

Curriculum Vita

Christopher S. Baird

Associate Professor of Physics
Department of Chemistry and Physics
West Texas A&M University
WTAMU Box 60732
Canyon, Texas 79016

cbaird@wtamu.edu
wtamu.edu/~cbaird/
NSB Room 114C
office: 806.651.4264
cell: 806.680.5548

EDUCATION

Ph.D. in Physics, *University of Massachusetts Lowell (UMass Lowell)* 2007

Dissertation Title: "Design and Analysis of an Euler Transformation Algorithm Applied to Full-Polarimetric ISAR Imagery"

Advisor: Robert H. Giles, Professor, Department of Physics

B.S. in Physics, *Brigham Young University* 2001

Minor: Mathematics, Emphasis: Computer Science

HONORS AND AWARDS

Outstanding Professional Service Award, College Level 2022

Paul Engler College of Agriculture and Natural Sciences

West Texas A&M University

Physics Graduate Student of the Year Award 2005

University of Massachusetts Lowell

First-Year Physics Graduate Student of the Year Award 2003

University of Massachusetts Lowell

Dean's List 1999-2001

Brigham Young University

INSTRUCTIONAL RESPONSIBILITIES AT WEST TEXAS A&M UNIVERSITY***COURSES TAUGHT AT WEST TEXAS A&M UNIVERSITY***

General Physics I (PHYS 1401)	2016-2025
General Physics II (PHYS 1402)	2017-2025
Calculus Physics I (PHYS 2425)	2016-2025
Calculus Physics II (PHYS 2426)	2017-2025
Optics (PHYS 4330)	2017, 2024
Electromagnetism (PHYS 3340)	2016, 2018, 2020

SUPERVISION OF STUDENT RESEARCH AT WEST TEXAS A&M UNIVERSITY

Tucker Beekman, B.S. in Physics	2024-2025
Mahan Khorsand, B.S. in Physics	2023-2025
Marissa Lafferty, B.S. in Physics	2017-2020
Alec Baldwin, B.S. in Physics	2018-2019

OTHER INSTRUCTIONAL RESPONSIBILITIES AT WEST TEXAS A&M UNIVERSITY

Supervisor of Physics Lab Courses 2016-2025
Supervised General Physics I & II and Calculus Physics I & II lab courses.

Facilitator of Texas Physics Consortium (TPC) Courses 2016-2025
Facilitated TPC courses taught remotely from other universities, which included proctoring tests, reporting grades, and give assistance with homework assignments.

Implementer of All Lower-Level Physics Lab Course Redesigns 2019-2024
Redesigned experiments, wrote 16 physics lab course manuals, trained the TA's on all the changes, and purchased new equipment to facilitate the updated experiments, including a large set of wireless datalogger sensor links.

INSTRUCTIONAL RESPONSIBILITIES AT UMASS LOWELL

COURSES TAUGHT AT UMASS LOWELL

Graduate Electromagnetism I	2008-2016
Graduate Electromagnetism II	2009-2016

SUPERVISION OF STUDENT RESEARCH AT UMASS LOWELL

Robert Martin , M.S. in Physics	2014-2016
Duncan Pettengill , B.S. in Physics	2012
Christopher Emma , B.S. in Physics	2012
Karen Uttecht , M.S. in Computer Science	2011-2012
Adam Boudreau , M.S. in Mathematics	2010-2012
Philip Slingerland , Ph.D. in Physics	2008-2011
Thomas Socorelis , B.S. in Mathematics	2010-2011
Betty Makovoz , B.S. in Mathematics	2010
Bryan Crompton , B.S. in Mathematics	2007-2010
Alex Petrosillo , B.S. in Mathematics	2009
Sam O'Brien , B.S. in Mathematics	2008
Jareth Arnold , B.S. in Physics	2007-2008
Christopher Evans , B.S. in Physics	2005-2007

OTHER INSTRUCTIONAL RESPONSIBILITIES AT UMASS LOWELL

Teaching Assistant	2002-2004
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Taught laboratory courses as a graduate student for General Physics 1, General Physics 2, and Exploring the Universe. Worked in the stock room setting up lab course equipment.

INTELLECTUAL CONTRIBUTIONS AT WEST TEXAS A&M UNIVERSITY

GRANTS AND AWARDS WHILE AT WEST TEXAS A&M UNIVERSITY

“**Supporting Low-Income Students for Success in STEM Careers**” 2019-2024
National Science Foundation (NSF)
Co-Principal Investigator
N. Flynn, C. Baird, D. Byers, G. McGovern
Amount Awarded: \$999,545

PEER REVIEWED PUBLICATIONS WHILE AT WEST TEXAS A&M UNIVERSITY

C. Baird, “**Polarization of Waves**,” invited review article, *AccessScience*, McGraw-Hill, editors: Adam Hadhazy, Hilary Maybaum. 2025

C. Baird, “**Dielectric Material**,” invited review article, *AccessScience*, McGraw-Hill, editors: Adam Hadhazy, Hilary Maybaum. 2025

C. Baird, “**Transmission Lines**,” invited review article, *AccessScience*, McGraw-Hill, editors: Adam Hadhazy, Hilary Maybaum. 2025

C. Baird, “**Electric Charge**,” invited review article, *AccessScience*, McGraw-Hill, editors: Adam Hadhazy, Hilary Maybaum. 2024

C. Baird, “**Electrostatics**,” invited review article, *AccessScience*, McGraw-Hill, editors: Adam Hadhazy, Hilary Maybaum. 2024

C. Baird, “**Capacitance**,” invited review article, *AccessScience*, McGraw-Hill, editors: Adam Hadhazy, Hilary Maybaum. 2024

C. Baird, “**Inductance**,” invited review article, *AccessScience*, McGraw-Hill, editors: Adam Hadhazy, Hilary Maybaum. 2024

