

CURRICULUM VITÆ¹

JOHN ZWECK

CONTACT INFORMATION

Address: The University of Texas at Dallas
Department of Mathematical Sciences, FO 35
800 West Campbell Road
Richardson, TX 75080-3021

Office: FO 3.704J

Email: zweck@utdallas.edu

Phone: (972) 883 6699

EDUCATION

Ph.D. 1993 Rice University, Mathematics

B.Sc. 1988 University of Adelaide, Mathematical Sciences (*Honours*)

EMPLOYMENT HISTORY

2012– University of Texas at Dallas, Professor, Department of Mathematical Sciences and Affiliate Professor, Department of Science/Mathematics Education

2012–2014 Adjunct Professor of Computer Science and Electrical Engineering, University of Maryland Baltimore County

2006–2012 University of Maryland Baltimore County, Associate Professor with tenure, Department of Mathematics and Statistics

2006–2012 University of Maryland Baltimore County, Affiliate Associate Professor, Department of Computer Science and Electrical Engineering

Spring 2007 Research Scholar, Department of Mathematics, University of Texas at Austin

2003–2006 University of Maryland Baltimore County, Assistant Professor, Department of Mathematics and Statistics

2003 University of Maryland Baltimore County, Research Associate Professor, Department of Computer Science and Electrical Engineering

2000–2002 University of Maryland, Baltimore County, Research Associate, Department of Computer Science and Electrical Engineering

¹Sep 2, 2017

1998–2000	University of New Mexico, Postdoctoral Researcher, Department of Computer Science and Albuquerque High Performance Computing Center
1995–1998	University of Nevada Reno, Assistant Professor, Department of Mathematics
1996–1997	University of Texas at Austin, Visiting Lecturer, Department of Mathematics
1994–1995	State University of New York at Stony Brook, Visiting Assistant Professor, Department of Mathematics
1993–1994	Rice University, Lecturer, Department of Mathematics
1988–1993	Rice University, Graduate Teaching Assistant, Department of Mathematics

RESEARCH SPECIALTIES

- Modeling, analysis, simulation, experimental validation, and design optimization of high performance engineering systems and devices
 - Short-pulse mode-locked fiber lasers (pulse dynamics, stability, noise modeling)
 - Trace gas sensors
 - Plasma processing systems
 - Optical fiber communications systems
 - Models typically involve partial and/or ordinary differential equations and often incorporate stochasticity
 - Nonlinear waves and nonlinear optics
 - Advanced Monte Carlo methods for the simulation of rare events
 - Numerical methods
- Image analysis and applications of differential geometry
 - Statistics on manifolds (nonparametric Bayesian density estimation)
 - Computational anatomy (diffeomorphic curvature flow of surfaces)
 - Human and computer vision (contour completion and saliency)
 - Numerical methods

GRANTS/CONTRACTS AWARDED

2017-2018	\$6,500 (UTD Internal), Instructional Improvement Award, UT Dallas Center for Teaching and Learning, <i>TA Training for more Active Learning in Mathematical Sciences Service Courses</i> (Collaboration with Mietek Dabkowski)
2016-2019	\$97,488 (UTD Direct), \$149,156 (UTD Total), National Science Foundation, DMS Computational Mathematics <i>Collaborative Research: Multiphysics Modeling and Analysis of Thermo-Visco-Acoustic Equations with Applications to the Design of Trace Gas Sensors</i> , P.I. (Collaboration with S.E. Minkoff (Math, UTD), R. Kirby (Math, Baylor))

