

## CURRICULUM VITAE

### NAME

Timothy J. Gay

### DATE OF BIRTH

23 March 1953 – Ashtabula, Ohio

### CITIZENSHIP

U.S.A.

### MARITAL STATUS

Married Anna Christine Nothstine – 6 September 1975  
Two children – Frederick Sullivan, born 4 September 1984;  
Bertram McClelland, born 18 January 1988

### ADDRESS

#### Work:

073 Jorgensen Hall  
University of Nebraska  
Lincoln, Nebraska 68588–0299  
(402) 472–2773  
tgay1@unl.edu

#### Home:

2928 Woodsdale Boulevard  
Lincoln, Nebraska 68502  
(402) 423–4746

### PRESENT POSITION

Professor, Department of Physics and Astronomy, University of  
Nebraska (1993 – )

### PREVIOUS ACADEMIC AND RESEARCH POSITIONS

Professor (1992–93), Associate Professor (1989–92), Assistant  
Professor (1984–89), Research Assistant Professor (1983–84), Physics  
Department, University of Missouri–Rolla

Research Associate and Lecturer (1982-1983), Research Staff Physicist  
and Lecturer (1980-1982), Physics Department, Yale University

Graduate Laboratory Fellow, Physics Division, Argonne National  
Laboratory (1978 – 1980)

Undergraduate Summer Student Fellow, Physics Division, Argonne  
National Laboratory (1974)

Undergraduate Teaching Assistant, Physics Department, California  
Institute of Technology (1974 – 1975)

Undergraduate Research Assistant, Geology and Geophysics  
Department, California Institute of Technology (1972 – 1975)

**EDUCATION**

University of Chicago — Ph.D., 1980 (Physics)  
S.M., 1976 (Physics)

California Institute of Technology – B.S., 1975 (Physics)

Phillips Academy, Andover, Massachusetts

**HONORS & AWARDS**

Outstanding Referee Award, American Physical Society (2009)

Fellow, American Physical Society (elected 1994) *“For his studies of fundamental atomic collision processes, particularly with regard to spin-dependent effects, and for important contributions to the development of polarized electron technology.”*

Graduate Laboratory Fellowship, Argonne National Laboratory (1978 – 1980)

Outstanding Teacher Award, University of Missouri–Rolla, 1987, 1988, 1990, 1991

Faculty Excellence Award, University of Missouri-Rolla, 1987, 1988, 1989, 1990, 1991, 1992 (only Assistant Professor to receive this award in 1987, 1988)

Certificate of Recognition for Contributions to Students, University of Nebraska Parents Association, 1995, 1999, 2004, 2006, 2007, 2010, 2012

American Physical Society Centennial Speaker

Louis Begeman Memorial Lecturer, University of Northern Iowa

Gaseous Electronics Conference Foundations Plenary Lecture

**GRANT SUPPORT**

National Science Foundation, “Polarized Electron Physics,” including Research Experiences for Undergraduate (REU), International Programs (INT), and Research Opportunity Award (ROA) supplements; \$5,954,289; 4/1/86 – 8/1/18 (principal investigator).

National Science Foundation Major Research Instrumentation (MRI) Award, “Development of a Rubidium Spin Filter” \$370,000 (including \$90,000 matching funds from UNL); 8/01/08 – 7/31/11 (principle investigator).

**GRANT SUPPORT**

(continued)

National Science Foundation EPSCoR Research Infrastructure Improvement Program: Track 2, “Collaborative Research: Imaging and Controlling Ultrafast Dynamics of Atom, Molecules, and Nanostructures” \$6,000,000; 8/01/14 – 7/31/17 (co-principle investigator; \$85,702 for my group).

University of Nebraska Faculty Fellowship Program, “Collaborative National Science Foundation, “Determination of the Electron Neutrino Rest Mass via Tritium Decay;” \$51,242; 8/01/03 – 7/31/08 (principle investigator; subcontract to the University of Texas – Austin).