- C. Baird, “**Lens (Optics)**,” invited review article, *AccessScience*, McGraw-Hill, 2022
editors: Adam Hadhazy, Hilary Maybaum.
- C. Baird, “**Line Spectrum**,” invited review article, *AccessScience*, McGraw-Hill, 2022
editors: Adam Hadhazy, Hilary Maybaum.
- C. Baird, “**Wave Motion**,” invited review article, *AccessScience*, McGraw-Hill, 2022
editors: Adam Hadhazy, Hilary Maybaum.
- C. Baird, “**Antenna (Electromagnetism)**,” invited review article, *AccessScience*, McGraw-Hill, editors: Adam Hadhazy, Hilary Maybaum. 2022
- C. Baird, “**Electromagnetic Wave Transmission**,” invited review article, *AccessScience*, McGraw-Hill, editors: Adam Hadhazy, Hilary Maybaum. 2021
- C. Baird, “**Interference of Waves**,” invited review article, *AccessScience*, McGraw-Hill, editors: Adam Hadhazy, Hilary Maybaum. 2021
- C. Baird, “**Electromagnetic Field**,” invited review article, *AccessScience*, McGraw-Hill, editors: Adam Hadhazy, Hilary Maybaum. 2021
- C. Baird, “**Electromagnetic Wave**,” invited review article, *AccessScience*, McGraw-Hill, editors: Adam Hadhazy, Hilary Maybaum. 2021
- C. Baird, “**Radiation**,” invited review article, *AccessScience*, McGraw-Hill, editors: Adam Hadhazy, Hilary Maybaum. 2019
- C. Baird, “**Magnetism**,” invited review article, *AccessScience*, McGraw-Hill, editors: Adam Hadhazy, Hilary Maybaum. 2019
- C. Baird, “**Magnet**,” invited review article, *AccessScience*, McGraw-Hill, editors: Adam Hadhazy, Hilary Maybaum. 2019

C. Baird, “**Absorption of Electromagnetic Radiation**,” invited review article, 2019
AccessScience, McGraw-Hill, editors: Adam Hadhazy, Hilary Maybaum.

C. Baird, “**Electromagnetic Radiation**,” invited review article, 2019
AccessScience, McGraw-Hill, editors: Adam Hadhazy, Hilary Maybaum.

C. Baird, “**Electromagnetism**,” invited review article, 2019
AccessScience, McGraw-Hill, editors: Adam Hadhazy, Hilary Maybaum.

C. Baird, M. Lafferty, “**Analysis of approximations used in terahertz quantum cascade laser doping calculations**,” 2019
SPIE Terahertz, RF, Millimeter, and Submillimeter-Wave Technology and Application XII, editors: Laurence P. Sadwick, Tianxin Yang, Vol. 9806.

C. Baird, M. Lafferty, P. Slingerland, “**The effects of a common approximation used in the polarizability calculations of electron-electron subband screening in quantum well devices**,” 2018
SPIE Low-Dimensional Materials and Devices, editors: Nobuhiko P. Kobayashi, A. Alec Talin, M. Saif Islam, Albert V. Davydov, Vol. 10725.

CONFERENCE PRESENTATIONS WHILE AT WEST TEXAS A&M UNIVERSITY

N. Flynn, C. Baird, D. Byers, “**Effect of Mentoring and Leadership Workshops On STEM Student Organizations**,” 2024
poster presentation, *American Chemical Society Fall 2024 Conference*, Denver, CO.

C. Baird, N. Flynn, D. Byers, G. McGovern, “**Lessons Learned from Redesigning Gateway Science Courses**,” 2024
podium presentation, *Joint Meeting of the Texas Section of AAPT, Texas Section of APS, and Zone 13 of SPS*, Stephenville, TX.

C. Baird, D. Byers, G. McGovern, N. Flynn, “**Redesigning Gateway Science Courses and its Impact on Minority Students**,” 2023
poster presentation, *Joint Meeting of the Texas Section of AAPT, Texas Section of APS, and Zone 13 of SPS*, Commerce, TX.

- N. Flynn, C. Baird, D. Byers, G. McGovern, “**Trident mentoring of STEM majors,**” 2023
poster presentation, *American Chemical Society Spring 2023 Conference*, Indianapolis,
IN.
- N. Flynn, C. Baird, D. Byers, G. McGovern, “**Supporting Low-Income Students for
Success in STEM Careers (SLISS),**” poster presentation, *American Association for
the Advancement of Science (AAAS) S-STEM Symposium*, Washington, DC. 2022
- C. Baird, M. Lafferty, “**Minimizing the Lasing Frequency Fluctuations Arising
from Temperature Variations in Terahertz Quantum Cascade Lasers,**” podium
presentation, *American Physical Society Session of the Joint 2021 Texas Sections
Meeting of the APS, AAPT, & SPS*, Corpus Christi, TX. 2021
- M. Lafferty, C. Baird “**Terahertz Quantum Cascade Lasers: What is the Effect of
Doping Locations on Lasing Frequency,**” poster presentation, *Texas Tech University
Undergraduate Research Conference*, Lubbock, TX. 2020
- C. Baird, M. Lafferty, “**Analysis of approximations used in terahertz quantum
cascade laser doping calculations,**” podium presentation, *SPIE Photonics West
Conference*, San Francisco, CA. 2019
- M. Lafferty, C. Baird, “**Terahertz quantum cascade lasers: What are the typical
values of the Fermi energy?**” poster presentation, *West Texas A&M University
Student Research Conference*, Canyon, TX. 2019
- M. Lafferty, C. Baird, “**Terahertz quantum cascade lasers: Determining the optimal
waveguide for 1.5 THz,**” poster presentation, *Texas A&M System Pathways Student
Research Symposium*, Canyon, TX. 2018
- M. Lafferty, C. Baird, “**Computational investigation of waveguide effects in low-
frequency terahertz quantum cascade lasers,**” invited podium presentation,
*Conference for Undergraduate Women in Physical Sciences at the University of
Nebraska-Lincoln*, Lincoln, NE. 2018

C. Baird, M. Lafferty, P. Slingerland, “**The effects of a common approximation used in polarizability calculations of electron-electron subband screening in quantum well devices,**” podium presentation, *SPIE Optics+Photonics Conf.*, San Diego, CA. 2018

M. Lafferty, C. Baird, “**Terahertz quantum cascade lasers: Which electron population algorithm is the fastest?**” poster presentation, *West Texas A&M University Student Research Conference*, Canyon, TX. 2018

BOOKS/MANUALS WHILE AT WEST TEXAS A&M UNIVERSITY

C. Baird, “**Calculus Physics 1 Lab Manual, 2nd Edition, TA Version,**” containing 12 lab course experiments, approx. 70 pages, *Published by the WTAMU Print Shop* 2020

C. Baird, “**Calculus Physics 1 Lab Manual, 2nd Edition, Student Version,**” containing 12 experiments, approx. 70 pages, *Published by the WTAMU Print Shop* 2020