- 2015-2017 \$52,363 (UTD direct), \$80,115 (UTD total), National Science Foundation: Robert Noyce Teacher Scholarship Program, *MATH: Supplement: Pedagogical Coaches to Develop Geometric Imagination and Conceptual Thinking for Calculus III*, Supplement to “*The UTeach Dallas Noyce Teacher Scholarship Program*”, co-P.I., (Collaboration with M. Urquhart (P.I.), H. Montgomery, and S. Minkoff (Math))
- 2015-2018 \$496,629 (UTD direct), \$598,722 (UTD total), National Science Foundation “*EDT: Team Training Mathematical Scientists through Industrial Collaborations*”, co-P.I. (Collaboration with S.E. Minkoff (P.I.), Y. Cao, Y. Gel, F. Pereira, (Math, UTD))
- 2014-2019 \$722,201 (UTD direct), \$799,688 (UTD total), National Science Foundation: Robert Noyce Teacher Scholarship Program, “*The UTeach Dallas Noyce Teacher Scholarship Program*”, co-P.I., (Collaboration with M. Urquhart (P.I.), H. Montgomery, and S. Minkoff (Math))
- 2012 \$59,524 (direct), \$75,000 (total), Subcontract from John Hopkins Applied Physics Laboratory, “*Modulation format identification under polarization mode dispersion impairments and identification of high-order formats*,” co-P.I. (Collaboration with Curtis Menyuk (P.I.), CSEE, UMBC)
- 2011–2012 \$42,230 (direct), \$62,500 (total), Subcontract from John Hopkins Applied Physics Laboratory “*Format Independent Receiver for Digital Optical Data Systems, Extension of Phase II*”, co-P.I. (Collaboration with Curtis Menyuk (P.I.), CSEE, UMBC)
- 2011–2012 \$28,784 (direct), \$46,200 (total), Subgrant from National Science Foundation: Engineering Research Center on Mid InfraRed Technologies for Health and the Environment “*Geometrical Dependence of Tuning Fork Q-factors for Optimized QEPAS Sensors*”, P.I., (Collaboration with S.E. Minkoff, Math&Stat UMBC, and F. Tittel, Rice University)
- 2010–2011 \$27,027 (direct), \$40,000 (total), Subcontract from John Hopkins Applied Physics Laboratory “*Format Independent Receiver for Digital Optical Data Systems, Extension of Phase II*”, co-P.I. (Collaboration with Curtis Menyuk (P.I.), CSEE, UMBC)
- 2010–2011 \$32,014 (direct), \$47,380 (total), Subgrant from National Science Foundation: Engineering Research Center on Mid InfraRed Technologies for Health and the Environment “*Design Optimization of Tuning Forks for QEPAS and ROTADE Sensors*”, P.I., (Collaboration with S.E. Minkoff, Math&Stat UMBC, and A. Kosterev, Rice University)
- 2010 \$19,842 (direct), \$25,000 (total), Subcontract from John Hopkins Applied Physics Laboratory “*Laser Modeling Analysis*”, co-P.I. (Collaboration with Curtis Menyuk (P.I.), CSEE, UMBC)
- 2009–2010 \$31,769 (direct), \$46,700 (total), Subgrant from National Science Foundation: Engineering Research Center on Mid InfraRed Technologies for Health and the Environment “*Development, verification, and validation of three-dimensional models for QEPAS and ROTADE sensors*”, P.I., (Collaboration with S.E. Minkoff, Math&Stat UMBC, and A. Kosterev, Rice University)

- 2009 \$19,842 (direct), \$25,000 (total), Subcontract from John Hopkins Applied Physics Laboratory “*Laser Modeling Analysis*”, co-P.I. (Collaboration with Curtis Menyuk (P.I.), CSEE, UMBC)
- 2009–2010 \$59,121 (direct), \$87,484 (total), Subcontract from John Hopkins Applied Physics Laboratory “*Format Independent Receiver for Digital Optical Data Systems, Phase II*”, co-P.I. (Collaboration with Curtis Menyuk (P.I.), CSEE, UMBC)
- 2008 \$34,014 (direct), \$50,000 (total), Subcontract from John Hopkins Applied Physics Laboratory “*Format Independent Receiver for Digital Optical Data Systems, Phase I*”, co-P.I. (Collaboration with Curtis Menyuk (P.I.), CSEE, UMBC)
- 2008–2009 \$32,653 (direct), \$48,000 (total), Subgrant from National Science Foundation: Engineering Research Center on Mid InfraRed Technologies for Health and the Environment “*Computational Modeling of Quartz-Enhanced Photoacoustic and Optothermal Spectroscopy Sensors*”, P.I., (Collaboration with S.E. Minkoff, Math&Stat UMBC, A. Kosterev, Rice University, and C.R. Menyuk CSEE, UMBC)
- 2007–2008 \$34,014 (direct), \$50,000 (total), Technion Foundation, “*Frequency Metrology with Short Pulse Lasers*”, co-P.I. (Collaboration with Curtis Menyuk (P.I.), CSEE, UMBC)
- 2007–2008 \$32,432 (direct), \$48,000 (total), Subgrant from National Science Foundation: Engineering Research Center on Mid InfraRed Technologies for Health and the Environment “*Computational Modeling of Quartz-Enhanced Photoacoustic Spectroscopy Sensors*”, P.I., (Collaboration with S.E. Minkoff, Math&Stat UMBC, A. Kosterev, Rice University, and C.R. Menyuk CSEE, UMBC)
- 2006–2007 \$27,211 (direct), \$40,000 (total), Subgrant from National Science Foundation: Engineering Research Center on Mid InfraRed Technologies for Health and the Environment “*Computational Modeling of Quartz-Enhanced Photoacoustic Spectroscopy Sensors*”, P.I., (Collaboration with S.E. Minkoff, Math&Stat UMBC, A. Kosterev, Rice University, and C.R. Menyuk CSEE, UMBC)
- 2005 \$7,000 (Summer salary support directly from JHU), Center for Imaging Science, Whiting School of Engineering, Johns Hopkins University, “*Statistical characterization of the roughness of the cingulate gyrus in schizophrenic and normal subjects*”.
- 2004–2007 \$169,949 (direct), \$232,800 (total), National Science Foundation: Division of Electrical and Communications Systems, Award ECS-0400535 “*Accurate calculation of bit-error ratios in optical fiber communications systems*”, co-P.I., (Collaboration with C.R. Menyuk (P.I.), G.M. Carter, and J.M. Morris, CSEE, UMBC)
- 2002–2003 \$25,000 (direct), \$34,937 (total), NASA Goddard/UMBC Center for Advanced Study of Photonics Research: “*Numerical simulation and analysis of*

