

Dept. of Physics  
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Williamstown, MA 01267  
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Birth: 3/10/60 Calcutta, India  
Citizenship: U.S.

## **I. EDUCATION:**

### **HARVARD UNIVERSITY**, Cambridge, MA

Ph.D. in Physics, March 1989.

Dissertation: " Measurement of the  $4^2S_{1/2} - 4^2F_{5/2}$  Three-Photon Transition in  $He^+$ :

A New Test of Q.E.D."

Thesis Advisor: Prof Francis M. Pipkin

### **YALE COLLEGE**, New Haven, CT

B.S. with Honors in Physics, May 1982.

Senior Thesis: "Aspects of the Search for Parity Nonconservation in Atomic Hydrogen"

Supervisor: Prof. Edward A. Hinds

## **II. SUMMARY OF WORK/RESEARCH EXPERIENCE:**

Director of the Science Center ["Dean of Science"]	2010-
Professor of Physics	2006-
Physics Department Chair	2003-2005
Associate Prof. of Physics w/tenure, Williams College, Williamstown, MA	2001-2006
Assistant Professor of Physics, Williams College, Williamstown, MA	1994-2001
Research Assistant Professor, Physics Dept., Univ. of Washington, Seattle, WA	1993-1994
Postdoctoral Research Associate, Physics Dept., Univ. of Washington, Seattle, WA	1989-1993
Research Assistant (incl. thesis research), Harvard University, Cambridge, MA	1982-1988
Research Assistant, Atomic physics group, Yale University, New Haven, CT	1981-1982

## **III. GRANTS, HONORS AND AWARDS**

NSF-RUI Grant (3-yr/\$350,000 + College matching funds)	2014-2017
NSF-RUI Grant (3-yr/\$285,000 + College matching funds)	2010-2014
NSF-RUI Grant (3-yr/\$229,500 + College matching funds)	2006-2010
NSF-RUI Grant (3-yr/\$230,200 + College matching funds)	2002-2006
<b>N.I.S.T. Precision Measurement Grant</b> (3-years/\$150,000)	1999-2002
NSF-RUI Grant (3-yr/\$198,720 + College matching funds)	1998-2002
NSF-Major Research Initiative Grant, (w/Strait, Jones, Bolton, and Thoman) (\$143,912+ College matching funds)	1997
<b>Research Corp.-Cottrell College Scholar Award</b> (\$39,700 + College matching funds)	1994-1997
Schlumberger Graduate Fellowship	1986-1987
Harvard Univ. Danforth Center Teaching Award	1985



**2009**

Yale University  
Siena College  
Univ. of Connecticut  
Williams College

*AMO group seminar*  
*Department colloquium*  
*AMO group seminar*  
*Summer Science colloquium*

**2007**

Univ. of Delaware  
Old Dominion Univ.

*AMO seminar*  
*Department colloquium*

**2006**

Adelphi University  
Univ. of Maryland  
Union College

*Department Colloquium*  
*AMO seminar*  
*Department Colloquium*

**2005**

Univ. of Montana  
Univ. of Montana

*OPTEC laser science conference, invited talk*  
*Department Colloquium*

**2003**

Amherst College  
Yale University  
U. Connecticut

*Department Colloquium*  
*AMO seminar*  
*AMO seminar*

**2002**

U.C. Berkeley  
Middlebury College  
Colby College

*AMO seminar*  
*Department Colloquium*  
*Department Colloquium*

**2001**

Harvard/ITAMP  
York Univ., Toronto  
Mt. Holyoke College

*Fundamental Symmetries workshop, invited talk*  
*AMO seminar*  
*Department Colloquium*

**2000**

Holy Cross College

*Department Colloquium*

**1999**

Colgate University  
NIST/Gaithersburg

*Department Colloquium*  
*AMO seminar*

**1998**

Williams College  
Harvard Univ.  
U. Connecticut

*Sigma Xi annual lecture series*  
*AMO seminar*  
*AMO seminar*

**1997**

Williams College  
SUNY/Stonybrook

*Department Colloquium*  
*AMO seminar*

**1994**

MIT  
Amherst College  
Williams College

*Nuclear/Particle physics group seminar*  
*Department Colloquium*  
*Department Colloquium*