C. Baird, “**Calculus Physics 2 Lab Manual, 2nd Edition, TA Version,**” containing 12 experiments, approx. 70 pages, *Published by the WTAMU Print Shop* 2020

C. Baird, “**Calculus Physics 2 Lab Manual, 2nd Edition, Student Version,**” containing 12 experiments, approx. 70 pages, *Published by the WTAMU Print Shop* 2020

C. Baird, “**General Physics 1 Lab Manual, 2nd Edition, TA Version,**” containing 12 experiments, approx. 70 pages, *Published by the WTAMU Print Shop* 2020

C. Baird, “**General Physics 1 Lab Manual, 2nd Edition, Student Version,**” containing 12 experiments, approx. 70 pages, *Published by the WTAMU Print Shop* 2020

C. Baird, “**General Physics 2 Lab Manual, 2nd Edition, TA Version,**” containing 12 experiments, approx. 70 pages, *Published by the WTAMU Print Shop* 2020

C. Baird, “**General Physics 2 Lab Manual, 2nd Edition, Student Version,**” containing 12 experiments, approx. 70 pages, *Published by the WTAMU Print Shop* 2020

C. Baird, “**Calculus Physics 1 Lab Manual, 1st Edition, TA Version,**” containing 12 experiments, approx. 70 pages, *Published by the WTAMU Print Shop* 2019

C. Baird, “**Calculus Physics 1 Lab Manual, 1st Edition, Student Version,**” containing 12 experiments, approx. 70 pages, *Published by the WTAMU Print Shop* 2019

C. Baird, “**Calculus Physics 2 Lab Manual, 1st Edition, TA Version,**” containing 12 experiments, approx. 70 pages, *Published by the WTAMU Print Shop* 2019

C. Baird, “**Calculus Physics 2 Lab Manual, 1st Edition, Student Version,**” containing 12 experiments, approx. 70 pages, *Published by the WTAMU Print Shop* 2019

C. Baird, “**General Physics 1 Lab Manual, 1st Edition, TA Version,**” containing 12 experiments, approx. 70 pages, *Published by the WTAMU Print Shop* 2019

C. Baird, “**General Physics 1 Lab Manual, 1st Edition, Student Version,**” containing 12 experiments, approx. 70 pages, *Published by the WTAMU Print Shop* 2019

C. Baird, “**General Physics 2 Lab Manual, 1st Edition, TA Version,**” containing 12 experiments, approx. 70 pages, *Published by the WTAMU Print Shop* 2019

C. Baird, “**General Physics 2 Lab Manual, 1st Edition, Student Version,**” containing 12 experiments, approx. 70 pages, *Published by the WTAMU Print Shop* 2019

REPORTS AS A PEER REVIEWER WHILE AT WEST TEXAS A&M UNIVERSITY

Cambridge University Press, review of the proposed book, “Classical Electrodynamics.” 2025

IEEE Transactions on Antennas and Propagation, review of the journal article, “Micro-Doppler Radar Deception – Camouflaging Birds as Drones and Drones as Helicopters.” 2025

- Applied Physics Letters**, review of the journal article, “Enhancing Quantum Cascade Laser Active Region Design through Inverse Neural Networks: A Machine Learning Approach to Metric-Based Structure Generation.” 2024
- Applied Optics**, review of the journal article, “Wavelength optimization of fine optical surface defect detection based on FDTD,” 2024
- IEEE Transactions on Antennas and Propagation**, review of the journal article, “A Layered Cross-correlation Back-projection Algorithm Based on Ray Theory for Electromagnetic Imaging in Stratified Medium.” 2024
- Optics Letters**, review of the journal article, “Photonic Crystal Surface-emitting Quantum Cascade Laser with Lateral Coupling Cavity at 9.4 μm .” 2024
- CRC Press, Chapman & Hill**, review of the proposed book, “Modern Nuclear Physics and its Applications for the 21st Century.” 2024
- Optics Express**, review of the journal article, “Wavelength stable metal grating distributed feedback quantum cascade laser emitting at $\lambda \sim 7.2 \mu\text{m}$.” 2023
- Taylor & Francis**, review of the proposed second edition of the book, "Modern Physics." 2023
- Applied Optics**, review of the journal article, “Forward-Looking MIMO-SAR for Enhanced Radar Imaging in Autonomous Mobile Robots.” 2023
- Nature Scientific Reports**, review of the journal article, “The discussion about the influence of gravitational time dilation on gravity propagation speed and on light propagation speed.” 2023
- Optics Express**, review of the journal article, “Calculation and analysis of quantum radar scattering characteristics of targets in atmospheric medium.” 2022

- AIP Advances**, review of the journal article, “Range-Angle-Dependent Beamforming for FDA Radar with Hamming Interelement Spacing and Sinusoidal Multi Carrier Approach.” 2022
- SPIE**, review of the proposed book, “Electromagnetic Theory and Applications for the Optical Engineer.” 2022
- McGraw-Hill**, review of the proposed book revision, “College Physics.” 2022
- Optics Letters**, review of the journal article, “Millimeter-level resolution through-the-wall radar imaging enabled by an optically injected semiconductor laser.” 2021
- Applied Optics**, review of the journal article, “Learned Linear Models for Detecting Watercraft in a Maritime Environment.” 2020
- Journal of Optics**, review of the journal article, “Polarimetric imaging method for target enhancement in haze based on polarimetric retrieval.” 2018
- Oak Ridge Associated Universities**, review of three research grant proposals as part of the Applied Sciences Panel. 2018
- Oak Ridge Associated Universities**, review of three research grant proposals as part of the Physical Sciences Panel. 2018
- Journal of Optics**, review of the journal article, “Underwater polarimetric imaging for visibility enhancement utilizing active unpolarized illumination.” 2018
- Applied Optics**, review of the journal article, “Canonical scattering coefficients upward recursion algorithm for multilayered sphere or long cylinder.” 2018
- AIP Advances**, review of the journal article, “Theoretical and experimental study of echo fluctuation suppression of cirrus cloud by millimeter wave MIMO radar.” 2017

Optics Express, review of the journal article, "Linearized inversion methods for three-dimensional electromagnetic imaging in the multiple scattering regime." 2017

Applied Optics, review of the journal article, "Laterally coupled distributed feedback type-I quantum well cascade diode lasers emitting near 3.22 μm ." 2017

Journal of Optics, review of the journal article, "Object detection with a hyperspectral polarimetric imager based on double-filtering technology." 2017