- fiber optic compensators*”, co-P.I., (Collaboration with S.E. Minkoff (P.I.), Mathematics and Statistics, UMBC)
- 2002–2005 \$173,050 (direct), \$210,000 (total), National Science Foundation, Division of Electrical and Communications System, Award ECS-020019: “*Polarization effects in long-haul wavelength-division multiplexed optical communications systems*”, co-P.I., (Collaboration with L. Yan (P.I.), B.S. Marks, G.M. Carter, and C.R. Menyuk, CSEE, UMBC)
- 2001–2002 Science Applications International Corporation: “*Modeling optical fiber transmission systems*”, Scientific Liaison, (Contract awarded to G.M. Carter (P.I.) and C.R. Menyuk, CSEE, UMBC)
- 1995–1997 \$218,898 (direct), \$300,000 (total), National Science Foundation, Division of Mathematical Sciences, Award DMS-9505174: “*Cycles, residues and global problems in geometry*”, co-P.I., (Collaboration with B. Lawson (P.I.) and M-L. Michelsohn (P.I.))
- 1991–1992 Schlumberger Foundation Fellowship, Rice University

PATENTS AND DISCLOSURES OF INVENTION

Patents

1. E.J. Adles, M.L. Dennis, R.M. Sova, J.E. Sluz, M.G. Taylor, C.R. Menyuk, and **J. Zweck** *Cueing System for Universal Optical Receiver*, 2015, [United States Patent No. 8,971,701 B2, Mar. 3, 2015]
2. J.M. Morris, R. Holzlöhner, A. Mahadevan, C.R. Menyuk, and **J. Zweck**, *System and method for estimating probabilities of events*, 2006, [United States Patent No. 8,144,757 B2, Mar. 27th, 2012]

Patent Applications

1. **J. Zweck** and C.R. Menyuk, *Method for Estimation of Chromatic Dispersion for a Universal Optical Receiver*, 2012 [United States Provisional Patent Application, 61695025]

PUBLICATIONS²

Works Submitted or in Preparation

1. Y. Chen, **J. Zweck**, M. Goeckner, and Y. Shen, “Deterministic computation of the low probability tail of the velocity distribution due to particle collisions in spatially homogeneous plasmas”, [*in preparation for submission to SIAM J. Scientific Computing*]

²On photonics papers for which a student is first author, the first faculty author is indicated with a *.

2. **J. Zweck** and C.R. Menyuk, “Computation of the timing jitter, phase jitter, and linewidth of a similariton laser”, [*in preparation for submission to Optics Express*], 2017
3. C. Contreras, J. Langford, L. Ammann, **J. Zweck**, and B. Marks, “Assignment algorithms for a target tracking measurement-to-measurement association problem with two cameras and one radar”, [*in preparation for submission to IEEE Transactions on Aerospace and Electronic Systems*], pp. 1–11, 2017
4. A. Safin, S. Minkoff, and **J. Zweck**, “A preconditioned finite element solution of the coupled pressure-temperature equations used to model trace gas sensors”, [*submitted to SIAM J. Scientific Computing*], pp. 1–26, 2017

Peer-Reviewed Works

Chapters in Books

5. C.R. Menyuk, B.S. Marks, I.T. Lima, Jr., **J. Zweck**, Y. Sun, G.M. Carter, and D. Wang, “Polarization effects in long-haul undersea systems”, in *Undersea Fibre Communication Systems*, José Chesnoy, ed., Elsevier Press, 2002

Articles

6. J. Kaderli, **J. Zweck**, A. Safin, and S.E. Minkoff, “An analytic solution to the coupled pressure-temperature equations for modeling of photoacoustic trace gas sensors”, *Journal of Engineering Mathematics*, **103** pp. 173–193, 2017
7. **J. Zweck**, “Analysis of the Methods Used to Reconstruct the Flight Path of Malaysia Airlines Flight 370”, *SIAM Review*, **58** (3), pp. 555–574, 2016
8. Y. Shen, **J. Zweck**, S. Wang, and C.R. Menyuk, “Spectra of Short Pulse Solutions of the Cubic-Quintic Complex Ginzburg Landau Equation near Zero Dispersion”, *Studies in Applied Mathematics (Special Issue in Honor of Mark Ablowitz)*, **137**, pp. 238–255, 2016
9. N. Petra, **J. Zweck**, S.E. Minkoff, A.A. Kosterev, and J.H. Doty III, “Modeling and design optimization of a resonant optoacoustic trace gas sensor”, *SIAM J. Applied Mathematics*, **71** (1) pp. 309–332, 2011
10. H. Jiao, **J. Zweck***, L. Yan, C.R. Menyuk, and G.M. Carter, “Receiver model for depolarized signal due to polarization-mode dispersion and partially polarized noise due to polarization-dependent loss in an optical fiber communication system”, *Journal of Lightwave Technology*, **27** (18) pp. 4124–4315, 2009
11. N. Petra, **J. Zweck***, A.A. Kosterev, S.E. Minkoff, and D. Thomazy, “Theoretical analysis of a quartz-enhanced photoacoustic spectroscopy sensor”, *Applied Physics B: Lasers and Optics*, **94** (4) pp. 673–680, 2009
12. **J. Zweck** and C.R. Menyuk, “Validity of the additive white Gaussian noise model for quasi-linear long-haul return-to-zero optical fiber communications systems”, *Journal of Lightwave Technology*, **27** (16) pp. 3324–3335, 2009

