

Bruce Johnson

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bjohnson@astate.edu

Current Position

Position Title: Associate Professor

Rank Since: Summer 1999

Ph.D. (*Physics*) University of Illinois--Urbana-Champaign, 1991. (Specialty: Biophysics, Advisor: Hans Frauenfelder, Thesis: *Motions in Myoglobin*).

M.S. (*Physics*) University of Illinois--Urbana-Champaign, 1986.

B.S. (*Physics*) Brigham Young University, 1985.

Scholarly Contributions and Creative Productions

Grants

Engleken, R., Johnson, B., & Chaudhury, Z. (2010). Arkansas ASSET Initiative II: VICTER. NSF-EPSCoR - 1225000.

Burns, W., Allen, S., Johnson, B., & Reeve, S. (2009). Standoff Explosives Detection. Dept of Defense contract W909MY-09-C-0001 - 6032114.

Burns, W., Johnson, B., Reeve, S., & Allen, S. (2005). DOD contract W39113M-05-C-0158. - 5560000.

Johnson, B. co-PIs: Allen, S., Reeve, S., Burns, W, and Kudryashov, S. (2005). Standoff Sensors for Radionuclide Identification (SSRID), U. S. Army Space and Strategic Missile Defense Command through the University of Hawaii at Manoa.

Johnson, J.B. (2003). The Creation of In₂S₃/SnS Heterojunction Solar Cells, Arkansas Space Grant Consortium.

Johnson, J.B. (1998). Vacuum evaporation of SnS thin films, Arkansas Space Grant Consortium.

(1997). Investigation of tin sulfide for Photovoltaic Applications, SILO Undergraduate Research Fellowship (two students).

Johnson, J.B. (1997). The Characterization of Photovoltaic Materials, Arkansas Space Grant Consortium.

Johnson, J.B. and Engelken, R.D. (1995). Development of Tin Sulfide Thin-Film Photoconductors, Arkansas Science and Technology Authority Basic Research Grant.

(1996). Investigation of tin sulfide for Photovoltaic Applications, SILO Undergraduate Research Fellowship.

(1995). Development of Tin Sulfide Thin-film Photoconductors, SILO Undergraduate Research Fellowship.

Johnson, J.B. (1995). Optimization of Tin Sulfide Photoconductors, Arkansas State University Faculty Research Fund.

Journal Publications

Tanjaroorn, C., Reeve, S., Ford, A.R., Murry, W.D., Lyon, K., Yount, B., Britton, D., Burns, W., Allen, S., & Johnson, B. (2012). Picosecond Rotationally Resolved Stimulated Emission Pumping Spectroscopy of Nitric Oxide. *Chem. Phys.*, 393, 80-85.

Johnson, B., Lyon, K., & Johnson, M.J. (2011). Limitations and guidelines for measuring the spectral width of a single pulse of light with a Fabry-Perot interferometer. *Applied Optics*, 50(3), 347-355.

Presentations

Lue, C.J., Tanjaroorn, C., Johnson, J.B., and Reeve, S.W. (2013). Fluorescence excitation spectra of photo-fragmented nitrobenzene using a picosecond laser: potential evidence for NO produced by two distinct channels. 68th International Symposium on Molecular Spectroscopy.

Hoke, S. and Johnson, J. (2013). Analysis of Picosecond Pulses by Optical Heterodyning. Joint Meeting of the APS Division of Atomic Molecular & Optical Physics and the CAP Division of Atomic, Molecular & Optical Physics, Canada, Vol. 58, No. 6 D1.00013

Lue, C.J., Tanjaroorn, C., Johnson, J.B., and Reeve, S.W. (2013). Measuring the quenching of NO fluorescence produced from the excitation of photo-fragmented nitrobenzene using a picosecond laser, 68th International Symposium on Molecular Spectroscopy

Tilley, M., Johnson, B., Tanjaroorn, C., & Allen, S. (2012). Computational analysis of population transfer via STIRAP in sodium vapor. Division of Atomic, Molecular, and Optical Physics.

Johnson, B. (2012). Fluorescence Emission and Excitation Spectra of Photofragmented Nitrobenzene., 67th International Symposium on Molecular Spectroscopy.