Journal of Applied Physics, review of the journal article, "Terahertz quantum cascade laser with an X-valley-based injector." 2017

Journal of Applied Physics, review of the journal article, "Cross section equivalence between photons and non-relativistic massive particles for targets with complex geometries." 2016

LOCAL PRESENTATIONS WHILE AT WEST TEXAS A&M UNIVERSITY

C. Baird, "**Applying to Graduate School in the Natural Sciences**," podium presentation, Department of Chemistry and Physics, *West Texas A&M University*, Canyon, TX. 2024

C. Baird, "**Timeline for Applying to Graduate Schools**," podium presentation, Residence Hall Association, *West Texas A&M University*, Canyon, TX. 2024

C. Baird, M. Lafferty, "**Fermi Energy Effects in Terahertz Quantum Cascade Lasers**," podium presentation, Department of Chemistry and Physics, *West Texas A&M University*, Canyon, TX. 2019

C. Baird, M. Lafferty, A. Baldwin, "**Electron dynamics in terahertz quantum cascade lasers**," podium presentation, Department of Chemistry and Physics, *West Texas A&M University*, Canyon, TX. 2018

C. Baird, “**Terahertz quantum cascade laser computational research,**” podium presentation, Dept. of Chem. and Phys., *West Texas A&M University*, Canyon, TX. 2017

C. Baird, “**Wind turbine defect detection using terahertz imaging,**” invited podium presentation, *North American Wind Research and Training Center*, Tucumcari, NM. 2016

C. Baird, “**Terahertz imaging: From quantum cascade lasers to wind turbine defect detection,**” invited podium presentation, Department of Chemistry and Physics, *West Texas A&M University*, Canyon, TX. 2016

RESEARCH POSITIONS WHILE AT WEST TEXAS A&M UNIVERSITY

Associate Professor of Physics 2022-2025
Department of Chemistry and Physics, West Texas A&M University
Research Projects: Terahertz Quantum Cascade Lasers, Quantum Well Physics, Educational Research

Assistant Professor of Physics 2016-2022
Department of Chemistry and Physics, West Texas A&M University
Research Projects: Terahertz Quantum Cascade Lasers, Quantum Well Physics

INTELLECTUAL CONTRIBUTIONS AT UMASS LOWELL

GRANTS AND AWARDS WHILE AT UMASS LOWELL

“Large Area Turbine Blade Inspection,” 2015

National Science Foundation (NSF)/WindSTAR

Co-Investigator

C. Niezrecki, C. Baird

Amount Awarded: \$81,511

“Submillimeter-Wave Radar Signature Support” 2011-2015

Department of Defense (DoD)

Co-Investigator

R. Giles, A. Gatesman, C. Baird, T. Goyette

Amount Awarded: \$21,656,780

“Submillimeter-Wave Radar Signature Support” 2006-2010

Department of Defense (DoD)

Co-Investigator

R. Giles, A. Gatesman, C. Baird, T. Goyette

Amount Awarded: \$26,228,950

PEER REVIEWED PUBLICATIONS WHILE AT UMASS LOWELL

R. Martin, C. Baird, R. Giles, C. Niezrecki, **“Terahertz ISAR and x-ray imaging of large area wind turbine blade structures,”** *SPIE Smart Materials and Nondestructive Evaluation for Energy Systems*, editor: Norbert G. Meyendorf, Vol. 9806. 2016

R. Martin, supervised by C. Baird, ***Analysis of polarimetric terahertz imaging for non-destructive detection of subsurface defects in wind turbine blades***, M.S. thesis, University of Massachusetts Lowell. 2016

- P. Slingerland, C. Baird, R. Giles, “**Application of multi-subband self-consistent energy balance method to terahertz quantum cascade lasers,**” *Semiconductor Science and Technology*, editor: Koji Ishibashi, 27 (6). 2012
- X. Qian, N. Chandrayan, S. Vangala, W. Goodhue, A. Danylov, J. Waldman, C. Baird, R. H. Giles, W. E. Nixon, “**One-half milliwatt 2.31 THz continuous-wave QCL operating at 77K,**” *SPIE Terahertz Technology and Applications V*, editors: Laurence P. Sadwick, Creidhe M. O'Sullivan, Vol. 8261. 2012
- P. Slingerland, supervised by C. Baird, *Temperature effects and transport phenomena in terahertz quantum cascade lasers*, Ph.D. dissertation, University of Massachusetts Lowell. 2011
- P. Slingerland, C. Baird, R. Giles, “**The effects of various approximations on electron-electron scattering calculations in QCLs,**” *SPIE Terahertz Technology and Applications IV*, editor: Laurence P. Sadwick, Vol. 7938. 2011
- P. Slingerland, C. Baird, B. Crompton, R. Giles, W. E. Nixon, “**The effects of electron temperature in terahertz quantum cascade laser predictions,**” *SPIE Modeling and Simulation for Defense Systems and Applications V*, editor: Eric J. Kelmelis, Vol. 7705. 2010
- C. Baird, B. Crompton, P. Slingerland, R. Giles, W. E. Nixon, “**Optimization of semi-insulating surface-plasmon waveguides within terahertz QCL's using computational models,**” *SPIE Terahertz Physics, Devices, and Systems IV: Advanced Applications in Industry and Defense*, editors: Mehdi Anwar, Nibir K. Dhar, Thomas W. Crowe, Vol. 7671. 2010
- C. Baird, *Design and analysis of an Euler transformation algorithm applied to full-polarimetric ISAR imagery*, Ph.D. dissertation, University of Massachusetts Lowell. 2007
- C. Baird, R. Giles, W. E. Nixon, “**Development and assessment of a complete ATR algorithm based on ISAR Euler imagery,**” *SPIE Radar Sensor Technology XI*, editors: James L. Kurtz, Robert J. Tan, Vol. 6547. 2007

C. Baird, W. T. Kersey, R. Giles, W. E. Nixon, “**Classification of targets using optimized ISAR Euler imagery,**” *SPIE Radar Sensor Technology X*, editors: Robert N. Trebits, James L. Kurtz, Vol. 6210. 2006

C. Baird, *Classification of targets using optimized ISAR Euler imagery*, Advanced Projects thesis, University of Massachusetts Lowell. 2006

C. Baird, W. T. Kersey, R. Giles, W. E. Nixon, “**Exploitation of ISAR imagery in Euler parameter space,**” *SPIE Radar Sensor Technology IX*, editors: Robert N. Trebits, James L. Kurtz, Vol. 5788. 2005