## VII. CONFERENCE PRESENTATIONS - Majumder group @Williams

### [undergraduate student co-authors in bold]:

36. “High-precision Stark shift measurements using FM spectroscopy in an indium atomic beam” **N. A. Schine '13, N. Bricault '14, B. Augenbraun '15**, G. Ranjit, and P.K. Majumder. *Contributed poster*, APS Division of Atomic, Molecular, and Optical Physics Meeting, Madison, WI, June 2–6, 2014.

35. “Precise measurement of the  $7P_{1/2}$  and  $8P_{1/2}$  hyperfine splittings and isotope shift in  $^{203}\text{Tl}$  and  $^{205}\text{Tl}$  using two-step laser spectroscopy” **David Kealhofer '13, G.D. Vukasin '14**, G. Ranjit, and P.K. Majumder. *contributed poster*, APS Division of Atomic, Molecular, and Optical Physics Meeting, Madison, WI, June 2-6, 2014.

34. “Precise atomic beam measurement of the Stark shift within the  $5P_{1/2} \rightarrow 6S_{1/2}$  transition in  $^{115}\text{In}$  using FM spectroscopy” P.K. Majumder, **N. Schine '13**, and G. Ranjit. *contributed talk*, APS Division of Atomic, Molecular, and Optical Physics Meeting, Quebec City, CA, June 3 – June 7, 2013.

33. “Measurement of the  $7P_{1/2}$ -state hyperfine structure and isotope shift in  $^{203}\text{Tl}$  and  $^{205}\text{Tl}$  using two-color spectroscopy” **D. Kealhofer '13**, G. Ranjit, and P.K. Majumder. *contributed poster*, APS Division of Atomic, Molecular, and Optical Physics Meeting, Quebec City, CA, June 3 – June 7, 2013.

32. “Precise atomic beam measurement of the Stark shift within the  $5P_{1/2} \rightarrow 6S_{1/2}$  transition in  $^{115}\text{In}$  using FM spectroscopy” Gambhir Ranjit, **A. Schneider '12, N. Schine '13**, and P.K. Majumder. *contributed poster*, APS Division of Atomic, Molecular, and Optical Physics Meeting, Anaheim, CA, June 4 – June 9, 2012.

31. “Measuring hyperfine structure and isotope shift in the thallium  $7S_{1/2} \rightarrow 7P_{1/2}$  transition using two-color spectroscopy” Gambhir Ranjit, **T. Siegel '12**, and P.K. Majumder. *contributed poster*, APS Division of Atomic, Molecular, and Optical Physics Meeting, Anaheim, CA, June 4 – June 9, 2012.

30. “Using AMO techniques to probe physics of the Standard Model (and beyond)”, *invited talk, session chair*, Atomic Physics Gordon Research Conference, Mt. Snow Resort, VT, June 26 – July 1, 2011.

29. “Precise atomic beam measurement of the Stark shift within the  $5P_{1/2} \rightarrow 6S_{1/2}$  transition in  $^{115}\text{In}$ ” Gambhir Ranjit, **A. Lorenzo '11**, and P.K. Majumder. *contributed poster*, Atomic Physics Gordon Research Conference, Mt. Snow Resort, VT, June 26 – July 1, 2011.

28. “Precise atomic beam measurement of the Stark shift within the  $5P_{1/2} \rightarrow 6S_{1/2}$  transition in  $^{115}\text{In}$ ” Gambhir Ranjit, **A. Lorenzo '11**, and P.K. Majumder. *contributed poster*, APS Division of Atomic, Molecular, and Optical Physics Meeting, Atlanta, GA, June 13-17, 2011.