Department of Energy, “Experimental Investigations of Electron Capture from Atomic Hydrogen and Deuterium by Alpha Particles;” \$262,278; 9/15/84 – 9/14/93 (principal investigator).

National Science Foundation, “Stringent Tests of Theory for Fundamental Ion–Atom Collisions;” \$1,068,321; 6/1/84 – 1/01/91 (co-principal investigator).

NASA Nebraska Space Grant, “Collisions Between Polarized Electrons and Chiral Molecules;” Graduate Fellowship; \$7,000; 9/11 – 8/14 (co-principal investigator).

University of Missouri Weldon Spring Grant, “Polarized Electron–Atom Collisions;” \$27,364 (principal investigator).

University of Missouri Research Initiative Grant, “Laser-Polarized  $^3\text{He}$  Neutron Spin Filter;” \$44,738; 2/93 – 2/94 (co-principal investigator).

Center for Materials Research and Analysis, University of Nebraska, “A Spin–Polarized Electron Source for Studies of Magnetism;” \$14,000; 1/1/94–12/31/94 (principal investigator).

National Science Foundation Instrumentation Grant, “Acquisition and Construction of a Spin-Polarized Inverse Photoemission Spectrometer;” \$80,727; 7/1/94 – 12/31/95 (co-principal investigator).

Center for Materials Research and Analysis, University of Nebraska, “The Electronic Structure of Molecular Cluster Films;” \$10,730; 6/1/94 – 12/31/94 (co-principal investigator).

National Science Foundation EPSCoR Grant; Subcontract to “Nanostructured Devices Group;” \$42,552; 7/1/95 – 6/30/96 (co-principal investigator).

**GRANT SUPPORT**

(continued)

Center for Materials Research and Analysis, University of Nebraska, "Construction of a Compact Mott Polarimeter;" \$10,000; 9/1/96 – 6/30/97 (principal investigator).

NATO Collaborative Research Grant, "Manifestations of Chirality in Molecular Physics;" \$11,000; 11/1/97 – 12/31/99 (with E. A. Seddon, Daresbury Laboratory, UK).

University of Nebraska Research Council, "Exotic Chiral Compounds;" \$2,985; 5/1/97 – 4/31/99 (principal investigator).

University of Nebraska Faculty Fellowship Program, "Collaborative Research, University of Texas," \$2,500; 9/1/01 – 6/30/02 (principle investigator).

University of Nebraska; Undergraduate Research (Funded by the NSF and Pepsi Foundation); \$31,100; 2001-20013 (principle investigator).

**INVITED TALKS**

*133 invited physics colloquia and seminars at universities and government laboratories in the United States, Canada, Great Britain, France, and Germany.*

Conference on the Application of Accelerators in Research and Industry (Denton, Texas; 11/86).

International Symposium on Ion-Atom Collisions X (Frankfurt, FRG; 7/87).

Symposium on Atomic Spectroscopy and Highly-Ionized Atoms (Argonne National Laboratory; 8/87).

Conference on the Application of Accelerators in Research and Industry (Denton, Texas; 11/88).

Annual Meeting of the Division of Atomic, Molecular, and Optical Physics, American Physical Society (Monterey, California; 5/90).

Conference on the Application of Accelerators in Research and Industry (Denton, Texas; 11/90).

Sixth International Symposium on Correlations and Polarization in Electronic and Atomic Collisions and (e,2e) Reactions (Adelaide, South Australia; 7/91).

Forty-fifth Annual Gaseous Electronics Conference (Boston, Massachusetts; 10/92).

Eighteenth International Conference on the Physics of Electronic and Atomic Collisions (Aarhus, Denmark; 7/93).

Applications of He Optical Pumping: A Colloquium Dedicated to the Memory of Laird Schearer (Paris, France; 6/94).

Peter Farago Symposium on Electron Physics (Edinburgh, Scotland; 4/95).

Workshop on Polarized Electron Sources and Low-Energy Polarimeters (Amsterdam, Netherlands; 9/96).