CONFERENCE PRESENTATIONS WHILE AT UMASS LOWELL

R. Martin, C. Baird, R. Giles, C. Niezrecki, “**Terahertz ISAR and x-ray imaging of large area wind turbine blade structures,**” podium presentation, *SPIE Smart Structures NDE Conference*, Las Vegas, NV. 2016

R. Martin, C. Niezrecki, R. Giles, C. Baird, “**Large area turbine blade inspection, June 2015,**” podium presentation, *WindSTAR IAB Conference*, Lowell, MA. 2015

R. Martin, C. Niezrecki, R. Giles, C. Baird, “**Large area turbine blade inspection, Jan. 2015,**” podium presentation, *WindSTAR IAB Conference*, Dallas, TX. 2015

X. Qian, N. Chandrayan, S. Vangala, W. Goodhue, A. Danylov, J. Waldman, C. Baird, R. H. Giles, W. E. Nixon, “**One-half milliwatt 2.31 THz continuous-wave QCL operating at 77K,**” podium presentation, *SPIE Photonics West Conference*, San Francisco, CA. 2012

P. Slingerland, C. Baird, R. Giles, “**The effects of individual subband electron temperatures in terahertz quantum cascade laser predictions,**” podium presentation, *SPIE Defense, Security, and Sensing Conference*, Orlando, FL. 2011

P. Slingerland, C. Baird, R. Giles, “**The effects of various approximations on electron-electron scattering calculations in QCLs,**” podium presentation, *SPIE Photonics West Conference*, San Francisco, CA. 2011

C. Baird, B. Crompton, P. Slingerland, R. Giles, W. E. Nixon, “**Optimization of semi-insulating surface-plasmon waveguides within terahertz QCL's using computational models,**” podium presentation, *SPIE Defense, Security, and Sensing Conference*, Orlando, FL. 2010

P. Slingerland, C. Baird, B. Crompton, R. Giles, W. E. Nixon, “**The effects of electron temperature in terahertz quantum cascade laser predictions,**” podium presentation, *SPIE Defense, Security, and Sensing Conference*, Orlando, FL. 2010

C. Baird, R. Giles, W. E. Nixon, “**Development and assessment of a complete ATR algorithm based on ISAR Euler imagery,**” podium presentation, *SPIE Defense, Security, and Sensing Conference*, Orlando, FL. 2007

C. Baird, W. T. Kersey, R. Giles, W. E. Nixon, “**Classification of targets using optimized ISAR Euler imagery,**” podium presentation, *SPIE Defense, Security, and Sensing Conference*, Orlando, FL. 2006

C. Baird, W. T. Kersey, R. Giles, W. E. Nixon, “**Exploitation of ISAR Imagery in Euler Parameter Space,**” podium presentation, *SPIE Defense, Security, and Sensing Conference*, Orlando, FL. 2005

REPORTS AS A PEER REVIEWER WHILE AT UMASS LOWELL

CRC Press, review of the book, “Elastic scattering of electromagnetic radiation: analytic solutions in diverse backgrounds.” 2015

IEEE Transactions on Antennas and Propagation, review of the journal article, “Global scattering center extraction for radar targets using a modified RANSAC Method.” 2015

- NASA Postdoctoral Program**, review of a research grant proposal. 2015
- Applied Optics**, review of the journal article, “Electric field induced by a PEC strip placed in soil.” 2015
- Journal of Optics**, review of the journal article, “Adaptive polarimetric image representation for contrast optimization of a polarized beacon through fog.” 2015
- IEEE Transactions on Antennas and Propagation**, review of the journal article, “Classification of shell-shaped targets using RCS and fuzzy classifier.” 2015
- IEEE Transactions on Antennas and Propagation**, review of the journal article, “Hierarchical reconstruction and structural waveform analysis for target classification.” 2015
- NASA Postdoctoral Program**, review of a research grant proposal. 2014
- Optics Letters**, review of the journal article, “Enhancing the sensitivity of mid-IR QCL-based cavity-enhanced absorption spectroscopy using RF current perturbation.” 2014
- Applied Physics Letters**, review of the journal article, “Importance of the localization for inter-subband scattering rates in quasi two-dimensional structures.” 2013
- IEEE Transactions on Antennas and Propagation**, review of the journal article, “Wide-band imaging of canonical rotation-symmetric ballistic targets.” 2012
- Optics Express**, review of the journal article, “Indirectly pumped 3.7 THz InGaAs/InAlAs quantum-cascade lasers grown by metal-organic vapor-phase epitaxy.” 2012
- IEEE Transactions on Antennas and Propagation**, review of the journal article, “Kennaugh matrix phenomenology.” 2011

LOCAL PRESENTATIONS WHILE AT UMASS LOWELL

- R. Martin, supervised by C. Baird, “**Analysis of polarimetric terahertz imaging for non-destructive detection of subsurface defects in wind turbine blades**”, M.S. thesis defense presentation, *University of Massachusetts Lowell*, Lowell, MA. 2016
- C. Baird, “**CEM capabilities at STL**,” poster presentation, *University of Massachusetts Lowell*, Lowell, MA. 2015
- C. Baird, D. Pettengill, R. Giles, W. E. Nixon, “**Identification of the center of a rectangular vehicle in ISAR images using various methods**,” podium presentation, Department of Physics, *University of Massachusetts Lowell*, Lowell, MA. 2012
- C. Baird, C. Emma, R. Giles, W. E. Nixon, “**Use of the Xpatch scattering centers code**,” podium presentation, Department of Physics, *University of Massachusetts Lowell*, Lowell, MA. 2012
- C. Baird, D. Pettengill, R. Giles, W. E. Nixon, “**Automatic identification of the orientation of rectangular vehicles in ISAR images**,” podium presentation, Department of Physics, *University of Massachusetts Lowell*, Lowell, MA. 2012
- P. Slingerland, supervised by C. Baird, “**Temperature effects and transport phenomena in terahertz quantum cascade lasers**,” Ph.D. dissertation defense presentation, *University of Massachusetts Lowell*, Lowell, MA. 2011
- P. Slingerland, C. Baird, “**Study of electron temperature in quantum cascade lasers**,” podium presentation, Department of Physics, *University of Massachusetts Lowell*, Lowell, MA. 2010
- C. Baird, “**Electromagnetic scattering theory**,” podium presentation, Department of Physics, *University of Massachusetts Lowell*, Lowell, MA. 2009

