

N. DANIEL GIBSON, Ph.D.

EDUCATION

Ph.D. in Physics, University of Virginia, Charlottesville, Virginia, September 1992.

Thesis - "*Photodetachment of Negative Ions in a Static Electric Field*"

B.S. in Physics with High Distinction, University of Virginia, Charlottesville, Virginia, May 1987.

Honors Thesis - "*Two-tone Frequency Modulation Spectroscopy of Rubidium Vapor*"

SUMMARY OF QUALIFICATIONS

Teaching experience includes over twenty-five years of teaching, supervising and mentoring physics and mathematics students of a wide range of abilities in both the classroom and the laboratory.

- Love of teaching, use of demonstrations and hands-on interactions with students have led to consistent recognition for excellence in instruction.

Experimental atomic physics experience spans thirty years with concentrations in the areas of negative ions, lasers, electron-atom and ion-atom collisions, plasma physics, x-ray, visible, uv and ir spectroscopy.

GRANTS AND AWARDS

- *RUI: Structure and Dynamics of Negative Ions* – National Science Foundation Physics- Atomic and Molecular Structure 2017, N. Daniel Gibson and C. W. Walter, \$344,000.
- *Negative Ion Photodetachment Spectroscopy* – National Science Foundation Physics- Atomic and Molecular Structure 2014, N. Daniel Gibson and C. W. Walter, \$308,862.
- *Valence and Inner Shell Negative Ion Photodetachment Spectroscopy* – National Science Foundation Physics - 2011, N. Daniel Gibson and C. W. Walter, \$274,000.
- *Valence and Inner Shell Negative Ion Spectroscopy* - National Science Foundation (NSF) Physics- Atomic and Molecular Structure 2008, N. Daniel Gibson and C. W. Walter, \$283,000.
- *Oscillator Strengths for Ultraviolet Atomic and Molecular Transitions* - NASA 2005, S. R. Federman, N. D. Gibson, R. M. Schectman, S. Chen and D. G. Ellis, \$25,584.
- *Structure and Spectroscopy of Negative Ions* - National Science Foundation (NSF) Physics- Atomic and Molecular Structure 2005, C. W. Walter and N. Daniel Gibson, \$279,477.
- *Spectroscopy and Structure of Negative Ions* - National Science Foundation (NSF) Physics- Atomic and Molecular Structure 2002, C. W. Walter and N. Daniel Gibson, \$224,527.
- *Oscillator Strengths for Ultraviolet Atomic and Molecular Transitions* - NASA 2001, S. R. Federman, S. Chen, N. D. Gibson, and R. M. Schectman, \$32,900.
- *Laser Spectroscopy of Negative Ions* - National Science Foundation (NSF) AMO Physics 1998, C. W. Walter and N. Daniel Gibson, \$224,460.
- *Optical and Laser Spectroscopy Instrumentation for Research and Education* - NSF MRI 1998, C. W. Walter, K. A. Coplin, N. Daniel Gibson and M. E. Mickelson, \$200,916.
- *Oscillator Strengths for Ultraviolet Atomic and Molecular Transitions* - NASA 1998, S. R. Federman, S. Chen, N. D. Gibson, K. L. Menningen, and R. M. Schectman, \$24,038.
- *Oscillator Strengths and Branching Fractions in the UV* – National Institute of Standards and Technology Equipment grant - 1998, N. D. Gibson, \$27,770.
- *Oscillator Strengths for Ultraviolet Atomic and Molecular Transitions* - NASA 1997, S. R. Federman, S. Chen, N. D. Gibson, K. L. Menningen, and R. M. Schectman, \$14,800.
- *Branching Fractions in the UV and VUV* - High Precision atomic and ionic data for high priority atomic physics and astrophysics needs - Research Corporation 1997, N. Daniel Gibson, \$39,995.

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ACADEMIC EXPERIENCE

Professor, Denison University, Granville, Ohio, September 2008 – on.

- Faculty Appeals Committee, 2015 – 2018, Chair 17-18.
- Selections and Elections Committee, 2017 - 2019.
- Chair, Science Chairs Committee, 2016 – 2017.
- J. Reid Anderson Distinguished Professor in Physics, 2015 – present.
- Director, Oak Ridge Science Semester off-campus program for 27 colleges July 2004 – on.
- Chair, Accommodations Review Board, 2014 – 2015.
- Director of Career Development Search, 2014.
- Student Commencement speaker selection committee 2013 – 2016.
- Chair, University Council, 2010 – 2012.
- Chair, Department of Physics and Astronomy, 2008 – 2012, 2015 - 2018.
- President, Denison chapter of Sigma Xi, Interdisciplinary Scientific Research Society, 1999 – on.
- Faculty Advisor, Society of Physics Students, 2007 – 2014, 2016 - 2017.
- Mentor, SPS Outreach group, Physics demonstrations shows to 200+ students per year.
- International and Off-campus Education Committee of the GLCA, 2003 – on.
- Personnel Committee, 2008 – 2010, Vice-Chair and University Council Representative 2009 - 10.
- Faculty Representative, Board of Trustees Student Enrollment Committee, 2012 – 2014.
- Faculty Representative, Board of Trustees Academic Affairs Committee, 2009 – 2012.

John and Christine Warner Professor, Denison University, Granville, Ohio, July 2004 - August 2007.

- Faculty Representative, Board of Trustees Student Affairs Committee, 2004 – 2006.
- Dean of Students Search Committee, 2006 - 07.
- Selections and Elections Committee, 2005 - 08.
- Finance Committee, 2006-2009, Chair 2007 - 08.
- Physical Chemist search, 2006 - 07.

Associate Professor, Denison University, Granville, Ohio, September 2002 - 2008.

- Develop innovative liberal arts Quantum Mechanics course.
- Chair, Finance Committee of the University Council, 2002 - 04.
- Teach advanced experimental physics course and develop new, modern experiments.
- University Council, 2001 - 02.