13. S. Zhang, L. Younes, **J. Zweck**, and T. Ratnanather, “Diffeomorphic surface flows: A novel method of surface evolution”, *SIAM Journal on Applied Mathematics*, **68**, (3), pp. 806-824, 2008
14. P. Griggio, J. Hu, J. Wen, G. E. Tudury*, **J. Zweck**, B. S. Marks, L. Yan, G. M. Carter, and C. R. Menyuk, “Characterizing pattern dependence in transmitters and receivers for optical communications systems”, *Optics Communications*, **272** (1), pp. 107-110, 2007
15. **J. Zweck** and S.E. Minkoff, “Modeling compensation for optical fiber communication systems”, *SIAM Journal on Optimization*, **17** (3), pp. 738–775, 2006
16. H. Xu, B.S. Marks*, **J. Zweck**, L. Yan, C.R. Menyuk, and G.M. Carter, “Statistical properties of the DGD in a long-haul optical fiber system with temporally drifting birefringence”, *Journal of Lightwave Technology*, **24** (3), pp. 1165–1175, 2006
17. W. Xi, T. Adali*, and **J. Zweck**, “A MAP equalizer for the optical communications channel”, *Journal of Lightwave Technology*, **23** (12), pp. 3989–3996, 2005
18. O.V. Sinkin, V.S. Grigoryan*, **J. Zweck**, C.R. Menyuk, A. Docherty, and M. Ablowitz, “Calculation, characterization, and application of the time-shift function in wavelength-division-multiplexed return-to-zero systems”, *Optics Letters*, **30** (16), pp. 2056–2058, 2005
19. W. Pellegrini, **J. Zweck***, C.R. Menyuk, and R. Holzlöhner, “Computation of bit error ratios for a dense WDM system using the noise covariance matrix and multicanonical Monte Carlo methods”, *Photonics Technology Letters*, **17** (8), pp. 1644–1646, 2005
20. I.T. Lima Jr., A.O. Lima, Y. Sun, H. Jiao, **J. Zweck***, C.R. Menyuk, and G.M. Carter, “A receiver model for optical fiber communication systems with arbitrarily polarized noise”, *Journal of Lightwave Technology*, **23** (3), pp. 1478–1490, 2005
21. R. Holzlöhner, A. Mahadevan, C.R. Menyuk*, J.M. Morris, and **J. Zweck**, “Evaluation of the very low BER of FEC codes using dual adaptive importance sampling”, *IEEE Communications Letters* **9** (2), pp. 163-165, 2005
22. H. Xu, **J. Zweck***, L. Yan, C.R. Menyuk, and G.M. Carter, “Quantitative experimental study of intra-channel nonlinear timing jitter in a 10 Gb/s terrestrial WDM return-to-zero system”, *Photonics Technology Letters*, **16** (1), pp. 314–316, 2004
23. **J.W. Zweck** and L.R. Williams, “Euclidean group invariant computation of stochastic completion fields using shiftable-twistable functions”, *Journal of Mathematical Imaging and Vision*, **21**, (2), pp. 135–154, 2004
24. L.R. Williams and **J. Zweck**, “A rotation and translation invariant discrete saliency network”, *Biological Cybernetics*, **88**, (1), pp. 2-10, 2003
25. R. Harvey, B. Lawson (*First Author*), and **J. Zweck**, “The de Rham-Federer theory of differential characters and character duality”, *American Journal of Mathematics*, **125**, (4), pp. 791–847, August 2003
26. Y. Sun, I.T. Lima Jr., A.O. Lima, H. Jiao, **J. Zweck***, L. Yan, C.R. Menyuk, and G.M. Carter, “System performance variations due to partially polarized noise in a receiver”, *Photonics Technology Letters*, **15** (11), pp. 1648–1650, 2003