27. “Precise measurements of hyperfine structure and atomic polarizability in indium and thallium using two-color diode laser spectroscopy” P. K. Majumder, **Huajie Cao '08, Scott Smedinghoff '09**, and M. Gunawardena, *contributed poster*, APS Division of Atomic, Molecular, and Optical Physics Meeting, Williamsburg, VA, May 19-23, 2009.

26. “Precise measurement of the hyperfine splittings within the  $6p_{3/2}$  level of atomic indium using two-color diode laser spectroscopy.” M. Gunawardena, **Huajie Cao '09, P.W. Hess '08**, and P.K. Majumder, *contributed talk*, APS Division of Atomic, Molecular, and Optical Physics Meeting, Williamsburg, VA, May 19-23, 2009.

25. “Precise measurements of hyperfine structure and atomic polarizability in indium and thallium”, P. K. Majumder, **P.W. Hess '08**, M. Gunawardena, *contributed poster*, International Conference on Atomic Physics, Storrs, CT, July 2008.

24. “Precise measurement of the hyperfine splittings within the  $6P_{3/2}$  level of atomic indium

using two-color diode laser spectroscopy” **P.W. Hess '08**, M. Gunawardena, and P.K. Majumder. . [Invited talk selected competitively for DAMOP ‘undergraduate research’ session] APS Division of Atomic, Molecular, and Optical Physics Meeting, State College, PA, May 2008.

23. “Precise measurements of hyperfine structure and atomic polarizability in indium and thallium using two-color diode laser spectroscopy”, **P.W. Hess '08, J. Strait '07**, M. Gunawardena, P.K. Majumder, *contributed poster*, APS Division of Atomic, Molecular, and Optical Physics Meeting, State College, PA, May 2008.

22. “High precision two-step spectroscopy in atomic indium” P.K. Majumder, M. Gunawardena, **O. Simpson '07, J. Strait '07, and P. Hess '08**, , *contributed poster* - Gordon Research Conference in Atomic Physics, Tilton, NH. June 27-July 1, 2007.

21. “Atomic structure measurements and tests of fundamental symmetries in a thallium atomic beam”, P.K.Majumder, **D. Butts '06**, R. Uhl. . *Contributed poster*, APS Division of Atomic, Molecular, and Optical Physics Meeting, , Knoxville, TN May 16-20, 2006.

20. “ Differential Phase Shift Spectroscopy in a Thallium Atomic Beam”, P.K. Majumder, **D.Butts '06, J.A. Kerckhoff '05**, and R.Uhl. *Contributed talk*, APS Division of Atomic, Molecular, and Optical Physics Meeting, , Knoxville, TN May 16-20, 2006

19. “High-precision phase shift spectroscopy of the weak 1283 nm M1 transition in a thallium atomic beam”, P.K. Majumder, **C.D. Bruzewicz '05, J.A. Kerckhoff '05**, and R. Uhl., *contributed poster*: Atomic Physics Gordon conference, Tilton, NH 6/25-6/29 2005.

18. “High-precision phase shift spectroscopy of the weak 1283 nm M1 transition in a thallium atomic beam”, R. Uhl, **C.D. Bruzewicz '05, J.A. Kerckhoff '05** and P.K. Majumder, *contributed poster*: APS Division of Atomic, Molecular, and Optical Physics Meeting, Lincoln, NE, 5/22-5/25 2005.

17. “Search for long-range T-odd, P-even forces in atomic thallium”, P.K. Majumder, **J.A. Backsmayes '05, C.D. Bruzewicz '05** and R. Uhl, *contributed poster*: APS Division of Atomic, Molecular, and Optical Physics Meeting, Tucson, AZ, 5/25-5/29 2004.

16. “High-precision atomic structure measurements in thallium”, **M.A. Burkhardt '04, C.D. Holmes '03**, R. Uhl, and P.K. Majumder , *contributed poster*: APS Division of Atomic, Molecular, and Optical Physics Meeting, Tucson, AZ, 5/25-5/29 2004.

