L. Cocke, M. P. Stöckli, E. Üdgo, and S. Datz.
- 78) State Selective Single-Electron Capture in the Collisions $C^{q+} + He$ ($q=1-6$) at Low to Intermediate Velocities
M. A. Abdallah, W. Wolff, H. E. Wolf, C. L. Cocke, M. P. Stöckli, E. Üdgo, S. Datz, and E. Y. Kamber.

XXI International Conference on the Physics of Electronic and Atomic Collisions, Sendai, Japan, July 22-27, 1999

- 79) Total Secondary Electron Yields for Ar Ions Incident on HOPG and SiO_2 Surface as a Function of Impact Velocity
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- 80) Lifetime Measurement of He^- and Be^- Using an Electrostatic Ion Trap
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- 81) Electron Momentum Imaging in Ion-Surface Collisions
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- 82) Formation of Long Lived CH_n^{2+} and CD_n^{2+} Dications
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- 84) Mean Lifetimes and Kinetic Energy Released Upon Dissociation of $^3He^4He^{2+}$ and $^{12}C^{16}O^{2+}$ Molecular Ions
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- 85) Charge Transfer in Very Slow $H^+ + D(1s)$ Half Collisions
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- 86) Production of Triply Excited States in Li-Like Boron
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- 87) Energy Distributions in Resonant Charge Transfer Ion-Rydberg Collisions
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- 88) Binary Encounter of Ground State, and Laser Excited States of Lithium
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- 89) Continuum Electron Momentum Profiles for Many Body
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- 90) Triple Differential Cross Sections for (e,2e) Electron Impact
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- 91) Three-Dimensional Imaging of Molecular Breakup in Xe^{26+} - D_2 Interactions
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- 92) State-Selective Single-Electron Capture in Ar^{6+} and Ar^{7+} -He Collisions
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- 93) Collisions Involving Highly-Charged Ions and Laser-Prepared Atoms
B. D. DePaola (INVITED).

International Symposium on Ion-Atom Collisions, Kyoto, Japan, July 29-30, 1999

- 94) X-Ray Emission for Ar Ions Impacting on SiO_2
M. P. Stockli (INVITED).
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- 95) Collisions Between Electrons, Positrons, Protons and Antiprotons
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C. D. Lin (INVITED).
- 96) Progress in the MOTRIMS Project: Ion-Atom Collisions with a MOT Target
B. D. DePaola (INVITED).
- 97) Charge Transfer in Very Slow $H^+ + D(1s)$ Half Collisions
I. Ben-Itzhak (INVITED).
In collaboration with E. Wells, K. D. Carnes, H. R. Sadeghpour and
B. D. Esry.

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- 98) Photo- and Charged-Particle-Ionization of He and D_2 Studied with
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Mergel, T. Osipov, M. Prior, H. Schmidt-Böcking,
M. Singh, T. Weber, W. Wolff, and H. E. Wolf

18th International Conference on X-Ray and Inner-Shell Processes, Chicago, Illinois, August 23-27, 1999

- 99) Three-Dimensional Momentum Imaging of the Fragments Emitted in the
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- I. Ali, R. D. DuBois, C. L. Cocke, S. Hagmann, H. Schmidt-Böcking, and M. P. Stöckli.
- 100) Production and Use of Metastable Ions with Inner Shell Vacancies
Patrick Richard, T. J. Gray, H. Aliabadi, Adam Harrington, and Erik Emmons.
- 101) Photo- and Charged-Particle-Ionization of He and D₂ Studied with COLTRIMS
C. L. Cocke (INVITED).
In collaboration with M. A. Abdallah, Matthias Achler, H. Bräuning, Angela Bräuning-Deminian, Achim Czasch, R. Dörner, A. Landers, V. Mergel, T. Osipov, M. Prior, H. Schmidt-Böcking, M. Singh, T. Weber, W. Wolff, and H. E. Wolf.

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- 102) The Effect of Indirect Ionization on the Charge State Distributions Observed with Highly Charged Ion Sources
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- 103) Ionization of He by Intermediate Energy Protons
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- 104) Transfer Ionization to Single Capture Ratio for Fast Multiply Charged Ions on He
R. Unal, P. Richard, H. Tawara, H. Aliabadi, C. L. Cocke, I. Ben-Itzhak, and M. J. Singh.
- 105) Zero Degree Auger Electron Spectroscopy of Quasi-Free Electrons Scattered by Highly Charged Ions
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- 106) Single Ionization of Atomic Helium by Slow Antiproton Impact
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- 107) Theoretical Treatment of Very Slow H⁺ + D(1s) Collisions
I. Ben-Itzhak, E. Wells, B. D. Esry, and H. R. Sadeghpour.
- 108) Charge Transfer and Elastic Scattering in Very Slow H⁺ + D(1s) “half” Collisions
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- 109) Imaging the Momentum of Very Slow H⁺ and D⁺ Recoil Ions Resulting from the Dissociation of HD⁺(1s σ) Molecular Ions
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- 110) Collision Energy Dependence of Metastable Beam Fraction of B³(1s2s ³S) to B³⁺(1s ²S) Produced in a Tandem Accelerator
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- 111) New Improvements on the KSU-CRYEBIS, a User Facility for Low Energy, Highly Charged Ions
M. P. Stöckli, C. L. Cocke, A. Cuquemelle, B. D. DePaola, B. Eastman, C. Fehrenbach, D. Fry, P. E. Gibson, U. Kentsch, U. Lehnert, P. Richard, R. Schedler, and T. N. Tipping.
- 112) Method of processing of Ion Energy Distributions Based on Measurements Performed by Means of Thomson Parabola Ion Spectrograph with Image

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- 113) Calibration of the Galileo Micro Channel Plates with the Xe^{2+} - Xe^{13+} and
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- 114) Quantitative Measurements of Chemical Composition of Bare Samples,
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