27. T. Wanner, B.S. Marks, C.R. Menyuk, and **J. Zweck**, “Polarization decorrelation in optical fibers with randomly varying elliptical birefringence”, *Optics Letters*, **28** (19), pp. 1799–1801, 2003
28. Y. Sun, A.O. Lima, I.T. Lima Jr., **J. Zweck***, L. Yan, C.R. Menyuk, and G.M. Carter, “Statistics of the system performance in a scrambled recirculating loop with PDL and PDG”, *Photonics Technology Letters*, **15** (8), pp. 1067–1069, 2003
29. I.T. Lima, Jr., A.O. Lima, **J. Zweck***, and C.R. Menyuk, “Performance characterization of chirped return-to-zero modulation format using an accurate receiver model”, *Photonics Technology Letters*, **15**, (4), pp. 608–610, 2003
30. **J. Zweck** and C.R. Menyuk, “Reduction of intra-channel four-wave mixing using subchannel multiplexing”, *Photonics Technology Letters*, **15**, (2), pp. 323–325, 2003
31. I.T. Lima, Jr., A.O. Lima, **J. Zweck***, and C.R. Menyuk, “Efficient computation of outage probabilities due to polarization effects in a WDM system using a reduced Stokes model and importance sampling”, *Photonics Technology Letters*, **15**, (1), pp. 45–47, 2003
32. O.V. Sinkin, R. Holzlöhner, **J. Zweck***, and C.R. Menyuk, “Optimization of the split-step Fourier method in modeling optical fiber communications systems”, *Journal of Lightwave Technology*, **21**, (1), pp. 61–68, 2003
33. **J. Zweck** and C.R. Menyuk, “Analysis of four-wave mixing between pulses in high-data-rate quasi-linear subchannel-multiplexed systems”, *Optics Letters*, **27**, (14), pp. 1235–1237, 2002
34. O.V. Sinkin, **J. Zweck***, and C.R. Menyuk, “A comparative study of pulse interactions in optical fiber transmission systems with different modulation formats”, *Optics Express*, **9**, (7), pp. 339–352, 2001
35. R. Harvey and **J. Zweck** (*First Author*), “Divisors and Euler sparks of atomic sections”, *Indiana University Mathematics Journal*, **50**, (1), pp. 243–298, 2001
36. “The Stiefel–Whitney spark”, *Houston Journal of Mathematics*, **27**, (2), pp. 325–351, 2001
37. L.R. Williams, **J. Zweck**, T. Wang, and K.K. Thornber, “Computing stochastic completion fields in linear-time using a resolution pyramid”, *Computer Vision and Image Understanding*, **76**, (3), pp. 289–297, 1999
38. R. Harvey and **J. Zweck** (*First Author*), “Stiefel–Whitney currents”, *The Journal of Geometric Analysis*, **8**, (5), pp. 809–844, 1998
39. “Chern currents of singular connections associated with a section of a compactified bundle”, *Indiana University Mathematics Journal*, **44**, pp. 341–384, 1995
40. “Euler and Pontrjagin currents of a section of a compactified real bundle”, *Journal of Differential Geometry and its Applications*, **5**, pp. 277–309, 1995

Conference Proceedings

41. J. Popa, K. Nezafati, Y. R. Gel, **J. Zweck**, and G. Bobashev, “Catching Social Butterflies: Identifying Influential Users of an Event-Based Social Networking Service”, *IEEE BigData Congress*, Paper #10982, 2016
42. B. Brennan, R.C. Kirby, **J. Zweck**, and S.E. Minkoff, “High-Performance Python-based Simulations of Pressure and Temperature Waves in a Trace Gas Sensor”, pp. 1-10, *Workshop on Python for High Performance and Scientific Computing (PyHPC 2013)*, *Supercomputing Conference 2013*
43. N. Petra, **J. Zweck**, S.E. Minkoff, A.A. Kosterev, and J.H. Doty III, “Validation of a Model of a Resonant Optoacoustic Trace Gas Sensor”, *Conference on Lasers and Electro-Optics*, Baltimore, MD, 2011, paper JTuI115 [poster]
44. **J. Zweck** and C.R. Menyuk, “A Chromatic Dispersion Estimation Method for Arbitrary Modulation Formats”, *Conference on Lasers and Electro-optics*, Baltimore, MD, 2011, paper CThX4
45. N. Petra, A. A. Kosterev, **J. Zweck**, S. E. Minkoff, and J.H. Doty III, “Numerical and experimental investigation for a resonant optoacoustic sensor”, *Conference on Lasers and Electro-Optics*, San Jose, CA, 2010, paper CMJ6
46. V. Veerasubramanian, J. Hu, **J. Zweck***, C. R. Menyuk, “Propagation analysis of an 80-Gb/s wavelength-converted signal utilizing XPM”, *Optical Fiber Communications 2008*, San Diego, CA, paper JWA69, [poster]
47. J.T. Ratnanather, L. Younes, **J. Zweck**, L. Wang, M. Hosakere, J.G. Csernansky, and M.I. Miller, “Statistical analysis of surface roughness via local area maps: Application to the cingulate gyrus in healthy and schizophrenic subjects”, *2007 International Congress on Schizophrenia Research*, Colorado Springs, Colorado, 2007, paper 99, [poster]
48. **J. Zweck** and C.R. Menyuk, “Detection and mitigation of soft failure due to polarization-mode dispersion in optical networks”, *Optical Fiber Communications 2006*, Anaheim, CA, paper OFG5
49. O.V. Sinkin, V.S. Grigoryan*, **J. Zweck** and C.R. Menyuk, “Calculation of the bit-error ratio in wavelength-division-multiplexed return-to-zero systems when the non-linear penalty is dominated by collision-induced timing jitter”, *Optical Fiber Communications 2006*, Anaheim, CA, paper JThB3
50. L. Fomundam, **J. Zweck***, H. Xu, H. Jiao, and G.M. Carter, “Probability density functions of rotations in loop-synchronous polarization scrambling for recirculating loop experiments”, *Optical Fiber Communications 2006*, Anaheim, CA, paper OWI16
51. W. Xi, T. Adali*, and **J. Zweck**, “Electrical estimation of conditional probability for maximum-likelihood based PMD mitigation”, *Optical Fiber Communications 2005*, Anaheim, CA, paper OWJ5
52. A.O. Lima, I.T. Lima Jr., C.R. Menyuk*, and **J. Zweck**, “Performance evaluation of single-section and three-section PMD compensators using extended Monte Carlo methods”, *Optical Fiber Communications 2005*, Anaheim, CA, paper OME27