Hoke, S., & Johnson, B. (2012). Optical Heterodyne analysis of picosecond laser pulses. Division of Atomic, Molecular, and Optical Physics.

Johnson, B., Tanjaroorn, C., Hicks, J.L., & Allen, S. (2011). STIRAP on sodium vapor with picosecond pulses: calculations and experiment. DAMOP (Division of Atomic, Molecular and Optical Physics).

Reeve, S., Johnson, T., Johnson, B., Hicks, J., & Tanjaroorn, C. (2010). FT Spectroscopy of sodium vapor: confirmation of a pressure related signal enhancement. SWRM and SERMACS 2010.

Johnson, B., Reeve, S., Burns, W., & Allen, S. (2010). Optical Detection of Special Nuclear Materials: an alternative approach for standoff and remote sensing. SPIE Defense, Security, and Sensing.

Hicks, J.L., Tanjaroorn, C., Allen, S., Burdin, J., Hoke, S., & Johnson, B. (2010). Picosecond STIRAP on sodium vapor in a noble gas buffer. American Physical Society, Division of Atomic, Molecular, and Optical Physics.

Johnson, B., Allen, S., Hicks, J.L., & Burdin, J. (2010). STIRAP on sodium gas as a function of argon buffer gas pressure. SPIE Defense, Security, and Sensing.

Johnson, B. (2009). Determining the spectral width of an ultrashort light pulse with a diffraction grating-based spectrometer. Division of Atomic, Molecular, and Optical Physics.

Hicks, J.L., Allen, S., Burdin, J., Murry, W.D., & Johnson, B. (2009). Efficiency of STIRAP as a function of buffer gas pressure: sodium in argon. Division of Atomic, Molecular, and Optical Physics.

Johnson, B., Allen, S., Britton, D.R., Burdin, J., Hicks, J., Lyon, K., & Murry, W.D. (2009). Picosecond multiphoton STIRAP detection of gas phase species: a test with sodium. Defense, Security and Sensing 2009.

Lyon, K., Allen, S., Johnson, M.J., Murry, W.D., Britton, D.R., Kutner, T., & Johnson, B. (2008). Analysis of a single pulse of light using a Fabry-Pérot interferometer. Division of Atomic, Molecular and Optical Physics.

Johnson, B., Lyon, K., Murry, W.D., Britton, D.R., & Johnson, M.J. (2008). Picosecond standoff multiphoton detection of gas phase species: initial results. SPIE Defense and Security.

Lyon, K., Allen, S., Johnson, M.J., Murry, W.D., Britton, D.R., Kutner, T., & Johnson, B. (2008). STIRAP in a sodium gas using picosecond lasers. Division of Atomic Molecular and Optical Physics Meeting.

Johnson, B., & Yount, B. (2007). Energy Level Determination in NO. SSRID Program Review.

Johnson, B., & Murry, W.D. (2007). Energy measurement, Wavelength Determination, Gas delivery, and Computer Control. SSRID Program Review.

Johnson, B., & Paul, S. (2007). Experimental Setup, Streak Camera, and Spatial Filtering. SSRID Program Review.

Johnson, B., & Lyon, K. (2007). Fabry-Perot and its Application to Time-Bandwidth product Determination. SSRID Program Review.

Johnson, B. (2007). STIRAP and its Potential in Atmospheric Detection. SSRID Program Review.

Johnson, B. (2007). STIRAP and its Potential in IED Detection. Special visit to ASU by Major Corey Gerving.

Johnson, B. (2007). STIRAP and its Potential in IED Detection (with updates). Visit to ASU by Major Steve Cho.

Poster Presentations

Tanjaroorn, C., Lue, C., Reeve, S., Johnson, B., & Allen, S. (2012). Tunable picosecond spectroscopy for detection of NO. SciX 2012.

Lue, C., Tangaroorn, C., Reeve, S., Johnson, B., & Allen, S. (2012). Wavelength Dependence of the Production of NO From Photodissociated C₆H₅NO₂. SciX 2012.

Proceedings Publications

Reeve, S., Johnson, B., Allen, S., & Burns, W. (2010). Optical Detection of Special Nuclear Materials: an alternative approach for standoff and remote sensing. CBRNE Sensing XI/SPIE, 7665, 6.