Assistant Professor, Denison University, Granville, Ohio, August 1996-August 2002.

- Taught calculus based introductory physics, modern physics and quantum mechanics using interactive teaching methods and peer instruction techniques.
- Created new Denison course – “The Way Things Work,” primarily for non-science majors.
- Instituted use of Interactive Physics III and other educational software.

Visiting Professor, University of Wisconsin, Madison, Wisconsin, June 1996 - August 1996.

Postdoctoral Associate, University of Wisconsin, Madison, Wisconsin, July 1994 - August 1996.

Postdoctoral Associate, North Carolina State University, Raleigh, NC, October 1992 - July 1994.

Graduate Research Assistant, University of Virginia, Charlottesville, VA, May 1988 - October 1992.

COURSES TAUGHT

Physics 121 – General Physics I
Physics 122 – General Physics II
Physics 126 – Principles of Physics II
Physics 127 – Principles of Physics III
Physics 200 – Modern Physics
Physics 220 – Geometrical and Physical Optics
Physics 300 – Physics Math Seminar
Physics 312 – Experimental Physics w/ Data Reduction and Error Analysis
Physics 320 – Thermodynamics and Statistical Mechanics
Physics 330 – Quantum Mechanics
Physics 400 – Physics Seminar
Physics 470 – Teaching Methods in Physics
Astronomy 311 – Observational Astronomy
Honors 136 – The Way Things Work

AWARDS, HONORS, AND PROFESSIONAL MEMBERSHIPS

- President of Denison-Kenyon Chapter of Sigma Xi, Scientific Research Society, 1999-present.
- Society of Physics Students; Denison Chapter Advisor, 1999-2002.
- John and Christine Warner Professorship, 2004-2007.
- Governor's Fellowship, University of Virginia, 1989-1991.
- President's Fellowship, University of Virginia, 1987-1989.
- Phi Beta Kappa Honor Society, 1987 - present.
- Graduated with High Distinction, University of Virginia, 1987.
- Federal Junior Fellowship, Naval Research Laboratory, 1983-1987.
- Dean's Alumni Scholarship, University of Virginia, 1986-1987.
- ΣΠΣ, Physics Honor Society, 1985-present; Denison Chapter Advisor 1999-2002.
- Echol's Scholar, University of Virginia, 1983-1987.
- American Association of Physics Teachers
- American Physical Society:
 - Division of Atomic, Molecular and Optical Physics
 - Division of Astrophysics
 - Forum on Education
 - Physics in Society Forum

REFERENCES

AVAILABLE UPON REQUEST

REFEREED JOURNAL ARTICLES

43. "Inner-Shell Photodetachment from Ni^- : A Giant Feshbach Resonance," I. Dumitriu, R. C. Bilodeau, T. W. Gorczyca, C. W. Walter, N. D. Gibson, D. Rolles, Z. D. Pešić, A. Aguilar, and N. Berrah, **Physical Review A** **96**, 023405 (2017).
42. "Candidate for Laser Cooling of a Negative Ion: Observations of Bound-Bound Transitions in La^- ," C.W. Walter, N.D. Gibson, D.J. Matyas, C. Crocker, K.A. Dungan, B.R. Matola, and J. Rohlen, **Physical Review Letters**, **113**, 063001 (2014).
41. "Single-Photon Multiple Detachment in Fullerene Negative Ions: Absolute Ionization Cross Sections and the Role of the Extra Electron," R.C. Bilodeau, N.D. Gibson, C.W. Walter, D.A. Esteves-Macaluso, S. Schippers, A. Muller, R. Phaneuf, A. Aguilar, M. Hoener, J. M. Rost and N. Berrah, **Physical Review Letters**, **111**, 043003 (2013).
40. "Inner-shell Photodetachment: Shape and Feshbach Resonances of Anions" R.C. Bilodeau, N. D. Gibson, C. W. Walter, A. Aguilar and N. Berrah, **Journal of Electron Spectroscopy and Related Phenomena**, **185(8-9)**, 219-225 (2012).
39. "Experimental and theoretical study of bound and quasibound states of Ce^- ," C.W. Walter, N.D. Gibson, Y.-G. Li, D.J. Matyas, R.M. Alton, S.E. Lou, R.L. Field III, D. Hanstorp, Lin Pan and D. Beck, **Physical Review A**, **84**, 032514 (2011).
38. "Inner-Shell Photodetachment from Ru^- " I. Dumitriu, R. C. Bilodeau, T. W. Gorczyca, C. W. Walter, N. D. Gibson, Z. D. Pešić, D. Rolles, and N. Berrah, **Physical Review A**, **82**, 043434 (2010).
37. "Electron affinity of indium and the fine structure of In- measured using infrared photodetachment threshold spectroscopy" C.W. Walter, N.D. Gibson, D.J. Carman, Y.-G. Li, and D.J. Matyas, **Physical Review A**, **82**, 032507 (2010).
36. "Inner-shell Photodetachment from Fe^- ," I. Dumitriu, R.C. Bilodeau, T. W. Gorczyca, C.W. Walter, N.D. Gibson, A. Aguilar, Z. Pesic, D. Rolles, and N. Berrah, **Physical Review A**, **81**, 053404, (2010).
35. "Depletion of the excited state population in negative ions using laser photodetachment in a gas-filled RF quadrupole ion guide" A. O. Lindahl, D. Hanstorp, O. Forstner, N.D. Gibson, T. Gottwald, K. Wendt, C. C. Havener and Y. Liu, **Journal of Physics B**, **43**, 115008 (2010).
34. "Promoting a core electron to fill a d shell: A threshold law and shape and Feshbach resonances," R.C. Bilodeau, I. Dumitriu, N.D. Gibson, C.W. Walter, and N. Berrah, **Physical Review A**, **80**, 031403 (2009).
33. "Electron affinity of arsenic and the fine structure of As- measured using infrared photodetachment threshold spectroscopy" C.W. Walter, N.D. Gibson, R.L. Field III, A.P. Snedden, J.P. Shapiro, C.M. Janczak, and D. Hanstorp, **Physical Review A**, **80**, 014501 (2009).
32. "Selective detection of ^{13}C by laser photodetachment mass spectrometry" P. Andersson, J. Sandström, D. Hanstorp, N.D. Gibson, K. Wendt, D.J. Pegg and R. D. Thomas, **Nuclear Instruments and Methods in Physics Research B**, **266**, 3667 (2008).