- P. Slingerland, C. Baird, “**QCL fundamentals**,” podium presentation, Department of Physics, *University of Massachusetts Lowell*, Lowell, MA. 2009
- P. Slingerland, C. Baird, “**Rate equations and their implementation in QCLs**,” podium presentation, Dept. of Phys., *University of Massachusetts Lowell*, Lowell, MA. 2009
- P. Slingerland, C. Baird, “**QCL prediction code progress and rate equations**,” podium presentation, Department of Physics, *University of Massachusetts Lowell*, Lowell, MA. 2009
- C. Baird, “**Quantum cascade laser code prediction**,” podium presentation, Department of Physics, *University of Massachusetts Lowell*, Lowell, MA. 2009
- C. Baird, “**Terahertz quantum cascade lasers**,” poster presentation, *University of Massachusetts Lowell Research Symposium*, Lowell, MA. 2008
- C. Baird, supervised by R. Giles, “**Design and analysis of an Euler transformation algorithm applied to full-polarimetric ISAR imagery**,” Ph.D. dissertation defense presentation, *University of Massachusetts Lowell*, Lowell, MA. 2007
- C. Baird, R. Giles, “**Design and analysis of an automatic target recognition algorithm using optimized Euler ISAR imagery**,” podium presentation, *University of Massachusetts Lowell*, Lowell, MA. 2007
- C. Baird, W. T. Kersey, R. Giles, W. E. Nixon, “**Classification of targets using optimized ISAR Euler imagery**,” Advanced Projects thesis defense presentation, *University of Massachusetts Lowell*, Lowell, MA. 2006
- C. Baird, C. Evans, W. T. Kersey, R. Giles, “**Initial assessment of the STL Xpatch radar prediction system**,” podium presentation, *University of Massachusetts Lowell*, Lowell, MA. 2006

NON-PEER REVIEWED PUBLICATIONS WHILE AT UMASS LOWELL

C. Baird, “**Graduate Electromagnetics I and II Lecture Notes,**” 39 documents 2008-2016
Website: wtamu.edu/~cbaird/courses.html

C. Baird, “**Jackson Homework Solutions,**” 87 documents 2008-2016
Website: wtamu.edu/~cbaird/courses.html

C. Baird, “**Quantum Cascade Laser Theory Online Research Notes,**” 14 documents 2008-2011
Website: wtamu.edu/~cbaird/research_QCL_theory.html

RESEARCH POSITIONS WHILE AT UMASS LOWELL AND BEFORE

Senior Scientist and Adjunct Research Faculty 2007-2016
Submillimeter-Wave Technology Laboratory, University of Massachusetts Lowell
Research Projects: Terahertz Quantum Cascade Lasers, Wind Turbine Defect Detection, Radar Scattering Prediction and Analysis, ATR

Research Assistant 2004-2007
Submillimeter-Wave Technology Laboratory, University of Massachusetts Lowell
Research Projects: Radar Scattering Prediction and Analysis, Phenomenological Electromagnetic Scattering, Automatic Target Recognition

Space Scholar 2003
Air Force Research Laboratory, Hanscom Air Force Base
Research Project: Ionospheric Plume Dynamics Modeling

Software Engineer in Research and Development 2001-2002
ZServe Corporation, Provo, UT
Research Project: Social Media Analytics

Research Assistant 2000
Department of Biology, Brigham Young University
Research Project: Molecular Dynamics Modeling of Cell Membrane Ion Channels

PROFESSIONAL SERVICE WHILE AT WEST TEXAS A&M UNIVERSITY

COMMITTEE AND SENATE SERVICE WHILE AT WEST TEXAS A&M UNIVERSITY

Promotion and Tenure Committee Member 2023-2025

Department of Chemistry and Physics

Curriculum Committee Member 2024-2025,

Department of Chemistry and Physics 2018-2021

Retention, Promotion, and Tenure Committee Member 2024-2025

Department of Computer Information & Decision Management

Student Honors Council Committee Member 2023-2025

West Texas A&M University

Search Committee Member 2024

Department of Chemistry and Physics

Served on the search committee tasked with filling the position of the department's lab coordinator and chemistry instructor.

Faculty Senator 2023-2024

West Texas A&M University

Represented the Department of Chemistry and Physics in the Faculty Senate.

Faculty Grievance Committee Pool 2022-2023

West Texas A&M University

Served on Faculty Grievance Committee Pool, serving when selected from the pool.

Promotion and Tenure Committee Member 2022-2023

Paul Engler College of Agriculture and Natural Sciences

WT 125 Generational and Strategic Planning Committee Member 2017-2023
West Texas A&M University

Physics Faculty Search Committee Member 2019
Department of Chemistry and Physics
Reviewed and scored 21 applications, helped to phone interview 6 semi-finalists, and helped to on-site interview and host the 2 finalists.

UNIVERSITY NON-COMMITTEE SERVICE WHILE AT WEST TEXAS A&M UNIVERSITY

Society of Physics Students (SPS) Faculty Advisor 2016-2025
Organized and participated in all SPS events and biweekly planning meetings. Trained and consulted with the SPS officers. Events included research presentations, public science lectures, fundraisers, service projects, field trips, and career workshops.

Supervisor of Student Research 2017-2025
Supervised the original research of two students in the fields of quantum cascade lasers, quantum well physics, and computational physics. This research led to the successful completion of two capstone projects, four student research conference poster presentations, and one invited student research conference podium presentation.

Physics Course Schedule Planner 2019-2025
Department of Chemistry and Physics
Served as the department's course schedule planner for all physics courses.

Supervisor of Physics Lab Courses 2016-2025
Supervised the lab course components of General Physics I, General Physics II, Calculus Physics I, and Calculus Physics II. Supervised on average four lab courses per semester.

Facilitator of Texas Physics Consortium (TPC) Courses 2016-2025
Facilitated TPC courses taught remotely from other universities: administered tests, ensured the proper functioning of broadcast equipment, and helped students with homework problems. Facilitated on average two courses per semester.