Annual Meeting of the Division of Atomic, Molecular, and Optical Physics, American Physical Society (Washington, DC; 4/97).

Manfred Fink Honor Symposium, University of Texas (Austin, Texas; 9/97).

**INVITED TALKS**

(continued)

Wilhelm Raith Festspiel, University of Bielefeld (Bielefeld, Germany; (11/97).

Plenary Speaker, American Association of Physics Teachers Annual Summer Meeting (Lincoln, Nebraska; 8/98).

Tenth International Symposium on Correlations and Polarization in Electronic and Atomic Collisions (Beijing, China; 8/99).

Plenary Review Talk, DOE Workshop on Electron Driven Processes, Stevens Institute of Technology (Hoboken, New Jersey, 3/00).

Fifty-third Annual Gaseous Electronics Conference (Houston, Texas; 10/00).

American Physical Society General Meeting (Washington, DC; 4/01).

Annual Meeting of the Division of Atomic, Molecular, and Optical Physics, American Physical Society (London, Ontario, Canada; 5/01).

Twenty-second International Conference on Photonic, Electronic, and Atomic Collisions (Santa Fe; 7/01).

Workshop on Polarized Electron Sources and Polarimeters (PESP 2002) (Danvers, Massachusetts; 9/02).

Workshop on Electron Collisions with Biological Molecules, Institute for Theoretical Atomic and Molecular Physics, Harvard University (Cambridge, Massachusetts; 10/03)

Annual American Association for the Advancement of Science Meeting (Seattle, Washington; 02/04)

Annual Meeting of the Division of Atomic, Molecular, and Optical Physics, American Physical Society (Tucson, Arizona; 06/04).

Thirteenth International Symposium on Correlations and Polarization in Electronic and Atomic Collisions (Buenos Aires, Argentina; 8/05).

Workshop on the Forefront of AMO Science: Clusters, Ions, Dressed States (Lawrence Berkeley Laboratory Advanced Light Source User's Meeting, Berkeley, California 10/05)

**INVITED TALKS**

(continued)

Annual Meeting of the Division of Atomic, Molecular, and Optical Physics, American Physical Society (Knoxville, Tennessee, 05/06).  
2006 User's Meeting of the SRC (Stoughton, Wisconsin, 10/06)

Gordon Research Conference on Atomic Physics (Tilton, New Hampshire, 7/07)

Workshop on Polarized Electron Sources and Polarimeters (PESP 2008) (Newport News, VA; 10/08).

Sixty Second Annual Gaseous Electronics Conference (Saratoga Springs, New York; 10/09).

Annual Meeting of the Division of Atomic, Molecular, and Optical Physics, American Physical Society (Atlanta, Georgia; 06/11).

Sixteenth International Symposium on Correlations and Polarization in Electronic and Atomic Collisions (Dublin, Ireland; 8/11).

Festspiel for Vincent McKoy, California State University – Fullerton (Fullerton, CA 6/12)

Chancellor's Distinguished Lecture, University of Nebraska (Lincoln, NE 4/13)

Louis Begeman Memorial Lecture, University of Northern Iowa (Cedar Falls, IA, 2/14)

Testimony delivered to the U.S. House of Representatives Subcommittee on Commerce, Manufacturing, and Trade on Concussions and Protective Equipment in American Football (Washington, DC 3/14)

6<sup>th</sup> Workshop on Parity Violation and Hadron Structure (Syracuse, NY 7/14)

Sixty-Seventh Annual Gaseous Electronics Conference (Raleigh, North Carolina; 11/14).