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31. “*Experimental Investigation of electron impact on Si_2^-* ,” A. O. Lindahl, P. Andersson, G. F. Collins, D. Hanstorp, D. J. Pegg, M. Danielsson, W. D. Geppert, M. Hamberg, R. D. Thomas, V. Zhaunerchyk, C. Diehl, N. D. Gibson and A. Källberg, **Physical Review A**, **77**, 022710 (2008).
30. “*Infrared Photodetachment of Ce^- : Threshold Spectroscopy and Resonance Structure*,” C.W. Walter, N.D. Gibson, C.M. Janczak, K.A. Starr, A.P. Snedden, R.L. Field III and P. Andersson, **Physical Review A**, **76**, 052702 (2007).
29. “*Shape Resonances in the absolute K-shell Photodetachment of B⁻*,” N. Berrah, R.C. Bilodeau, I. Dumitriu, J. D. Bozek, N. D. Gibson, C. W. Walter, G. Ackerman, O. Zatsarinny and T. W. Gorczyca, **Physical Review A**, **76**, 032713 (2007).
28. “*Double Auger decay, Feshbach and shape resonances in negative ions*,” N. Berrah, R.C. Bilodeau, J. D. Bozek, C. W. Walter, N. D. Gibson, and G. D. Ackerman, **Radiation Physics and Chemistry**, **75**, 1447-1450, 2006.
27. “*Photo Double Detachment of CN^- : Electronic Decay from an Inner-valence Hole in Molecular Anions*,” R.C. Bilodeau, C.W. Walter, I. Dumitriu, N.D. Gibson, G.D. Ackerman, J.D. Bozek, B.S. Rude, R. Santra, L.S. Cederbaum, and N. Berrah, **Chemical Physics Letters**, **426**, 237-241, 2006.
26. “*Shape Resonance in K-shell Photodetachment from C⁻*,” C. W. Walter, N. D. Gibson, R.C. Bilodeau, N. Berrah, J. D. Bozek, G. Ackerman, and A. Aguilar, **Physical Review A**, **73**, 062702, 2006.
25. “*Radiative Lifetimes of metastable states of negative ions*,” P. Andersson, K. Fritioff, J. Sandström, G. F. Collins, D. Hanstorp, A. Ellman, P. Schef, P. Lundin, S. Mannervik, P. Royen, C. Froese Fischer, F. Österdahl, D. Rostohar, D. J. Pegg, N. D. Gibson, H. Danared, and A. Källberg, **Physical Review A**, **73**, 032705, 2006.
24. “*High Charge State Formation in Inner-shell Photodetachment of S⁻*,” R.C. Bilodeau, N. D. Gibson, J. D. Bozek, C. W. Walter, G. Ackerman, P. Andersson, J. G. Heredia, M. Perri and N. Berrah, **Physical Review A**, **72**, 050701(R), 2005.
23. “*Inner-shell Photodetachment Thresholds: Unexpected Long-range Validity of the Wigner Law*,” R.C. Bilodeau, J. D. Bozek, N. D. Gibson, C. W. Walter, G. Ackerman, I. Dumitriu and N. Berrah, **Physical Review Letters**, **95**, 083001, 2005.
22. “*Oscillator Strengths for Ultraviolet Transitions in Cl II and III*,” R. M. Schectman, S. R. Federman, M. Brown, S. Cheng, M. C. Fritts, R. E. Irving and N. D. Gibson, **Astrophysical Journal**, **621**, 1159, 2005.
21. “*The observation of an excited C_2^- ion*,” K. Fritioff, J. Sandström, P. Andersson, D. Hanstorp, F. Hellberg, R. Thomas, M. Larsson, F. Österdahl, G. F. Collins, A. Le Padellec, D. J. Pegg, N. D. Gibson, H. Danared, and A. Källberg, **Journal of Physics B**, **37**, 2241-2246, 2004.
20. “*The radiative lifetime of a bound excited state of Te^-* ,” A. Ellmann, P. Schef, P. Lundin, K. Fritioff, P. Andersson, D. Hanstorp, C. Froese Fischer, F. Österdahl, D. J. Pegg, N. D. Gibson, H. Danared, and A. Källberg, **Physical Review Letters**, **92**, 253002-1, 2004.
19. “*Single and double detachment from H⁻*,” K. Fritioff, J. Sandström, P. Andersson, D. Hanstorp, F. Hellberg, R. Thomas, W. Geppert, M. Larsson, F. Österdahl, G. F. Collins, D. J. Pegg, H. Danared, A. Källberg, and N. D. Gibson, **Physical Review A**, **69**, 042707, 2004.
18. “*K-Shell Photodetachment from C⁻: Experimental Results and Theory*,” N. D. Gibson, C. W. Walter, O. Zatsarinny, T. W. Gorczyca, G. Ackerman, J. D. Bozek, M. Martins, B. M. McLaughlin and N. Berrah, **Physical Review A**, **67**, 030703(R), 2003.