- New Student Orientation (NSO) and Transfer Student Orientation (TSO) Advisor** 2017-2025
Served as an orientation advisor for most of the orientations held every year. Attended the orientation advisor training every year.
- Student Recommendation Letter Writer** 2016-2025
Wrote 20+ letters of recommendation for various students.
- Graduations Ceremonies Marshal** 2023-2024
Directed students and faculty during processions.
- Implementer of All Lower-Level Physics Lab Course Redesigns** 2019-2023
Department of Chemistry and Physics
Redesigned lab experiments. Wrote 16 physics lab course manuals, including the student and TA editions for every lower-level physics lab course, 1st and 2nd editions. Trained the TA's on all the changes during weekly meetings. Purchased new equipment to facilitate the updated experiments in the lab manuals, including tablet computers and wireless datalogger links.
- Author of the Guide for New Texas Physics Consortium (TPC) Instructors** 2022-2023
Wrote an 8-page Guide for New Texas Physics Consortium (TPC) Instructors, had it peer-reviewed, and then delivered it to the new TPC professors.
- S-STEM Scholars Faculty Mentor** 2019-2023
Paul Engler College of Agriculture and Natural Sciences
Regularly interviewed and mentored students about their academic performance and career progress as part of the NSF S-STEM grant.
- Trainer of Physics Teaching Assistants** 2019-2021
Department of Chemistry and Physics
Trained all physics lab course teaching assistants on the use of equipment and the nature of effective teaching. These training sessions were typically held every Friday of the semester, except during the pandemic.

Student Research Conference Science Judge 2017-2019

West Texas A&M University Student Research Conference

Served as poster judge, paper judge, and oral presentation judge.

Host of the Visiting Fulbright Scholar Dr. Avashai Benyamini 2017

Invited, organized, secured funding for, and facilitated the visit of this Fulbright scholar. This visit involved seven events, including research presentations, student discussions, and meals.

Supporter of the Visiting Distinguished Lecturer Dr. Shane Larson 2017

Advertised and helped facilitate the five events involved in this visit, which included research presentations, student discussions, and meals.

Contributor to the Development of the Department Brochure 2017

Department of Chemistry and Physics

REGIONAL AND GLOBAL SERVICE WHILE AT WEST TEXAS A&M UNIVERSITY

Texas Physics Consortium (TPC) Registration and Access Coordinator 2018-2025

Texas A&M University System

As the only Registration and Access Coordinator for all nine universities in the TPC, set up the academic accounts, course registration, network access, and course evaluations for all students, instructors, and facilitators in all TPC courses at all nine member universities. Created, updated, and organized all TPC enrollment files. This system-level position has demanded dedication of almost every waking hour to TPC duties during the entire two weeks preceding each regular semester.

Author and Publisher of Science Articles for the General Public 2016-2025

"Science Questions with Surprising Answers," wtamu.edu/~cbaird/sq/

Authored, designed, and self-published 33 science articles for the general public, in addition to the 340 articles written before coming to West Texas A&M University. Answered approximately 7200 science questions from readers of these articles via email, averaging 2.2 questions answered per day for 9 years. These articles have been quoted by Space.com, Weather.com, NASA, EarthSky, The HuffPost, and others.

- Science Consultant** 2025
TED-Ed Videos. Helped write a script about lasers for an animated educational video.
- Science Consultant** 2025
Veritasium YouTube Channel. Provided science consulting regarding quantum trajectories.
- Peer Reviewer of a Research Article** 2025
IEEE Transactions on Antennas and Propagation
- Peer Reviewer of Book Proposal** 2025
Cambridge University Press. Served as a peer reviewer of a book proposal titled “Classical Electrodynamics.”
- Author of Book** 2024
Faraday’s Flame. Wrote and carried to publication the general-audience book titled, “The Top 50 Science Questions with Surprising Answers.” This book has been purchased in Australia, India, Germany, the United Kingdom, Canada, and the United States.
- Peer Reviewer of a Research Article** 2024
Applied Physics Letters
- Science Consultant** 2024
Live Science. Provided science consulting regarding atomic interactions.
- Peer Reviewer of a Research Article** 2024
Applied Optics
- Peer Reviewer of a Research Article** 2024
IEEE Transactions on Antennas and Propagation

- Research Conference Science Judge** 2024
Joint Meeting of the Texas Section of AAPT, Texas Section of APS, and Zone 13 of SPS
- Research Conference Session Chair** 2024
Joint Meeting of the Texas Section of AAPT, Texas Section of APS, and Zone 13 of SPS
- Peer Reviewer of Book Proposal** 2024
CRC Press, Chapman & Hall. Served as a peer reviewer of a book proposal titled “Modern Nuclear Physics and its Applications for the 21st Century.”
- Science Consultant** 2024
New York Times. Provided science consulting regarding solar heating.
- Science Consultant** 2024
Yahoo Life. Provided science consulting regarding microwave radiation.
- Peer Reviewer of a Research Article** 2024
Optics Letters
- Science Consultant** 2023
National Geographic. Provided science consulting regarding microwave radiation.
- Science Consultant** 2023
Reuters News. Provided science consulting regarding wildfires.
- Peer Reviewer of a Research Article** 2023
Optics Express
- Peer Reviewer of Book Proposal** 2023
Taylor & Francis. Served as a peer reviewer of a proposed second edition to a book titled, “Modern Physics.”

- Science Consultant** 2023
Experience Life Magazine. Provided science consulting regarding blood flow.
- Peer Reviewer of Book Proposal** 2023
Nature Scientific Reports
- Science Bowl Science Judge** 2017-2023
National Science Bowl Regional Competitions, Department of Energy
- Peer Reviewer of Book Proposal** 2023
Applied Optics
- Peer Reviewer of a Research Article** 2022
Optics Express
- Science Consultant** 2022
Newsweek. As an invited consultant, provided information on the physics of auroras and the Russell-McPherron Effect.
- Peer Reviewer of a Research Article** 2022
AIP Advances
- Peer Reviewer of Book Proposal** 2022
SPIE. Served as a peer reviewer of a book proposal titled, "Electromagnetic Theory and Applications for the Optical Engineer."
- Peer Reviewer of Book Revision** 2022
McGraw-Hill. Served as a peer reviewer of a revision of a textbook titled, "College Physics."
- Author of Short Article** 2021
All About Space. As an invited author, wrote a short article titled, "Can a Star Turn into a Planet?" July 2021 issue.