The XVIII International Workshop on Low-Energy Positron and Positronium Physics & the XIX International Symposium on Electron-Molecule Collisions and Swarms (Lisbon, Portugal; 7/14)

Sixty-Eight Annual Gaseous Electronic Conference Plenary Foundations Lecture (Honolulu, HI; 10/15)

**PROFESSIONAL  
SERVICE**

Referee for the *Physical Review* (A and B), *Physical Review Letters*, *American Journal of Physics*, *Review of Scientific Instruments*, *Journal of Physics A and B*, *Europhysics Letters*, *Measurement Science and Technology*, *Journal of Geophysical Research*, *Journal of Chemical Physics*, *Nuclear Instruments and Methods*, *Zeitschrift für Physik*, *Physica Scripta*, *Canadian Journal of Physics*, *Journale de Physique*, Journal of the IEEE, American Institute of Physics Press, NSF, NASA, Australian Research Council, Canadian Research Council, W.A. Benjamin, Inc., Worth Publishers, the National Academy of Sciences, and the Research Corporation.

External Tenure and Promotion Review Committees: University of Oklahoma, University of Toledo, University of North Texas, University of Missouri-Rolla, University of Manitoba, Denison University, University of Newcastle, Australian National University, and University of Saudi Arabia.

External Examiner on Ph.D. Thesis Committees: Australian National University (2), University of Western Australia, Flinders University.

Member of the Organizing Committee for the Eleventh International Symposium on Ion-Atom Collisions (Manhattan, Kansas; 8/89).

Organizer and Chairman of Symposium on "Spin-Polarized Atomic Physics," Annual Meeting of the Division of Atomic, Molecular, and Optical Physics, American Physical Society (Reno, Nevada; 5/93).  
Chairman of the Organizing Committee for the conference "Two-Center Effects in Ion-Atom Collisions: A Symposium Honoring M.E. Rudd on the Occasion of his Retirement" (Lincoln, Nebraska; 5/94).

Undergraduate Research Prize Selection Committee, Division of Atomic, Molecular, and Optical Physics, American Physical Society (1994).

Executive Committee, Division of Atomic, Molecular, and Optical Physics, American Physical Society (1996-99).

Exhibits Chairman, Division of Atomic, Molecular and Optical Physics/American Physical Society Centennial Meeting (1997-99).

Executive Committee, Gaseous Electronics Conference (1997-2000).

American Physical Society Centennial Speaker (1998-99).

University of Nebraska Speaker's Bureau (1998-99).

Organizer and Chairman of Symposium on "Recent Advances in Scattering of Electrons by Atoms and Molecules," American Physical



**PROFESSIONAL  
SERVICE**

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Society Centennial Meeting (Atlanta, Georgia; 3/99).

Secretary/Treasurer, Division of Atomic, Molecular, and Optical Physics, American Physical Society (1999-2002).

Member of Review Panel; Experimental Atomic, Molecular and Optical Physics Program of the National Science Foundation Physics Division (1999-2000; 2002-2003; 2009-2010).

Member of Committee on Atomic, Molecular, and Optical Science (CAMOS); National Research Council (2000-2002; 2009-2011).

International Scientific Committee for the Eleventh International Symposium on Polarization and Correlation in Electronic and Atomic Collisions (2000-2001).

General Committee of the International Conference on the Physics of Electronic, Atomic, and Photonic Collisions (2001-2007).

International Scientific Committee for the Eleventh International Symposium on Polarization and Correlation in Electronic and Atomic Collisions (2001-2003).

Co-Chair, Local Organizing Committee, 2005 Meeting of the Division of Atomic, Molecular, and Optical Physics, American Physical Society (2002-2005)

Chemistry Division Review Panel, Argonne National Laboratory (2003)

International Advisory Committee for the 12th International Symposium on Polarization and Correlation in Electronic and Atomic Collisions (2004-2005)

Chair, Fellowship Committee of the Division of Atomic, Molecular, and Optical Physics of the American Physical Society (2004-2005)

Chair, Program Committee of the Division of Atomic, Molecular, and Optical Physics of the American Physical Society (2006-2007)

Vice-Chair, Chair-Elect, and Chair of the Division of Atomic, Molecular, and Optical Physics (DAMOP) of the American Physical Society (2004-2007)

Physics Policy Committee, American Physical Society (2005-2007)

Atomic, Molecular, and Optical Physics Program Review Panel, Lawrence Berkeley Laboratory (2005)

**PROFESSIONAL**  
**SERVICE**

(continued)

National Science Foundation, Committee of Visitors, Directorate for Math and Physical Sciences (2006).