53. H. Xu, B.S. Marks*, **J. Zweck**, L. Yan, C.R. Menyuk, and G.M. Carter, “The long-term distribution of differential group delay in a recirculating loop”, *Symposium on Optical Fiber Measurements, SOFM 2004*, Boulder Colorado, paper V3, pp. 95–98
54. W. Wang, O.V. Sinkin, T. Adali*, **J. Zweck**, and C.R. Menyuk, “Prior-based line-coding for WDM RZ systems”, *Conference on Lasers and Electro-Optics* San Francisco, CA, 2004, paper CFN5
55. A. Kalra, **J. Zweck***, and C.R. Menyuk, “Comparison of bit-error ratios for receiver models with integrate-and-dump and realistic electrical filters using the Gaussian approximation”, *Conference on Lasers and Electro-Optics* San Francisco, CA, 2004, paper CWA24, [poster]
56. W. Xi, T. Adali*, and **J. Zweck**, “A MAP equalizer for the optical communications channel”, *International Conference on Acoustics, Speech, and Signal Processing*, Montreal, Canada, 2004, paper SPCOM-P10, [poster]
57. O.V. Sinkin, V.S. Grigoryan*, R. Holzlöhner, A. Kalra, **J. Zweck**, and C.R. Menyuk, “Calculation of error probability in WDM RZ systems in presence of bit-pattern-dependent nonlinearity and of noise”, *Optical Fiber Communications 2004*, Los Angeles, CA, paper TuN4
58. O.V. Sinkin, R. Holzlöhner, V.S. Grigoryan*, **J. Zweck**, and C.R. Menyuk, “Probabilistic description of nonlinear penalties in WDM RZ systems using multicanonical Monte Carlo simulations”, *IEEE Lasers and Electro-optics Society (LEOS) 2003 Annual Meeting*, Tuscon AZ, paper ThI5
59. A.O. Lima, I.T. Lima Jr., **J. Zweck***, and C.R. Menyuk, “Efficient computation of PMD-induced penalties using multicanonical Monte Carlo simulations”, *ECOC-IOOC 2003*, Rimini, Italy, paper 507, [One of winners of the “2002 Venice Summer School on PMD Awards” for student papers on polarization-mode dispersion at ECOC-IOOC 2003]
60. I.T. Lima Jr., A.O. Lima, **J. Zweck***, and C.R. Menyuk, “An accurate formula for the Q -factor of a fiber transmission system with partially polarized noise”, *Conference on Lasers and Electro-Optics 2003*, Baltimore, MD, paper CThJ2
61. H. Jiao, I.T. Lima Jr., A.O. Lima, Y. Sun, **J. Zweck***, L. Yan, C.R. Menyuk, and G.M. Carter, “Experimental validation of a realistic receiver model for systems with unpolarized noise”, *Conference on Lasers and Electro-Optics 2003*, Baltimore, MD, paper CThJ1
62. **J. Zweck**, S.E. Minkoff, A.O. Lima, I.T. Lima, Jr., and C.R. Menyuk, “A comparative study of feedback controller sensitivity to all orders of PMD for a fixed DGD compensator”, *Optical Fiber Communications 2003*, Atlanta, GA, paper ThY2
63. T. Wanner, B.S. Marks, C.R. Menyuk, and **J. Zweck**, “Polarization mode dispersion, decorrelation, and diffusion in optical fibers with randomly varying elliptical birefringence”, *Optical Fiber Communications 2003*, Atlanta, GA, paper WJ5
64. O.V. Sinkin, **J. Zweck***, and C.R. Menyuk, “Effects of the nonlinearly-induced timing and amplitude jitter on the performance of different modulation formats in WDM