- Author of Short Article** 2021
All About Space. As an invited author, wrote a short article titled, “Where is the Edge of the Universe?” Jan. 2021 issue.
- Science Consultant** 2020
Live Science. As an invited contributor, provided extensive quotes and science consulting for an article titled, “What Color is the Sun?” published Dec. 2020.
- Author of Short Article** 2020
All About Space. As an invited author, wrote a short article titled, “Why Don’t We See Galaxies Rotating?” Dec. 2020 issue.
- Peer Reviewer of a Research Article** 2020
Applied Optics
- Student Research Conference Science Judge** 2018
Texas A&M University System Pathways Student Research Symposium
- Peer Reviewer of a Research Article** 2018
Journal of Optics
- Peer Reviewer of Three Grant Proposals** 2018
Oak Ridge Associated Universities, Physical Sciences Panel
- Peer Reviewer of Three Grant Proposals** 2018
Oak Ridge Associated Universities, Applied Sciences Panel
- Peer Reviewer of a Research Article** 2018
Journal of Optics
- Peer Reviewer of a Research Article** 2018
Applied Optics

Peer Reviewer of a Research Article 2017
AIP Advances

Peer Reviewer of a Research Article 2017
Optics Express

Peer Reviewer of a Research Article 2017
Applied Optics

Peer Reviewer of a Research Article 2017
Journal of Optics

Peer Reviewer of a Research Article 2017
Journal of Applied Physics

Science Consultant 2016
Popular Mechanics Magazine

Science Consultant 2016
Who Wants To Be a Millionaire Television Program

Peer Reviewer of a Research Article 2016
Journal of Applied Physics

LOCAL COMMUNITY SERVICE WHILE AT WEST TEXAS A&M UNIVERSITY

Church Service Volunteer 2016-2025
Church of Jesus Christ of Latter-day Saints, Amarillo, TX
Served in various local and regional church leadership positions.

Assistant Scoutmaster & Unit Commissioner 2016-2020
Boys Scouts of America, Amarillo, TX

High School Student Research Conference Science Judge

2018

Randall High School Science Research Conference, Amarillo, TX

Solar Eclipse Science Demonstrator

2017

2017 Solar Eclipse Viewing Event, Canyon Area Library, Canyon, TX

Science Demonstrator

2016-2017

Canyon High School Family Science Night, Amarillo, TX

Organized and directed three different science demonstrations both years. Trained and directed the physics students from West Texas A&M University that helped run the demonstrations.

PROFESSIONAL SERVICE WHILE AT UMASS LOWELL***UNIVERSITY SERVICE WHILE AT UMASS LOWELL***

Supervisor of Student Research 2005-2016

University of Massachusetts Lowell

Supervised the original research of 13 students in the fields of quantum cascade lasers, wind turbine defect detection, and radar scattering. This research led to the successful completion of a student's Ph.D. dissertation on quantum cascade lasers and another student's M.S. thesis on wind turbine defect detection, as well as numerous capstone projects and student presentations at research conferences.

Physics Graduate Comprehensive Exam Committee Member 2007-2016

University of Massachusetts Lowell

Wrote and corrected the written electromagnetism section of the exam every year.
Administered the oral electromagnetism section of the exam every year.

Masters Thesis Defense Committee Chair for Robert Martin 2016

University of Massachusetts Lowell

Doctoral Dissertation Defense Committee Member for Brian Wells 2015

University of Massachusetts Lowell

Masters Thesis Defense Committee Member for Christopher Roberts 2015

University of Massachusetts Lowell

Doctoral Thesis Defense Committee Chair for Philip Slingerland 2011

University of Massachusetts Lowell

Masters Thesis Defense Committee Member for Robert Esposito 2009

University of Massachusetts Lowell

REGIONAL AND GLOBAL SERVICE WHILE AT UMASS LOWELL

Author and Publisher of Science Articles for the General Public 2012-2016

“Science Questions with Surprising Answers,” wtamu.edu/~cbaird/sq/

Authored, designed, and self-published 340 science articles for the general public while at UMass Lowell. Answered approximately 3100 science questions from readers of these articles via email, averaging 2.2 questions answered per day for about 4 years. These articles have been quoted by Space.com, Weather.com, NASA, EarthSky, The HuffPost, UK Express News, RealClearScience, the Library of Congress’s Everyday Mysteries, and other media outlets.

Peer Reviewer of a Physics Textbook 2015

CRC Press

Peer Reviewer of a Grant Proposal 2015

NASA Postdoctoral Program

Peer Reviewer of a Research Article 2015

IEEE Transactions on Antennas and Propagation

Peer Reviewer of a Research Article 2015

Applied Optics

Peer Reviewer of a Research Article 2015

Journal of Optics

Peer Reviewer of a Research Article 2015

IEEE Transactions on Antennas and Propagation

Peer Reviewer of a Research Article 2015

IEEE Transactions on Antennas and Propagation

Peer Reviewer of a Grant Proposal 2014

NASA Postdoctoral Program

Peer Reviewer of a Research Article 2014
Optics Letters

Peer Reviewer of a Research Article 2013
Applied Physics Letters

Peer Reviewer of a Research Article 2012
IEEE Transactions on Antennas and Propagation

Peer Reviewer of a Research Article 2012
Optics Express

Peer Reviewer of a Research Article 2011
IEEE Transactions on Antennas and Propagation

LOCAL COMMUNITY SERVICE WHILE AT UMASS LOWELL

Church Service Volunteer 2007-2016
Church of Jesus Christ of Latter-day Saints, Nashua, NH
Served in various local and regional church leadership positions, attending meetings approximately two times per week.

Art Teacher 2014
Hudson Homeschooling Group, Hudson, NH
Taught pencil drawing and art technique once per week to children of all ages from different families.

PROFESSIONAL DEVELOPMENT

Joint Meeting of the Texas Section of AAPT, Texas Section of APS, & SPS Zone 13 <i>Research Conference, Corpus Christi, TX</i>	2021-2024
SPIE Photonics West <i>Research Conference, San Francisco, CA</i>	2019
SPIE Optics+Photonics <i>Research Conference, San Diego, CA</i>	2018
Chip-Scale Terahertz Frequency Combs & Multiheterodyne Spectroscopy <i>Research Webinar, Optical Society of America</i>	2017
WindSTAR AIB <i>Research Conference, Lowell, MA</i>	2015
SPIE Defense, Security, and Sensing <i>Research Conference, Orlando, FL</i>	2010
Xpatch Electromagnetics Workshop <i>Professional Development Workshop, Urbana-Champaign, IL</i>	2008
SPIE Defense, Security, and Sensing <i>Research Conference, Orlando, FL</i>	2007
SPIE Defense, Security, and Sensing <i>Research Conference, Orlando, FL</i>	2006
SPIE Defense, Security, and Sensing <i>Research Conference, Orlando, FL</i>	2005