International Advisory Committee for the 13th International Symposium on Polarization and Correlation in Electronic and Atomic Collisions (2006-2007).

Chair, Nominating Committee of the Division of Atomic, Molecular, and Optical Physics of the American Physical Society (2008-2009).

Member, Meeting Improvement Committee of the Division of Atomic, Molecular, and Optical Physics of the American Physical Society (2008-2009)

Committee on Meetings, American Physical Society (2010 - 2012);  
Chair (2012 – 2013)

Organizer and Chairman of Symposium on "Recent Advances in The Applications of Optical Pumping of Alkali Atoms," American Physical Society Annual DAMOP Meeting (Houston, Texas, 5/10).

International Advisory Committee for the 16th International Symposium on Polarization and Correlation in Electronic and Atomic Collisions (2010-2011).

Allis Prize Committee, American Physical Society (2011 – 2015)

Nominating Committee, Few-Body Physics Topical Group, American Physical Society (2011 – 2013)

Education Committee, Division of Atomic, Molecular, and Optical Physics (DAMOP), American Physical Society (2011 – 2014)

Chair, Task Force to Re-envision the April meeting of the American Physical Society (2013 – 2014)

American Physical Society Divisional Counselor, Division of Atomic, Molecular, and Optical Physics (2014-2019)

“Nifty-Fifty” Speaker, US Science and Engineering Festival (2015- )

Editorial Advisory Board, Journal of Physics B, Institute of Physics (IOP), UK (2015-16)

**PATENT**

H.Batelaan, B.A.Hitt, B.G.Birdsey, and T.J.Gay. U.S. Patent 6590923, "A Rubidium Spin Filter" (1998).

**STUDENTS**

**Ph.D.**

Victor Irby (University of Missouri-Rolla, 1990),  
Associate Professor of Physics, University of Southern Alabama.

Kanishka Wijayarathna (University of Missouri-Rolla, 1992),  
Professor, Physics Department, University of Colombo, Sri Lanka.

Edward Stevens (University of Missouri-Rolla, 1993), Research  
Assistant Professor of Physics, University of Missouri-Rolla  
President, Metastable Technologies, Inc.

Kenneth Trantham (University of Nebraska, 1996), Professor  
of Physics and Chair, University of Nebraska - Kearny.

Hasan Al-Khateeb (University of Nebraska, 2000), Instructor of  
Physics, Jordan Institute of Science and Technology.

Benjamin Birdsey (University of Nebraska, 2003)  
Lecturer, University of Western Australia

Adam Green (University of Nebraska, 2003)  
Professor of Physics, University of St. Thomas

Jack W. Maseberg (University of Nebraska, 2009)  
Assistant Professor of Physics, Fort Hays State University

Munir H. Pirbhai (University of Nebraska, 2013)  
Agilent Technologies.

Joan M. Dreiling (University of Nebraska 2014)  
NRC Postdoctoral Fellow at NIST-Gaithersburg

Eric T. Litaker (University of Nebraska 2014)

**M.S.**

Steve Yallaly (University of Missouri-Rolla, 1988)  
McDonnell-Douglas Corporation

William Meyer (University of Missouri-Rolla, 1991)  
NASA Glenn Research Center

Kenneth Trantham (University of Missouri-Rolla, 1993)  
Ph.D. University of Nebraska

**STUDENTS (continued)**

Justin Zohner (University of Nebraska, 2004)  
Northrup-Grumman Corporation

Jonathan Paxon Reyes (University of Nebraska, 2005)  
University of Nebraska

Joshua R. Machacek (University of Nebraska, 2009)  
Ph.D., The ANU

**Undergraduates** 88 Undergraduate Research Assistants from University of Missouri-Rolla, University of Nebraska, Western Michigan University, University of Michigan-Dearborn, Nebraska Wesleyan University, University of St. Thomas, Vassar College, Swarthmore College, Fort Hays State College, Harvey Mudd College, Evergreen College, University of Western Washington, the Georgia Institute of technology, and the University of Chicago.