Johnson, B., Allen, S., Hicks, J.L., & Burdin, J. (2010). STIRAP on sodium gas as a function of argon buffer gas pressure. Proceedings of SPIE, 7665, 766512/1-766512/10.

Johnson, B., Allen, S., Britton, D.R., Burdin, J., Hicks, J.L., Lyon, K., & Murry, W.D. (2009). Picosecond multiphoton STIRAP detection of gas phase species: a test with sodium. SPIE, 7304(730431), 9-Jan.

Johnson, B., Lyon, K., Murry, W.D., Britton, D.R., & Johnson, M.J. (2008). Picosecond standoff multiphoton detection of gas phase species: initial results. Proc. of SPIE, 6975(2008), 69750S-1.

Institutional Committees

University

Faculty Senate (University) Fall 2011

Other Institutional Service

(Committee Member) Physics search committee (University) Fall 2011 - Spring 2012
(Committee Chair) Physics search committee (University) Fall 2010 - Spring 2011
(Faculty Advisor) advisor (University) Fall 2007 - Fall 2009
(Committee Chair) Physics search (University) Summer 2007 - Spring 2008
(Committee Member) Electrical Engineering Search Committee (University)
Summer 2007 - Spring 2008
(Faculty Advisor) SPS advisor (University) Fall 2006 - Fall 2009
(Committee Member) College PRT committee (University) Fall 2006 - Fall 2012
(Committee Member) PRT (University) Fall 2006 - Fall 2012
(Committee Member) Pre-professional committee (University) Fall 2006 - Fall 2012

Teaching

Fall 2006 Courses:

PHYS 2064 002 - General Physics II
PHYS 3272 001 - Physical Instrumentation I
PHYS 459V 001 - Research in Physics

Spring 2007 Courses:

PHYS 2044 001 - University Physics II
PHYS 459V 001 - Research in Physics
PHYS 680V 2 - INDEPENDENT STUDY
PHYS 680V 3 - INDEPENDENT STUDY

Fall 2007 Courses:

CHEM 680V 5 - INDEPENDENT STUDY
CHEM 689V 3 - THESIS
PHYS 2034 001 - University Physics I
PHYS 3103 001 - Thermal Physics
PHYS 680V 1 - INDEPENDENT STUDY

Spring 2008 Courses:

ESCI 713V 21 - IND RSRCH NONLINEAR OPTICS
ESCI 713V 22 - IND RSRCH SPECTROSCOPY
ESCI 713V 23 - IND RSRCH LASER SOURCES
PHYS 3153 001 - Mechanics
PHYS 4553 001 - Principles of Quantum
Mechanics
PHYS 459V 002 - Research in Physics
PHYS 4693 001 - Research in Physics-Capstone

Fall 2008 Courses:

PHYS 3303 001 - Modern Physics
PHYS 4432 001 - Advanced Physics Laboratory
I
PHYS 459V 001 - Research in Physics

Spring 2009 Courses:

PHYS 3253 001 - Optics
PHYS 4442 001 -
PHYS 4693 001 - Research in Physics-Capstone

Fall 2009 Courses:

PHYS 2133 001 - Survey of Physics for the Health Professions

PHYS 4553 001 - Principles of Quantum Mechanics

Spring 2010 Courses:

PHYS 2044 001 - University Physics II

Summer 2010 Courses:

PHYS 459V 001 - Research in Physics

Fall 2010 Courses:

PHYS 2034 001 - University Physics I

PHYS 4432 001 - Advanced Physics Laboratory I

Spring 2011 Courses:

CHEM 6343 4 - SPECIAL TOPICS OPTICS

PHYS 3253 001 - Optics

PHYS 4693 001 - Research in Physics-Capstone

Fall 2011 Courses:

PHYS 2064 001 - General Physics II

PHYS 2064 002 - General Physics II

Spring 2012 Courses:

PHYS 3253 001 - Optics

PHYS 459V 001 - Research in Physics

PHYS 4693 001 - Research in Physics-Capstone

Fall 2012 Courses:

PHYS 2133 001 - SURVEY OF PHYSICS FOR HP

PHYS 3153 001 - MECHANICS