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17. "S-wave Photodetachment from S^- ions in a static electric field," N. D. Gibson, M. D. Gasda, K. A. Moore, D. A. Zawistowski, and C. W. Walter, *Rapid Comm.*, **Physical Review A**, **64**, 061403(R), 2001.
16. "K-Shell Photodetachment of Li^- Negative Ions: Experiment and Theory," N. Berrah, J. D. Bozek, A. A. Wills, G. Turri, H. L. Zhou, S. T. Manson, G. Ackerman, B. Rude, N. D. Gibson, C. W. Walter, L. VoKy, A. Hibbert and S. Fergusson, **Physical Review Letters**, **87**, 253002, 2001.
15. "Branching ratio measurement of N^+ inter-system lines, $2s2p^3\ ^5S_2-2s^22p^2\ ^3P_{2,1}$ " J.J. Curry, N. D. Gibson, and J. E. Lawler, **Astronomy and Astrophysics**, **321**, pp. 1021-1023, 1997.
14. "Investigation of the 147 nm radiative efficiency of Xe surface wave discharges," N. D. Gibson, U. Kortshagen and J.E. Lawler, **Journal of Applied Physics**, **81**, No. 3, pp. 1087-1092, 1997.
13. "Radiative lifetimes in Cr I by laser-induced fluorescence," J.C. Cooper, N. D. Gibson and J.E. Lawler, **Journal of Quantitative Spectroscopy and Radiative Transfer**, **58**, No. 1, pp. 85-92, 1997.
12. "Atomic Data for the Re II Resonance Multiplet and its Application to Astrophysics," G.M. Wahlgren, S.G. Johansson, U. Litzén, N. D. Gibson, J.C. Cooper, J.E. Lawler, D.S. Leckrone and R. Engleman, Jr, **Astrophysical Journal**, **475**, pp. 380-386, 1997.
11. "A Radiometric Investigation of low pressure rf sulfur discharges," N. D. Gibson, U. Kortshagen and J.E. Lawler, **Journal of Applied Physics**, **79**, No. 10, pp. 7523-7528, 1996.
10. "On the E-H-mode transition in RF inductive discharges," U. Kortshagen, N. D. Gibson, and J.E. Lawler, **Journal of Physics D**, **29**, pp. 1224-1236, 1996.
9. "A Radiometric and Electrical Characterization of low pressure dc positive column sulfur discharges," N. D. Gibson and J.E. Lawler, **Journal of Applied Physics**, **79**, No. 1, p. 86-92, 1996.
8. "Absolute measurements of optical oscillator strengths of noble gas resonance lines," N. D. Gibson and J.S. Risley, **Physical Review A**, **52**, No. 6, pp. 4451-6, 1995.
7. "On the formation of $H(n=3)$ dipole moments in collisions of protons on rare gas atoms," N. Seifert, N. D. Gibson, S.P. Renwick, and J.S. Risley, **Zeitschrift für Physik**, **35**, No. 4, p. 231.
6. "Experimental determination of the real elements of the density matrix of $H(n=3)$ atoms produced in 20-100 keV collisions of H^+ on Kr atoms," N. Seifert, N. D. Gibson, and J.S. Risley, **Physical Review A**, **52**, p. 3816, 1995.
5. "P-wave Photodetachment in a Static Electric Field," N. D. Gibson, B. J. Davies, and D. J. Larson, **Physical Review A**, **48**, No. 1, pp. 310-320, 1993.
4. "The Electron Affinity of Platinum," N. D. Gibson, B. J. Davies, and D. J. Larson, **Journal of Chemical Physics**, **98**, No. 6, pp. 5104-5105, 1993.
3. "S-wave Photodetachment in a Static Electric Field," N. D. Gibson, B. J. Davies, and D. J. Larson, **Physical Review A**, **47**, No. 3, pp. 1946-1952, 1993.
2. "Electric Field Effects in Photodetachment from Cl^- and S^- ions in a Microwave Field," M.C. Baruch, W.G. Sturru, N. D. Gibson, and D. J. Larson, **Physical Review A**, **45**, No. 5, pp. 2825-2832, 1992.
1. "Stimulated Brillouin scattering of multiline hydrogen fluoride laser radiation," M. T. Duignan, B.J. Feldman, N.D.Gibson, and W. T. Whitney, **SPIE**, **874**, pp. 25-38, 1988