**High School**

8 high school students supervised in laboratory projects.

**POSTDOCTORAL  
RESEARCH  
ASSOCIATES**

Murtadha A.M. Khakoo (now at California State University – Fullerton)

John Wm. Edwards (deceased)

Hans Geesmann (Daimler-Benz Corporation, Germany)

John Furst (University of Newcastle (Australia))

Martin Johnston (University of St. Thomas)

Herman Batelaan (University of Nebraska)

Mark Rosenberry (Sienna College)

Vola Andrianarijaona (Pacific Union College)

Joan Dreiling (NIST – Gaithersburg)

**PUBLICATIONS****BOOKS**

- 1) T.J. Gay and A.F. Starace, eds., *Two-Center Effects in Ion-Atom Collisions*, AIP Conference Proceedings Vol. #362 (AIP, New York, 1996).
- 2) T.J. Gay, *Football Physics – The Science of the Game* (Rodale, Easton, PA, 2004).
- 3) T.J. Gay, *The Physics of Football* (Re-titled and revised 2<sup>nd</sup> edition of *Football Physics*; Harper-Collins, New York, 2005).

**INVITED REVIEW PAPERS**

- 1) M.E. Rudd, Y.-K. Kim., D.H. Madison, and T.J. Gay, “Electron Production in Proton Collisions with Atoms and Molecules: Differential Cross Sections,” *Rev. Mod. Phys.* **64**, 441 (1992).
- 2) T.J. Gay and F.B. Dunning, “Mott Electron Polarimetry,” *Rev. Sci. Instrum.* **63**, 1635 (1992).
- 3) T.J. Gay, “Electron Polarimetry,” in *Experimental Methods in the Physical Sciences – Atomic, Molecular, and Optical Physics: Charged Particles*, F.B. Dunning and R.G. Hulet eds. (Academic Press, New York, 1995).
- 4) T.J. Gay, “Metastable Atom Sources,” in *Experimental Methods in the Physical Sciences – Atomic, Molecular, and Optical Physics: Atoms and Molecules*, F.B. Dunning and R.G. Hulet eds. (Academic Press, New York, 1996).
- 5) T.J. Gay, “What Physics Do We Learn From Integrated Stokes Parameter Measurements With Polarized Electrons?,” *Tsinghua University Review of Science and Technology* **6**, 458 (2001).
- 6) T.J. Gay, “Physics and Technology of Polarized Electron Scattering From Atoms and Molecules,” *Adv. At. Mol. Phys.* **57**, 157 (2009).

**REFEREED PUBLICATIONS**

- 1) H.G. Berry, G. Gabrielse, T.J. Gay, and A. E. Livingston, “Material-Dependent Variations of Alignment in Beam-Foil Spectroscopy,” *Physica Scripta* **16**, 99 (1977).
- 2) R.D. Hight, R.M. Schectman, H.G. Berry, G. Gabrielse and T.J. Gay, “Alignment of Helium Excited by Thin Carbon Foils,” *Phys. Rev. A* **16**, 1805 (1977).
- 3) T.J. Gay and H.G. Berry, “Temperature Dependence of Alignment Production in HeI by Beam-Foil Excitation,” *Phys. Rev. A* **19**, 952 (1979).