15. “Atomic Structure Measurements and Fundamental Symmetry Tests in a Thallium Atomic Beam”, **C.D. Holmes '03**, M.A. Green, and P.K. Majumder , *contributed poster*: APS Division of Atomic, Molecular, and Optical Physics Meeting, Boulder, CO, 5/29-6/1 2003.

14. “Atomic Structure Measurements and Fundamental Symmetry Tests in a Thallium Atomic Beam”, P.K. Majumder and **S.C. Doret '02**, , *contributed poster*: APS Division of Atomic, Molecular, and Optical Physics Meeting, Williamsburg, VA, 5/29-6/1 2002.

13. “Precise Measurement of the Stark Shift in the Thallium  $6P_{1/2} - 7S_{1/2}$  378 nm Transition”, **S.C. Doret '02**. [Invited talk selected competitively for DAMOP ‘undergraduate research’ session] APS Division of Atomic, Molecular, and Optical Physics Meeting, Williamsburg, VA, 5/29-6/1 2002.

12. “Atomic Beam Spectroscopy and Test of Tim-Reversal Symmetry in the Thallium  $6P_{1/2} - 6P_{3/2}$  M1 Transition”, P.K. Majumder, **S.C. Doret '02, C.D. Holmes '03**, and D.S. Richardson. *contributed poster*. 18<sup>th</sup> International Conference on Atomic Physics, Cambridge, MA, 7/28-8/2 2002.

11. “New Measurement of the Stark Shift in the Thallium  $6P_{1/2} - 7S_{1/2}$  378 nm Transition”, **S.C. Doret '02, P.D. Friedberg '01, A.J. Speck '00**, D.S. Richardson, and P.K. Majumder. *contributed poster*. 18<sup>th</sup> International Conference on Atomic Physics, Cambridge, MA, 7/28-8/2 2002.

10. "Precise Atomic Beam Spectroscopy Measurements in Thallium", D.S. Richardson, **P.D. Friedberg '01**, P.K. Majumder, *contributed poster*: DAMOP 2001 Meeting, London, Ontario, CA; May 16-19, 2001.
9. "Precise Atomic Structure Measurements in Thallium at 378 nm using a Frequency-doubled Diode Laser", P.K. Majumder, **R.N. Lyman ('99)**, **P.D. Friedberg ('01)**, and D.S. Richardson, *contributed talk*: DAMOP 2001 Meeting, London, Ontario, CA; May 16-19, 2001.
8. "Precise Atomic Beam Spectroscopy Measurements in Thallium", D.S. Richardson, **P.D. Friedberg '01**, P.K. Majumder, *contributed poster*: Atomic Physics Gordon Conference, Williams College; June 16-20, 2001.
7. "Precise Atomic Structure Measurements in Thallium and Tests of Fundamental Symmetries", P.K. Majumder, *invited talk*: Harvard University, ITAMP Workshop on "Tests of Fundamental Symmetries using Atoms and Molecules", 30 Nov.-1 Dec 2001.
6. "Atomic Structure Measurements in Thallium using a 378 nm Frequency-doubled Diode Laser", P.K. Majumder, **R.N. Lyman ('99)**, and D.S. Richardson, *contributed poster*: 1999 APS Centennial Meeting, Atlanta, GA; March 20-26, 1999.
5. "Proposed Test of Long-Range T-Violating Forces in Atomic Thallium", P.K. Majumder, *contributed poster*: 1999 APS Centennial Meeting, Atlanta, GA; March 20-26, 1999.
4. "Atomic Structure Measurements and Tests of Fundamental Symmetries within the Thallium  $6P_{1/2} - 6P_{3/2}$  1283 nm Transition", P.K. Majumder, **Leo L. Tsai ('98)**, and **P.C. Nicholas ('98)**. ICAP 16, Windsor, Ontario, Canada; 3-7 Aug. 1998. Appears in: 16<sup>th</sup> ICAP, Windsor, 1998 Contributed Abstracts.
3. "Precise Measurement of the Electric Quadrupole Amplitude within the 1.283 nm line of Atomic Thallium", P.K. Majumder and **Leo L. Tsai ('98)**. Contributed paper: DAMOP annual meeting, Santa Fe, NM; 27-30 May, 1998.
2. "Atomic Structure and Fundamental Symmetry Measurements in a Thallium Atomic Beam" P.K. Majumder and **Peter C. Nicholas ('98)**. Contributed paper: DAMOP annual meeting, Santa Fe, NM; 27-30 May, 1998.
1. "Precise Measurements of Electric Quadrupole and Dipole Amplitudes in Atomic Thallium," P.K. Majumder. Contributed paper: DAMOP annual meeting, Wash. DC; 18-21 April, 1997.