PROFESSIONAL PRESENTATIONS

101. N.D. Gibson, C.W. Walter, G.R. Drumm*, Y. Li*, and S.M. Miller*, “The Electron Affinity of Thallium by Laser Photodetachment Threshold Spectroscopy”, *Poster*, ICAP, Barcelona, Spain (2018).
100. C.W. Walter, N.D. Gibson, N.B. Lyman*, J. Wang*, “Photodetachment Spectroscopy of Bound and Quasibound States of the Negative Ion of Lanthanum”, *Poster*, ICPEAC XXX – The International Conference on Photonic, Electronic, and Atomic Collisions, Cairns, Australia (2017).
99. N.D. Gibson, C.W. Walter, C.T. Crocker*, W. Nakayama*, J Wang*, and J.N. Yukich, “Infrared Photodetachment Spectroscopy Measurement of the Electron Affinity of Gallium and the Fine Structure of Ga⁻”, *Poster*, ICPEAC XXX, Cairns, Australia (2017).
98. C.W. Walter, N.D. Gibson, N.B. Lyman*, J. Wang*, “Bound and Quasibound States of the Negative Ion of Lanthanum Studied by Photodetachment Spectroscopy”, *Poster*, DAMOP – American Physical Society Division of Atomic, Molecular, and Optical Physics Meeting, Sacramento, CA (2017).
97. N.D. Gibson, C.W. Walter, C.T. Crocker*, W. Nakayama*, J Wang*, and J.N. Yukich, “Experimental Measurements of the Electron Affinity of Gallium and the Fine Structure of Ga⁻”, *Poster*, DAMOP, Sacramento, CA (2017).
96. C.W. Walter, N.D. Gibson, C. Crocker*, K.A. Dungan*, and B.R. Matola*, “Photodetachment Spectroscopy of La⁻: Resonances and Thresholds”, *Poster*, ICPEAC XXIX – The International Conference on Photonic, Electronic, and Atomic Collisions, Toledo, Spain (2015).
95. R. C. Bilodeau, N. D. Gibson, C. W. Walter, I. Dumitriu, A. Aguilar, D. Macaluso, and N. Berrah, “Inner-Shell Photodetachment from the Carbon Chain Negative Ions”, *Poster*, ICPEAC XXIX, Toledo, Spain (2015).
94. C.W. Walter, N.D. Gibson, C. Crocker*, K.A. Dungan*, and B.R. Matola*, “Photodetachment Spectroscopy of La⁻: Resonances and Thresholds”, *Poster*, DAMOP - American Physical Society Division of Atomic, Molecular, and Optical Physics Meeting, Columbus, OH (2015).
93. R. C. Bilodeau, N. D. Gibson, C. W. Walter, I. Dumitriu, A. Aguilar, D. Macaluso, and N. Berrah, “Inner-Shell Photodetachment of the Carbon Anion Chain”, *Poster*, DAMOP, Columbus, OH (2015).
92. I. Dumitriu, R. C. Bilodeau, T. W. Gorczyca, C. W. Walter, N. D. Gibson, D. Rolles, Z. D. Pešić, A. Aguilar, and N. Berrah, “Inner-Shell Photodetachment of Nickel Negative Ions”, *Poster*, DAMOP, Columbus, OH (2015).
91. “A Promising Candidate for Laser Cooling of Negative Ions: Observations of Bound-Bound Transitions in La⁻”, C.W. Walter, N. D. Gibson, D. J. Matyas*, C. Crocker*, K.A. Dungan*, B.R. Matola*, and J. Rohlen, DAMOP - American Physical Society Division of Atomic, Molecular, and Optical Physics Meeting, Madison, Wisconsin (2014).
90. “Experimental Measurements of the Electron Affinity of Gallium and the Fine Structure of Ga⁻”, N.D. Gibson, C. W. Walter, C. Crocker*, J.N. Yukich, DAMOP, Madison, Wisconsin (2014).
89. “Toward Laser Cooling of Negative Ions: Observations of Multiple Bound-Bound Transitions in the Negative Ion of Lanthanum La⁻”, C.W. Walter, N.D. Gibson, C. Crocker*, K. Dungan*, B. Matola*, M. Scharpf*, J. Rohlen, ICPEAC XXVIII – The International Conference on Photonic, Electronic, and Atomic Collisions, Lanzhou, China (2013).
88. “Measurement of the Electron Affinity of Gallium and the Fine Structure of Ga⁻ using Infrared Photodetachment Threshold Spectroscopy”, N.D. Gibson, C.W. Walter, C. Crocker*, J.N. Yukich, ICPEAC XXVIII, Lanzhou, China (2013).
87. “Measurement of the Electron Affinity of Gallium and the Fine Structure of Ga⁻”, C.W. Walter, N.D. Gibson, C. Crocker*, R. Ficken*, and J. Yukich, 44th Meeting of the Division of Atomic, Molecular and Optical Physics, Quebec City, Canada 2013.
86. “Observation of Multiple Bound-Bound Transitions in the Negative Ion of Lanthanum La⁻”, C.W. Walter, N.D. Gibson, C. Crocker*, K. Dungan*, B. Matola*, M. Scharpf*, and J. Rohlen, 44th Meeting of the Division of Atomic, Molecular and Optical Physics, Quebec City, Canada 2013.

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85. "Observations of bound-bound transitions in the Negative Ion of La⁻", C.W. Walter, N.D. Gibson, D.J. Matyas*, A.N. Lebovitz*, K.J. Liebl*, J. Rohlén, EGAS – European Group on Atomic Systems Conference, Gothenburg Sweden 2012.
84. "Inner-Shell Photodetachment from O⁻", N.D. Gibson, C.W. Walter, D.J. Matyas*, A.N. Lebovitz*, Y.-G. Li*, R.M. Alton*, S.E. Lou*, R.C. Bilodeau, N. Berrah, A. Aguilar, D. Hanstorp, EGAS – European Group on Atomic Systems Conference, Gothenburg Sweden 2012.
83. "Enhanced Single-Photon Multi-detachment in anions of C₆₀⁻ and Observation of a Scaling Law", "R.C. Bilodeau, M. Hoener, N. Berrah, S. Schippers, A. Muller, D. Esteves, R. Phaneuf, N.D. Gibson, C.W. Walter, A. Aguilar and J. M. Rost, 43rd Meeting of the Division of Atomic, Molecular and Optical Physics, Orange County, CA 2012.
82. "Observations of bound-bound transitions in the Negative Ion of La⁻", C.W. Walter, N.D. Gibson, D.J. Matyas*, A.N. Lebovitz*, K.J. Liebl*, 43rd Meeting of the Division of Atomic, Molecular and Optical Physics, Orange County, CA 2012.
81. "K-Shell Photodetachment from O⁻", N.D. Gibson, C.W. Walter, D.J. Matyas*, A.N. Lebovitz*, Y.-G. Li*, R.M. Alton*, S.E. Lou*, R.C. Bilodeau, N. Berrah, A. Aguilar, D. Hanstorp, 43rd Meeting of the Division of Atomic, Molecular and Optical Physics, Orange County, CA 2012.
80. "Photo-multidetachment and fragmentation of C₆₀⁻", R.C. Bilodeau, N. Berrah, M. Hoener, S. Schippers, A. Muller, D. Esteves, R. Phaneuf, N.D. Gibson, C.W. Walter, A. Aguilar and J. M. Rost, XXVII International Conference on Photonic Electronic and Atomic Collisions. Belfast, Northern Ireland, 27 July – 2 August 2011.
79. "Observations of bound and resonance states of Ce⁻", Y.-G. Li*, R.M. Alton*, S.E. Lou*, D.J. Matyas*, R.L. Field III*, N.D. Gibson, C.W. Walter, D. Hanstorp, XXVII International Conference on Photonic Electronic and Atomic Collisions. Belfast, Northern Ireland, 27 July – 2 August 2011.
78. "K-Shell Photodetachment from O⁻", N.D. Gibson, R.C. Bilodeau, C.W. Walter, D. Hanstorp, A. Aguilar, N. Berrah, D.J. Matyas, Y.-G. Li, R.M. Alton and S.E. Lou, XXVII International Conference on Photonic Electronic and Atomic Collisions. Belfast, Northern Ireland, 27 July – 2 August 2011.
77. "Photo-multidetachment and fragmentation of C₆₀⁻", R.C. Bilodeau, N. Berrah, M. Hoener, S. Schippers, A. Muller, D. Esteves, R. Phaneuf, N.D. Gibson, C.W. Walter, A. Aguilar and J. M. Rost, 42nd Meeting of the Division of Atomic, Molecular and Optical Physics, Atlanta, GA 2011.
76. "Observations of bound and resonance states of Ce⁻", Y.-G. Li*, R.M. Alton*, S.E. Lou*, D.J. Matyas*, R.L. Field III*, N.D. Gibson, C.W. Walter, D. Hanstorp, 42nd Meeting of the Division of Atomic, Molecular and Optical Physics, Atlanta, GA 2011.
75. "K-Shell Photodetachment from O⁻", N.D. Gibson, R.C. Bilodeau, C.W. Walter, D. Hanstorp, A. Aguilar, N. Berrah, D.J. Matyas, Y.-G. Li, R.M. Alton and S.E. Lou, 42nd Meeting of the Division of Atomic, Molecular and Optical Physics, Atlanta, GA 2011.
74. "Tunable Infrared Laser Photodetachment Spectroscopy of Ce⁻", Y.-G. Li*, R.M. Alton*, S.E. Lou*, D.J. Matyas*, R.L. Field III*, N.D. Gibson, C.W. Walter, D. Hanstorp, OSAPS - Ohio-Region Section of the American Physical Society Fall Meeting, Marietta, Ohio, October 2010.
73. "Tunable Infrared Laser Photodetachment Spectroscopy of La⁻", R.M. Alton*, Y.-G. Li*, D.J. Matyas*, S.E. Lou*, C.W. Walter, N.D. Gibson, OSAPS - Ohio-Region Section of the American Physical Society Fall Meeting, Marietta, Ohio, October 2010.
72. "K-Shell Photodetachment from O⁻", N.D. Gibson, R.C. Bilodeau, C.W. Walter, D. Hanstorp, A. Aguilar, N. Berrah, D.J. Matyas, Y.-G. Li, R.M. Alton and S.E. Lou, International Conference on Atomic Physics, Cairns Australia 25-31 July 2010.