**REFEREED PUBLICATIONS** (page 2)

- 4) R.M. Schectman, R.D. Hight, S.T. Chen, L.J. Curtis, H.G. Berry, T.J. Gay, and R. Deserio, "Orientation and Alignment of the  $3p^1P$  and  $4d^1D$  Levels of Neutral He," *Phys. Rev. A* **22**, 1591 (1980).
- 5) T.J. Gay and H.G. Berry, "Optical Observations of Molecular Dissociation in Thin Foils," *J. Phys. B* **13**, L199 (1980).
- 6) T.J. Gay, H.G. Berry, R. Deserio, H.P. Garnir, R.M. Schectman, N. Schaffel, R. D. Hight, and D.J. Burns, "Energy Dependence of Alignment in Foil Collision-Excited  $n = 3$  States in HeI," *Phys. Rev. A* **23**, 1745 (1981).
- 7) T.J. Gay, H.G. Berry, and R. Deserio, "Molecular Effects in Beam-Foil Collision Induced Alignment of HeI," *Phys. Rev. A* **23**, 1761 (1981).
- 8) G.D. Fletcher, M.J. Alguard, T.J. Gay, V.W. Hughes, C.W. Tu, P.F. Wainwright, M.S. Lubell, W. Raith, and F.C. Tang, "Measurements of Spin Exchange Effects in Electron-Hydrogen Collisions:  $90^\circ$  Elastic Scattering from 4eV to 30eV," *Phys. Rev. Lett.* **48**, 1671 (1982).
- 9) T.J. Gay, G.D. Fletcher, M.J. Alguard, V.W. Hughes, P.F. Wainwright, and M.S. Lubell, "Further Measurements of Spin Exchange Effects in Electron Impact Ionization of Atomic Hydrogen," *Phys. Rev. A* **26**, 3664 (Brief Report; 1982).
- 10) T.J. Gay, "A Simple Optical Electron Polarimeter," *J. Phys. B* **16**, L553 (1983).
- 11) G.D. Fletcher, M.J. Alguard, T.J. Gay, V.W. Hughes, P.F. Wainwright, M.S. Lubell, and W. Raith, "An Experimental Study of Spin-Exchange Effects in Elastic and Ionizing Collisions of Polarized Electrons with Polarized Hydrogen Atoms," *Phys. Rev. A* **31**, 2854 (1985).
- 12) T.J. Kvale, D.G. Seely, D.M. Blankenship, E. Redd, T.J. Gay, M. Kimura, E. Rille, J.L. Peacher, and J.T. Park, "Angular Differential Cross Sections for the Excitation of  $1^1S$  Helium to the  $2^1P$  States by 25- to 100-keV Proton Impact," *Phys. Rev. A* **32**, 1369 (1985).
- 13) G.D. Fletcher, T.J. Gay, and M.S. Lubell, "New Insights Into Mott-Scattering Electron Polarimetry," *Phys. Rev. A* **34**, 911 (1986).
- 14) E. Redd, T.J. Gay, D.M. Blankenship, J.T. Park, J.L. Peacher, and D.G. Seely, "Measurements of Helium Excitation in  $Be^+$ ,  $Mg^+$  -He Collisions," *Nuc. Instrum. and Meth.* **B24/25**, 305 (1987).
- 15) R.E. Olson, T.J. Gay, H.G. Berry, E.B. Hale, and V.D. Irby, "Saddle-Point Electrons in Ionizing Ion-Atom Collisions," *Phys. Rev. Lett* **59**, 36 (1987).
- 16) E. Redd, T.J. Gay, D.M. Blankenship, J.T. Park, J.L. Peacher, and D.G. Seely, "Angular-Differential Studies of Excitation in Quasi-One-Electron Collisions at 'High' Energy," *Phys. Rev. A* **36**, 3475 (Rapid Communication; 1987).