- optical fiber communications systems”, *Optical Fiber Communications 2003*, Atlanta, GA, paper TuF5
65. I.T. Lima Jr., A.O. Lima, **J. Zweck***, and C.R. Menyuk, “Computation of the Q -factor in optical fiber systems using an accurate receiver model”, *Optical Fiber Communications 2003*, Atlanta, GA, paper MF81
 66. W. Xi, T. Adali*, A.O. Lima, W. Wang, **J. Zweck**, and C.R. Menyuk, “Electrical estimation of polarization mode dispersion parameters for compensation”, *Optical Fiber Communications 2003*, Atlanta, GA, paper TuO5
 67. H. Xu, J. Wen, **J. Zweck***, L. Yan, C.R. Menyuk, and G.M. Carter, “The effects of distributed PMD, PDL, and loop scrambling on BER distributions in a recirculating loop used to emulate a long-haul terrestrial transmission”, *Optical Fiber Communications 2003*, Atlanta, GA, paper TuO2
 68. H. Xu, H. Jiao, J. Wen, **J. Zweck***, L. Yan, C.R. Menyuk, and G.M. Carter, “Quantitative experimental study of intra-channel nonlinear timing jitter in a 10 Gb/s terrestrial WDM return-to-zero system”, *Optical Fiber Communications 2003*, Atlanta, GA, paper FE7
 69. Y. Sun, I.T. Lima Jr., A.O. Lima, H. Jiao, **J. Zweck***, L. Yan, C.R. Menyuk, and G.M. Carter “Effects of partially polarized noise in a receiver”, *Optical Fiber Communications 2003*, Atlanta, GA, paper MF82
 70. Y. Sun, A.O. Lima, I.T. Lima Jr., L. Yan, **J. Zweck***, C.R. Menyuk, and G.M. Carter, “Accurate Q -factor distributions in optical transmission systems with polarization effects”, *Optical Fiber Communications 2003*, Atlanta, GA, paper ThJ4
 71. I.T. Lima, Jr., A.O. Lima, Y. Sun, **J. Zweck***, B.S. Marks, G.M. Carter, and C.R. Menyuk, “Computation of the outage probability due to the polarization effects using importance sampling”, *Optical Fiber Communications 2002*, Anaheim, CA, paper TuI7
 72. **J. Zweck** and C.R. Menyuk, “Reduction of intra-channel four-wave mixing using subcarrier multiplexing”, *Optical Fiber Communications 2002*, Anaheim, CA, paper ThGG9
 73. L.R. Williams and **J. Zweck**, “A rotation and translation invariant discrete saliency network”, *Advances in Neural Information Processing Systems 14*, MIT Press, 2002, [Full Oral Presentation]
 74. O.V. Sinkin, **J. Zweck***, and C.R. Menyuk, “A comparative study of pulse interactions in optical fiber transmission systems with different modulation formats”, *IEEE Lasers and Electro-Optics Society Annual Meeting*, La Jolla, CA, paper TuK2, 2001, [Winner of IEEE-LEOS Best Student Paper Award]
 75. **J. Zweck** and L.R. Williams, “Euclidean group invariant computation of stochastic completion fields using shiftable-twistable functions”, *Proc. of the 6th European Conference on Computer Vision, Part II*, Dublin, Ireland, Lecture Notes in Computer Science, **1843**, pp. 100–116, Springer-Verlag, 2000

Non-Peer-Reviewed Works

Articles

76. **J. Zweck** , “How did Inmarsat deduce possible flight paths for MH370?”, *SIAM News*, **47**, pp. 1,8, May 2014.
77. **J. Zweck**, I.T. Lima, Jr., Y. Sun, A.O. Lima, C.R. Menyuk, and G.M. Carter, “Modeling receivers in optical communication systems with polarization effects”, *Optics and Photonics News*, November 2003, pp. 30–35
78. **J. Zweck** and L.R. Williams, “A wavelet basis for Euclidean invariant computation of visual contours”, *SIAM News, Applications on Advanced Architecture Computers Column*, **33** (3), 2000
79. **J. Zweck** and L.R. Williams, “Euclidean invariant computation of stochastic completion fields using shiftable-twistable wavelets”, *Applications of High Performance Computing in Engineering VI*, Ingber, Power, and Brebbia (Eds.), WIT Press, 2000

Invited Conference Proceedings

80. C.R. Menyuk, B.S. Marks, and **J. Zweck**, “A methodology for calculating performance in an optical fiber communications system”, *Optical Communication Theory and Techniques, Proceedings of Tyrrhenian International Workshop on Digital Communications*, E. Forestieri (Ed.), Springer-Verlag, pp. 113–120, Pisa Italy, October 17-18, 2004
81. **J. Zweck**, I.T. Lima, Jr., R. Holzlöhner, and C.R. Menyuk, “New advances in modeling optical fiber communication systems”, *Optical Society of America Integrated Photonics Research (Technical Digest)*, paper IThB1, Vancouver, Canada, July 17–19, 2002

PRESENTATIONS

Conference/Poster Presentations (Refereed)

1. J. Popa, K. Nezafati, Y. R. Gel, **J. Zweck**, and G. Bobashev, “Catching Social Butterflies: Identifying Influential Users of an Event-Based Social Networking Service”, *IEEE BigData Congress*, San Francisco, CA, June 30, 2016
2. B. Brennan, R.C. Kirby, **J. Zweck**, and S.E. Minkoff, “High-Performance Python-based Simulations of Pressure and Temperature Waves in a Trace Gas Sensor”, pp. 1-10, *Workshop Python for High Performance and Scientific Computing (PyHPC 2013), Supercomputing Conference 2013*, Denver, CO, Nov 18, 2013.
3. N. Petra, **J. Zweck**, S.E. Minkoff, A.A. Kosterev, and J.H. Doty III, “Validation of a Model of a Resonant Optoacoustic Trace Gas Sensor”, *Conference on Lasers and Electro-Optics*, Baltimore, MD, May 3, 2011, paper JTuI115 [poster]