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71. "Tunable Infrared Photodetachment Spectroscopy of Ce⁻", C.W. Walter, N.D. Gibson, R.L. Field III and D. Hanstorp, 41st Meeting of the Division of Atomic, Molecular and Optical Physics, Houston, TX 2010.
70. "Inner Shell Photodetachment from Se⁻", N.D. Gibson, C.W. Walter, R.L. Field III, D. J. Carman, J.Z. Shapiro, R.C. Bilodeau, I. Dumitriu, N. Berrah, A. Aguilar and D. Hanstorp, 41st Meeting of the Division of Atomic, Molecular and Optical Physics, Houston, TX 2010.
69. "The Electron Affinity of Indium and the Fine Structure of In⁻ Measured using Infrared Photodetachment Threshold Spectroscopy", C.W. Walter, Y. Li*, D.J. Matyas*, D.J. Carman*, N.D. Gibson, OSAPS - Ohio-Region Section of the American Physical Society Spring Meeting, Flint, Michigan (4/2010).
68. "Inner Shell Photodetachment from Se⁻ Negative Ions at the ALS", N.D. Gibson, C.W. Walter, R.L. Field III, D. J. Carman, J.Z. Shapiro, R.C. Bilodeau, I. Dumitriu, N. Berrah and A. Aguilar, XXVI International Conference on Photonic Electronic and Atomic Collisions. Kalamazoo, MI, 22-28 July 2009.
67. "Measurement of the electron affinity of As and the fine structure of As⁻ using infrared threshold photodetachment spectroscopy", C.W. Walter, N.D. Gibson, R.L. Field III, A.P. Snedden, J.Z. Shapiro, C.M. Janczak, and D. Hanstorp, XXVI International Conference on Photonic Electronic and Atomic Collisions. Kalamazoo, MI, 22-28 July 2009.
66. "Promoting a core electron to fill a d-shell in Negative Ions: Shape versus Feshbach Resonances and a Novel Threshold Law", R.C. Bilodeau, I. Dumitriu, N.D. Gibson, C.W. Walter and N. Berrah, XXVI International Conference on Photonic Electronic and Atomic Collisions. Kalamazoo, MI, 22-28 July 2009.
65. "Shape Resonances in Inner-Shell Photodetachment of Transition Metal Negative Ions", I. Dumitriu, R.C. Bilodeau, T. Gorczyca, C.W. Walter, N.D. Gibson, A. Aguilar, Z.D. Pesic, D. Rolles and N. Berrah, XXVI International Conference on Photonic Electronic and Atomic Collisions. Kalamazoo, MI, 22-28 July 2009.
64. "Inner Shell Photodetachment from Se⁻", N.D. Gibson, C.W. Walter, R.L. Field III, D. J. Carman, J.Z. Shapiro, R.C. Bilodeau, I. Dumitriu, N. Berrah and A. Aguilar, 40th Meeting of the Division of Atomic, Molecular and Optical Physics, Charlottesville, VA 2009.
63. "Promoting a core electron to fill a d-shell: A Novel Threshold Law and Shape and Feshbach resonances", R.C. Bilodeau, I. Dumitriu, N.D. Gibson, C.W. Walter and N. Berrah, 40th Meeting of the Division of Atomic, Molecular and Optical Physics, Charlottesville, VA 2009.
62. "Inner Shell Photodetachment Thresholds of transition Metal Negative Ions", I. Dumitriu, R.C. Bilodeau, T. Gorczyca, C.W. Walter, N.D. Gibson, A. Aguilar, Z.D. Pesic, D. Rolles and N. Berrah, 40th Meeting of the Division of Atomic, Molecular and Optical Physics, Charlottesville, VA 2009.
61. "Measurement of the electron affinity of As and the fine structure of As⁻", C.W. Walter, N.D. Gibson, R.L. Field III, J.Z. Shapiro, A.P. Snedden, C.M. Janczak, and D. Hanstorp, 40th Meeting of the Division of Atomic, Molecular and Optical Physics, Charlottesville, VA 2009.
60. "Inner-Shell Ion-Photon Studies with the New Movable Ion-Photon Beamline", R.C. Bilodeau, J.D. Bozek, I. Dumitriu, A. Aguilar, C.W. Walter, N.D. Gibson, D. Rolles, M. Hoener and N. Berrah, Advanced Light Source User's Meeting, Berkeley, CA 2008.
59. "K-Shell Photodetachment of small size-selected Negative Ions Clusters: Experiment and Theory", R.C. Bilodeau, N. Berrah, I. Dumitriu, O. Zatsarinni, T. Gorczyca, J.D. Bozek, N.D. Gibson, C.W. Walter, D. Toffoli, and R.R. Lucchese, 39th Meeting of the Division of Atomic, Molecular and Optical Physics, State College, PA 2008.
58. Additional presentations