**REFEREED PUBLICATIONS** (page 3)

- 17) T.J. Gay, H.G. Berry, E.B. Hale, V.D. Irby, and R.E. Olson, “ ‘Saddle–Point’ Ionization,” Nucl. Instrum. and Meth., **B31**, 336 (1988).
- 18) V.D. Irby, T.J. Gay, J. Wm. Edwards, E.B. Hale, M.L. McKenzie, and R.E. Olson, “Projectile–Charge Dependence of Ejected–Electron Spectra,” Phys. Rev. A **37**, 3612 (Rapid Communication; 1988).
- 19) T.J. Gay, E. Redd, D.M. Blankenship, J.T. Park, J.L. Peacher, and D.G. Seely, “Charge Transfer in  $\text{Be}^+$ ,  $\text{Mg}^+$ –He Collisions,” J. Phys. B **21**, L467 (1988).
- 20) R.E. Olson and T.J. Gay, “Dynamics of Antimatter–Atom Collisions,” Phys. Rev. Lett. **61**, 302 (1988).
- 21) J.L. Peacher, E. Redd, D.G. Seely, T.J. Gay, D.M. Blankenship, and J.T. Park, “Elastic Angular–Differential Cross Sections for Quasi–One–Electron Collision Systems at Intermediate Energies:  $(\text{Na}^+, \text{Li}^+) + \text{H}$  and  $(\text{Mg}^+, \text{Be}^+) + \text{He}$ ,” Phys. Rev. A **39**, 1760 (1989).
- 22) T.J. Gay and R.E. Olson, “Ionization of Helium by Protons, Electrons, and Their Antiparticles: Dynamical Effects of Projectile Mass and Charge in Angular–Differential Cross Sections,” Nucl. Instru. and Meth. **B40/41**, 104 (1989).
- 23) C.J. Liu, T.J. Gay, and K.P. Schüler, “Orientation of  $\text{H}(2P)$  by Beam–Tilted–Foil Interaction,” Phys. Rev. A **39**, 5560 (1989).
- 24) G.D. Cates, V.W. Hughes, R. Michaels, H.R. Schaefer, T.J. Gay, M.S. Lubell, R. Wilson, G.W. Dodson, K.A. Dow, S.B. Kowalski, K. Isakovitch, K.S. Kumar, M.E. Schulze, P.A. Souder, and D.H. Kim, “The Bates Polarized Electron Source,” Nucl. Instrum. and Meth. **A278**, 293 (1989).
- 25) P.A. Souder, R. Holmes, D.H. Kim, K.S. Kumar, M.E. Schulze, K. Isakovitch, G.W. Dodson, K.A. Dow, M. Farkhondeh, S.Kowalski, M.S. Lubell, J. Bellanca, M. Goodman, S. Patch, R. Wilson, G.D. Cates, S. Dhawan, T.J. Gay, V.W. Hughes, A. Magnon, R. Michaels, and H.R. Schaefer, “Measurement of Parity Violation in the Elastic Scattering of Polarized Electrons from  $^{12}\text{C}$ ,” Phys. Rev. Lett. **65**, 694 (1990).
- 26) T.J. Gay, M.W. Gealy, and M.E. Rudd, “Projectile–and Target–Charge Dependent Effects in Ionizing Collisions of  $\text{H}^+$  and  $\text{He}^{2+}$  with He, Ne, and Ar Atoms,” J. Phys. B **23**, L823 (1990).
- 27) J.A. Brand, J.E. Furst, T.J. Gay, and L.D. Schearer, “Production of a High–Density State–Selected Metastable Neon Beam,” Rev. Sci. Instrum. **63**, 163 (1992).
- 28) T.J. Gay, J.A. Brand, J.E. Furst, M.A. Khakoo, W.V. Meyer, W.M.K.P. Wijayaratna, and F.B. Dunning, “Extrapolation Procedures in Mott Electron Polarimetry,” Rev. Sci. Instrum. **63**, 114 (1992).
- 29) J.E. Furst, T.J. Gay, W.M.K.P. Wijayaratna, K. Bartschat, H. Geesman, M.A. Khakoo, and D.H. Madison, “An Attempt to Observe Mott Scattering Optically,” J. Phys. B **25**, 1089 (1992).

**REFEREED PUBLICATIONS** (page 4)

- 30) D.G. Seely, S.W. Bross, A.D. Gaus, J. Wm. Edwards, D.R. Schultz, T.J. Gay, J.T. Park, and J.L. Peacher, "Angular Differential Cross Sections for H(2p) Formation in Intermediate Energy Proton–Helium Collisions," *Phys. Rev. A* **45**, R1287 (Rapid Communication; 1992).
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