### **VIII. JOURNAL PUBLICATIONS [undergraduate student co-authors in bold]:**

18. "Frequency-modulation spectroscopy at high modulation depth in an atomic beam of indium", **N.A. Schine '13**, G. Ranjit, and P.K. Majumder, *in preparation*.
17. "Measurement of  $7p_{1/2}$ -state hyperfine structure and  $7s_{1/2}-7p_{1/2}$  transition isotope shift in  $^{203}\text{Tl}$  and  $^{205}\text{Tl}$ ", G. Ranjit, **D. Kealhofer '13**, **G.D. Vukasin '14**, and P.K. Majumder, *Phys. Rev. A* **89**, 012511 (2014).
16. "Thallium  $7p$  lifetimes derived from experiment and *ab initio* calculations of scalar polarizabilities", M.S. Safronova and P.K. Majumder, *Phys. Rev. A* **87**, 042502 (2013).
15. "Measurement of the scalar polarizability within the  $5P_{1/2}-6S_{1/2}$  410-nm transition in atomic indium", G. Ranjit, **N.A. Schine '13**, **A.T. Lorenzo '11**, **A.E. Schneider '12**, and P.K. Majumder, *Phys. Rev. A* **87**, 032506 (2013).

14. " Measurement of hyperfine structure within the  $6P_{3/2}$  excited state of  $^{115}\text{In}$ ", Mevan Gunawardena, **Huajie Cao '09, Paul W. Hess '08**, and P.K. Majumder, *Phys. Rev. A* **80**, 032519 (2009).
13. " A frequency stabilization technique for diode lasers based on frequency-shifted beams from an acousto-optic modulator ", Mevan Gunawardena, **Paul W. Hess '08, Jared Strait '07**, and P.K. Majumder, *Rev. Sci. Instrum.* **79**, 103110 (2008).
12. "A frequency stabilization method for diode lasers utilizing low-field Faraday polarimetry", **J.A. Kerckhoff '05, C.D. Bruzewicz '05**, R. Uhl, and P.K. Majumder, *Rev. Sci. Instrum.*, **76**, 093108 (2005).
11. "Measurement of the Stark Shift within the  $6P_{1/2} - 7S_{1/2}$  378 nm Transition in Atomic Thallium", **S.C. Doret '02, P.D. Friedberg '01, A.J. Speck '00**, D.S. Richardson, and P.K. Majumder, *Phys. Rev. A* **66** , 052504 (2002).
10. " Hyperfine splitting and isotope shift measurements within the 378 nm  $6P_{1/2} - 7S_{1/2}$  transition in  $^{203}\text{Tl}$  and  $^{205}\text{Tl}$ ," D.S. Richardson, **R.N. Lyman ('99)**, and P.K. Majumder, *Phys. Rev. A* **62**, 012510 (2000).
9. " Measurement of the electric quadrupole amplitude within the 1283 nm  $6P_{1/2} - 6P_{3/2}$  transition in atomic thallium," P.K. Majumder and **Leo L. Tsai ('98)**, *Phys. Rev. A* **60**, 267 (1999).
8. "Optical-rotation technique used for high-precision measurement of parity nonconservation in atomic lead," D.M. Meekhof, P.A. Vetter, P.K. Majumder, S.K. Lamoreaux, and E.N. Fortson, *Phys. Rev. A* **52**, 1895 (1995).
7. "High-Precision Measurements of Atomic Parity Nonconservation in Lead and Thallium," P.K. Majumder, *Proc. 5th Int. Conf. Intersec. Nucl. Part. Phys.* , edited by S.J. Seestrom, AIP Press, NY (1995).
6. "Precise Test of Electroweak Theory from a Measurement of Parity Nonconservation in Atomic Thallium," P. Vetter, D.M. Meekhof, P.K. Majumder, S.K. Lamoreaux, and E.N. Fortson, *Phys. Rev. Lett.* **74**, 2658 (1995).
5. "High-Precision Measurement of Parity Nonconserving Optical Rotation in Atomic Lead," D.M. Meekhof, P. Vetter, P.K. Majumder, S.K. Lamoreaux, and E.N. Fortson, *Phys. Rev. Lett.* **71**, 3442 (1993).
4. "Search for a Coupling of the Earth's Gravitational Field to Nuclear Spins in Atomic Mercury," B.J. Venema, P.K. Majumder, S.K. Lamoreaux, B.R. Heckel, and E.N. Fortson, *Phys. Rev. Lett.* **68**, 135 (1992).
3. "Test of the Linearity of Quantum Mechanics using Optically Pumped  $^{201}\text{Hg}$ ," P.K. Majumder, B.J. Venema, S.K. Lamoreaux, B.R. Heckel, and E.N. Fortson, *Phys. Rev. Lett.* **65**, 2931 (1990).
2. "New Test of QED from a Measurement of the  $4^2S_{1/2} - 4^2F_{5/2}$  Three Photon Transition in  $\text{He}^+$ ," P.K. Majumder and F.M. Pipkin, *Phys. Rev. Lett.* **63**, 372 (1989).