STUDENT EVALUATION EXCERPTS

- “I think that Dr. Gibson really cares about his students.”
- “I’m not scared of physics anymore!”
- “You are a great teacher and I’ve learned from you both in and out of class.”
- “I think he’ll be an excellent addition to any physics department anywhere. He’s really help[ed] me to enjoy physics.”
- “Dr. Gibson is enthusiastic about teaching and has a genuine desire to help us learn.”
- “Dr. Gibson is clear in his teaching, clear in his expectations, and always willing to help out side of class. He’s always very well-prepared & ready to answer questions. Teaches in a clear & supportive fashion.”
- “What I liked best about your teaching is that it is informative, easy to understand, askable, and extremely patient.”
- “He seems very knowledgeable about Physics and interested in teaching the class.”
- “Dr. Gibson as an instructor was top-notch; he seemed to be communicating more with us on a peer-like basis.”
- “I feel that Dr. Gibson takes an interest in each of his students and tries to make physics interesting for everyone.”
- “Dr. Gibson takes great care to make sure everyone understands the material; offering optional class periods for further explanation, numerous examples of principles and access to additional study aids.”
- “I liked the closeness and discussion oriented classes.”
- “Change(d) my way of thinking not only in physics but also the view about the world.”

DENISON STUDENT RESEARCH ADVISED

44. **Sarah Spielman** - Summer: 2018 NSF; Culmination: Data Collection at Denison and Poster presentations.
43. **Kush Patel** - Summer: 2018 Anderson; Culmination: Data Collection at Denison and Poster presentations.
42. **Romo Li** - Summer: 2017 Anderson; Culmination: Data Collection at Denison and Poster presentations.
41. **Scott Miller** - Summer: 2017 Anderson; Culmination: Data Collection at Denison and Poster presentations.
40. **Ryan Drumm** - Summer: 2017 NSF; Culmination: Data Collection at Denison and Poster presentations.
39. **Wae Nakayama** - Summer: 2016 Anderson; Culmination: Data Collection at Denison and Poster presentations.
38. **Archie Jugdersuren** - Summer: 2016 Anderson; Culmination: Data Collection at Denison and Poster presentations.
37. **Nic Lyman** - Summer: 2015 Anderson; Culmination: Trip to advanced light source to collect data.
36. **Sam Strosnider** - Summer: 2015 Anderson; Culmination: Trip to advanced light source to collect data.
35. **Junzhi Wang** - Summer: 2015 Anderson; Culmination: Trip to advanced light source to collect data.
34. **Jack Ogilvie** - Summer: 2013 Anderson; Culmination: Trip to advanced light source to collect data.
33. **Seed Zeng** - Summer: 2013 Anderson; Culmination: Trip to advanced light source to collect data.
32. **Kristina Dungan** - Summer: 2013 NSF Scholar, 2012 Anderson; Culmination: Two trips to advanced light source to collect data.
31. **Brad Matola** - Summer: 2013 Anderson, 2012 Anderson; Culmination: Two trips to advanced light source to collect data.
30. **Robert Ficken** - Spring 2013; Culmination: Thesis "Measuring the electron affinity of Gallium."
29. **Matthew Scharpf** - Summer: 2012 Anderson; Culmination: Trip to advanced light source to collect data.
28. **Clayton Crocker** - Summer: 2012 Anderson; Culmination: Trip to advanced light source to collect data. Graduate School: University of Wisconsin, Madison.
27. **Adam Lebovitz** - Summer: 2011 NSF; Semester: 2011 Fall; Culmination: Trip to advanced light source to collect data, Graduate School: Carnegie Mellon.
26. **Rachael Alton** - Summer: 2010 Anderson; Culmination: Trip to advanced light source to collect data. Physical Review A: "*Experimental and theoretical study of bound and quasibound states of Ce⁻*".
25. **Edwin Lou** - Summer : 2010 Anderson; Culmination: Trip to advanced light source to collect data. Physical Review A: "*Experimental and theoretical study of bound and quasibound states of Ce⁻*". Ohio Section American Physical Society Presentation, Fall 2010.