1. "Phase-Variation Technique for Measurement of the  $n=2$  Lamb Shift in  $\text{He}^+$  using Separated Oscillatory Fields," H.A. Klein, E.W. Hagley, P.K. Majumder, M.E. Poitzsch, and F.M. Pipkin, Phys. Rev. A **36**, 3494 (1987).

## **IX. RESEARCH TRAINING AND SUPERVISION**

- 50 undergraduate research students supervised (1995-2014)
- 26 undergraduate senior honors theses supervised (1995-2014)

### **List of senior honors students, thesis titles, and current activities**

#### **2015**

##### Ben Augenbraun

"Atomic beam measurement of the Stark shift in the In  $6S_{1/2} - 7P_{1/2}$  transition using two-step spectroscopy"  
Phys. Ph.D. program (applying fall 2014)

#### **2014**

##### Nathan Bricault

"Towards measurement of the Stark shift in the In  $6S_{1/2} - 7P_{1/2}$  transition using two-step spectroscopy"  
CAMBRIDGE UNIV. Mech. Eng. M.Phil. program

##### Gabrielle Vukasin

"Hyperfine structure and isotope shift measurements of the  $7P_{1/2}$  and  $8P_{1/2}$  states of thallium using two-step laser spectroscopy"  
TUFTS UNIV. Mech. Eng. MS/Ph.D program

#### **2013**

Nathan Schine "Precise measurement of Stark shift within the indium  $5P_{1/2}-6S_{1/2}$  transition at 410 nm"  
U. CHICAGO Physics Ph.D. program (FINALIST for 2013 Apker Award)

##### David Kealhofer

"Hyperfine structure and isotope shift measurements of the  $7P_{1/2}$  state of thallium using two-step laser spectroscopy"  
U. C. SANTA BARBARA Physics Ph.D. program

#### **2012**

Anders Schneider "Precise measurement of Stark shift within the indium  $5P_{1/2}-6S_{1/2}$  transition at 410 nm"  
U. PENN Comp. Sci. MS/Ph.D. program

##### Taryn Siegel

"Hyperfine structure and isotope shift measurements of the  $7P_{1/2}$  state of thallium using two-step laser spectroscopy"  
Epic Software Systems

#### **2011**

Antonio Lorenzo "Atomic beam measurement of the Stark shift in indium at 410 nm using FM spectroscopy"  
U. ARIZONA Optical Sciences Ph.D. program

#### **2010**

Anne O'Leary "Optical system development for high precision atomic beam spectroscopy of indium and thallium"  
PRINCETON Geophysics Ph.D. program



## **2009**

Huajie Cao "Precise measurement of the  $6P_{3/2}$  hyperfine structure in  $^{115}\text{In}$  using two-step diode laser spectroscopy"  
PRINCETON Physics Ph.D. program

## **2008**

Paul Hess "Measurement of the indium  $6P_{3/2}$  hyperfine structure using two-step excitation"  
HARVARD Physics Ph.D. program (*group of Gabrielse/DeMille*)  
JQI / U. MARYLAND Postdoc in atomic physics (*group of C. Monroe*)

## **2007**

Jared H. Strait "Vapor cell spectroscopy of Indium using a 410 nm diode laser system"  
CORNELL UNIVERSITY Elec. Eng./Optics Ph.D. program

Owen Simpson "Two-color spectroscopy of thallium and indium using two-tone RF spectroscopy"  
PRINCETON UNIVERSITY Physics Ph.D, program

Toby E. Schneider "Precise phase shift spectroscopy in thallium using an in-vacuum ring cavity"  
MIT/WOODS HOLE Mech./Ocean Eng. Ph.D. program  
MIT OCEAN ENG. DEPT. Postdoctoral Fellow

## **2006**

David Butts "Differential phase shift spectroscopy of the  $6P_{1/2} \rightarrow 6P_{3/2}$  1283 nm transition in atomic thallium"  
MIT Aero./Astro. Eng. Ph.D. program  
DRAPER LAB Staff Scientist

## **2005**

Joseph A. Kerckhoff  
"Measurement of a T-odd, P-even Interaction in the  $6P_{1/2} - 6P_{3/2}$  1283 nm Transition in Atomic Thallium"  
STANFORD UNIVERSITY Physics Ph.D. program (*group of H. Mabuchi*)  
U. COLORADO/JILA NRC postdoc (*group of K. Lehnert*)

## Colin D. Bruzewicz

"Phase Shift Spectroscopy of the  $6P_{1/2} - 6P_{3/2}$  M1 Transition in a Thallium Atomic Beam"  
YALE UNIVERSITY Physics Ph.D. program (*group of D. DeMille*)  
LINCOLN LABS Staff Scientist

## **2004**

Mark A. Burkhardt  
"Measuring the two-step  $6P_{1/2} \rightarrow 7S_{1/2} \rightarrow 7P_{1/2}$  378 nm / 1301 nm transition in atomic thallium"  
STANFORD UNIVERSITY Physics Ph.D. program (*group of J. Stohr*)  
HITACHI CORP.

## **2003**

### Christopher D. Holmes

"Frequency modulation spectroscopy of the forbidden M1/E2 1283 nm transition in thallium"  
HARVARD UNIVERSITY Atmospheric Sci. Ph.D. program  
U.C. IRVINE postdoc  
FLORIDA ST. UNIV. Asst. Prof. of Earth & Planetary Sciences

## **2002**

S. Charles Doret

“ A Precise Measurement of the Stark shift in the Thallium  $6P_{1/2} - 7S_{1/2}$  378 nm Transition”

HARVARD UNIVERSITY

Physics Ph.D. (2009) (*group of J. Doyle*)

GTRI

Postdoc

WILLIAMS COLLEGE

Asst. Professor

**APS LeROY APKER AWARD WINNER - 2002**

## **2001**

Paul D. Friedberg “Measuring the Stark shift in the  $6P_{1/2} - 7S_{1/2}$  378 nm Transition in Atomic Thallium”

U.C. BERKELEY

Elec. Eng. Ph.D. program

SYNOPSIS, INC.