DENISON STUDENT RESEARCH CONTINUED

24. **Dan Matyas** - Summer: 2011 Anderson, 2010 Anderson, 2009 Anderson; Semesters: 2012 Spring, 2011 Fall, 2010 Spring; Culmination: Three trips to advanced light source.
Physical Review A: "*Experimental and theoretical study of bound and quasibound states of Ce⁻*"
Physical Review A: "*Electron affinity of indium and the fine structure of In- measured using infrared photodetachment threshold spectroscopy*", Ohio Section American Physical Society Presentation, Fall 2010.
Graduate School: University of Virginia.
23. **Yige Li** - Summer: 2010 Anderson, 2009 Anderson; Culmination: Trip to advanced light source to collect data.
Physical Review A: "*Experimental and theoretical study of bound and quasibound states of Ce⁻*"
Physical Review A: "*Electron affinity of indium and the fine structure of In- measured using infrared photodetachment threshold spectroscopy*".
22. **Derrick Carman** - Summer: 2009 Anderson, 2008 Anderson; Semester: Fall 2009; Culmination: Trip to advanced light source to collect data.
Physical Review A: "*Electron affinity of indium and the fine structure of In- measured using infrared photodetachment threshold spectroscopy*".
21. **Jacob Shapiro** – Summer: 2007 NSF; Culmination: Ohio Five Research Symposium 2007 Poster: *Infrared Photodetachment of Ce- and As-*.
20. **Ali Sneddon** - Summer: 2006 Anderson, 2007 Bowen Scholar; Culmination: Trip to advanced light source to collect data.
Physical Review A: "*Infrared Photodetachment of Ce⁻: Threshold Spectroscopy and Resonance Structure*"
Ohio Five Research Symposium 2007 Poster: *Infrared Photodetachment of Ce- and As-*.
19. **Richard Field** – Summer: 2006 NSF, 2007 Anderson; Semester: 2008-09 Fall and Spring Senior Thesis; Culmination: Trips to advanced light source to collect data.
Physical Review A: "*Experimental and theoretical study of bound and quasibound states of Ce⁻*"
Physical Review A: "*Infrared Photodetachment of Ce⁻: Threshold Spectroscopy and Resonance Structure*"
Ohio Five Research Symposium 2007 Poster: *Infrared Photodetachment of Ce- and As-*.
18. **Corey Janczak** – Summer: 2004 NSF, 2005 Anderson, 2006 Anderson, 2007 NSF; Semester: Summer 04, Fall 04, Summer 05, Summer 06, Fall 06, Spring 07, Summer 07; Culmination: Two trips to advanced light source to collect data. Ohio Section American Physical Society Presentation, Fall 2005.
Physical Review A: "*Infrared Photodetachment of Ce⁻: Threshold Spectroscopy and Resonance Structure*"
Invited Talk: American Physical Society "*Photodetachment Spectroscopy of Ce-*" June 2007.
17. **Mathew Bowers** – Summer: 2005 Anderson; Semester: Summer 05, Fall 05, Spring 2006; Culmination: "*A Causal Approach to Teaching Introductory Physics*" American Association of Physics Teachers National meeting presentation, January 2006.
16. **Craig Moser** – Summer: 2004 NSF, Semester: Summer 04; Culmination: Ohio Section American Physical Society Poster, Fall 2005.
15. **Keith Starr** – Summer: 2004 Anderson, 2005 Anderson; Semesters: Summer 04, Summer 05, Spring 06; Culmination: Trip to advanced light source to collect data.
Physical Review A: "*Infrared Photodetachment of Ce⁻: Threshold Spectroscopy and Resonance Structure*"
Ohio Section American Physical Society Presentation, Fall 2005.
14. **David Richardson** – Summer: 2004 Anderson, 2005 NSF; Semester: Summer 04, Summer 05; Culmination: Ohio Section American Physical Society Presentation, Fall 2005.
13. **John Pyles** – Summer: 2002 Anderson.
12. **Nate Chandler** – Summer: 2002 NSF, 2003 NSF; Culmination: Trip to advanced light source to collect data.
11. **Akash Abraham** – Summer: 2001 Research Corp., 2002 Anderson; Semester: Fall 2001; Culmination: Ohio Section American Physical Society Presentation, Fall 2001, Fall 2002.

DENISON STUDENT RESEARCH CONTINUED

10. **Chris Dangler** – Summer: 2001 Anderson, 2002 Anderson; Semester: Fall 2001, Fall 2000; Culmination: Ohio Section American Physical Society Presentation, Fall 2001, Fall 2002.
9. **Jason McClure** – Summer: 2001 NSF
8. **Demian Phillips** – Summer: 2001 NSF
7. **Cuyler Smith** – Semester: Fall 2000, Spring 2001; Culmination: “*Negative Ion Sputter Source: DUNIBA get a SNICS II,*” A-level Honors Project.
6. **David Zawistowski** – Summer: 2000 NSF; Culmination: Ohio Sectional Meeting Fall 2000 DAMOP Presentation May 2001, Physical Review A paper 2001.
5. **Kim Moore** - Summer: 2000 Anderson; Semester: Fall 2000; Culmination: Ohio Sectional Meeting Fall 2000 DAMOP Presentation May 2001 “*The effects of electric fields on Negative Ion Photodetachment,*” A-level Honors Project, Physical Review A paper 2001.
4. **Mike Gasda** – Summer: 1999 Anderson, 2000 NSF; Culmination: Ohio Section American Physical Society Presentation, Fall 1999, Physical Review A paper 2001.
3. **Brian Hosterman** – Summer: 1999 Anderson, 2000 Anderson; Semester: Fall 1999, Fall 2000, Spring 2001; Ohio Sectional Presentation “*Elemental Spectra in the UV: Ni II and Co I Branching Fractions,*” A-level Honors Project.
2. **Carrie Barnes** - Summer: 1998 Anderson; Semester: Fall 1998, Spring 1999: American Physical Society Centennial Meeting presentation, competitive travel grant, “Branching Fractions of Ni II in the UV region,” A-level Honors Project.
1. **Fahd Sultan** – Summer: 1997 Anderson, 1998 DURF; Semester: Fall 1997; Culmination: Ohio Section American Physical Society Presentation, Fall 1997.