Design Engineer

## **2000**

Andrew J. Speck “Measuring the Stark shift in the Thallium  $6P_{1/2} - 7S_{1/2}$  378 nm Transition”

HARVARD UNIVERSITY

Physics Ph.D. (2005) (*group of G. Gabrielse*)

ROWLAND INST./HARVARD

Junior Fellow (2005 – 2011)

SCHLUMBERGER INC.

Staff Scientist

## **1999**

Robert N. Lyman " Precise Spectroscopy of the Thallium  $6P_{1/2} - 7S_{1/2}$  378 nm Transition "

U. WASHINGTON

M.S. in physics (2001)

U. VIRGINIA

Law school

## **1998**

Leo L. Tsai

" Precise measurement of the electric quadrupole amplitude in the  $6P_{1/2} - 6P_{3/2}$  transition of atomic thallium"

HARVARD/MIT

M.D./Ph.D. (2008) (*group of R. Walsworth*)

Peter C. Nicholas, " Design and construction of an atomic beam for precise spectroscopy of rhallium"

U.N.C.

M.D./Ph.D. (2008) (medical imaging research)

## **1997**

Julie R. Rapoport, " The Design, Construction, and Application of an Atomic Beam Apparatus"

NORTHWESTERN U.

Materials/Civil Eng. Ph.D. (2003)

EXPONENT, INC.

Engineering consulting firm (2004 - )

## **1996**

Kyle F. Downey

" An atom-laser interaction region and electromagnetic structure measurements in atomic thallium"

SELF-EMPLOYED

Computer programmer/consultant

Paul F. Boerner,

" Construction of an optical system for use in peicse measurements of thallium atomic structure"

STANFORD UNIVERSITY

Physics Ph.D. (2004) (*group of A. Walker*)

LOCKHEED MARTIN ADV. TECH. CENTER

Solar physicist

## **X. Postdoctoral Research Associates Supervised**

- Dr. David Richardson, Ph.D. U. Birmingham, UK 11/98 – 6/01  
[currently: Faculty member at NW Missouri St. Univ.]
- Dr. Michael Green, Ph.D. U. Adelaide, Aus. 11/02 – 12/03  
[currently: research in medical physics imaging lab, Sydney Australia]
- Dr. Ralph Uhl, Ph.D. Hohenheim Univ., Germany. 1/04 – 12/05  
[currently: employed in technical R&D company, Frankfurt, Germany]
- Dr. Mevan Gunawardena, Ph.D. Purdue Univ. 12/06 – 7/09  
[currently: tenured faculty member @ Stonehill College, N. Easton, MA]
- Dr. Gambhir Ranjit, Ph.D. Old Dominion Univ. 1/11 –9/13  
[currently: postdoctoral assoc. @ U. Nevada, Reno]

## **XI. TEACHING EXPERIENCE**

### **Williams College courses taught:**

Physics 109 (Sound, Light, and Perception – non majors introductory course);  
Physics 131-132 (Algebra-based mechanics, E&M, waves, modern physics + labs);  
Physics 141 (Calculus-based mechanics + labs);  
Physics 201 (Electricity and Magnetism + labs);  
Physics 202 (Waves and Optics + labs);  
Physics 301 (Introductory Quantum Mechanics + modern physics lab);  
Physics 302 (Thermal and Statistical Physics);  
Physics 402T (Advanced Quantum Mechanics tutorial).  
1 month 'Winter Study' courses in Holography, Electronics, Musical Sound.

### **Univ. of Washington, Research Assoc. and Res. Asst. Professor (1989 - 1994)**

While atomic physics research associate, worked with Prof. Lillian McDermott and the UW Physics Education Group during development of introductory physics "tutorials" (now published as Physics By Inquiry, JW Wiley, 1996, and Tutorials in Introductory Physics, Prentice Hall, 1997).

Tutorial section leader (calculus-based physics sequence)	1991-1993.
"Waves and Optics" (calculus-based; tutorials integrated).	1993-94