4. **J. Zweck** and C.R. Menyuk, "A Chromatic Dispersion Estimation Method for Arbitrary Modulation Formats", *Conference on Lasers and Electro-optics*, Baltimore, MD, 2011, May 5, paper CThX4
5. N. Petra, A. A. Kosterev, **J. Zweck**, S. E. Minkoff, and J.H. Doty III, "Numerical and experimental investigation for a resonant optoacoustic sensor", *Conference on Lasers and Electro-Optics* San Jose, CA, May 16-21, 2010, paper CMJ6
6. V. Veerasubramanian, J. Hu, **J. Zweck***, C. R. Menyuk, "Propagation analysis of an 80-Gb/s wavelength-converted signal utilizing XPM", *Optical Fiber Communications 2008*, San Diego, CA, February 24-28, 2008, paper JWA69 [poster]
7. J.T. Ratnanather, L. Younes, **J. Zweck**, L. Wang, M. Hosakere, J.G. Csernansky, and M.I. Miller, "Statistical analysis of surface roughness via local area maps: Application to the cingulate gyrus in healthy and schizophrenic subjects", *2007 International Congress on Schizophrenia Research*, Colorado Springs, Colorado, March 28 - April 1, 2007, paper 99 [poster]
8. **J. Zweck** and C.R. Menyuk, "Detection and mitigation of soft failure due to polarization-mode dispersion in optical networks", *Optical Fiber Communications 2006*, Anaheim, CA, March 7-9, 2006, paper OFG5
9. O.V. Sinkin, V.S. Grigoryan*, **J. Zweck** and C.R. Menyuk, "Calculation of the bit-error ratio in wavelength-division-multiplexed return-to-zero systems when the non-linear penalty is dominated by collision-induced timing jitter", *Optical Fiber Communications 2006*, Anaheim, CA, March 7-9, 2006, paper JThB3 [poster]
10. L. Fomundam, **J. Zweck***, H. Xu, H. Jiao, and G.M. Carter, "Probability density functions of rotations in loop-synchronous polarization scrambling for recirculating loop experiments", *Optical Fiber Communications 2006*, Anaheim, CA, March 7-9, 2006, paper OWI16 [poster]
11. W. Xi, T. Adali, and **J. Zweck**, "Electrical estimation of conditional probability for maximum-likelihood based PMD mitigation", *Optical Fiber Communications 2005*, Anaheim, CA, March 6-11, 2005, paper OWJ5
12. A.O. Lima, I.T. Lima Jr., C.R. Menyuk and **J. Zweck**, "Performance evaluation of single-section and three-section PMD compensators using extended Monte Carlo methods", *Optical Fiber Communications 2005*, Anaheim, CA, March 6-11, 2005, paper OME27 [poster]
13. H. Xu, B.S. Marks, **J. Zweck**, L. Yan, C.R. Menyuk, and G.M. Carter, "The long-term distribution of differential group delay in a recirculating loop", *Symposium on optical fiber measurements, SOFM 2004*, Boulder, Colorado, Wed Sept 29th, Session V, Talk 3, 9:45am
14. C.R. Menyuk, B.S. Marks, and **J. Zweck**, "A methodology for calculating performance in an optical fiber communications system", *Tyrrhenian International Workshop on Digital Communications* Pisa Italy, October 17-18, 2004, [Invited]
15. W. Wang, O.V. Sinkin, T. Adali, **J. Zweck**, and C.R. Menyuk, "Prior-based line-coding for WDM RZ systems", *Conference on Lasers and Electro-Optics* San Francisco, CA, May 16-21, 2004, paper CFN5

16. A. Kalra, **J. Zweck** and C.R. Menyuk, “Comparison of bit-error ratios for receiver models with integrate-and-dump and realistic electrical filters using the Gaussian approximation”, *Conference on Lasers and Electro-Optics* San Fransisco, CA, May 16–21, 2004, paper CWA24, [poster]
17. W. Xi, T. Adali, and **J. Zweck**, “A MAP equalizer for the optical communications channel”, *International Conference on Acoustics, Speech, and Signal Processing*, Montreal, Canada, May 17–21, 2004, paper SPCOM-P10, [poster]
18. O.V. Sinkin, V.S. Grigoryan, R. Holzlöhner, A. Kalra, **J. Zweck**, and C.R. Menyuk, “Calculation of error probability in WDM RZ systems in presence of bit-pattern-dependent nonlinearity and of noise”, *Optical Fiber Communications 2004*, Los Angeles, CA, Feb. 22–27, 2004
19. O.V. Sinkin, R. Holzlöhner, V.S. Grigoryan, **J. Zweck**, and C.R. Menyuk, “Probabilistic description of nonlinear penalties in WDM RZ systems using multicanonical Monte Carlo simulations”, *IEEE Lasers and Electro-optics Society (LEOS) 2003 Annual Meeting*, Tuscon AZ, Oct. 26–30, 2003
20. A.O. Lima, I.T. Lima Jr., **J. Zweck**, and C.R. Menyuk, “Efficient computation of PMD-induced penalties using multicanonical Monte Carlo simulations”, *ECOC-IOOC 2003*, Rimini, Italy, Sept. 21–25, 2003
21. I.T. Lima Jr., A.O. Lima, **J. Zweck**, and C.R. Menyuk, “An accurate formula for the Q -factor of a fiber transmission system with partially polarized noise”, *Conference on Lasers and Electro-Optics 2003*, Baltimore, MD, June 1–6, 2003
22. H. Jiao, I.T. Lima Jr., A.O. Lima, Y. Sun, **J. Zweck**, L. Yan, C.R. Menyuk, and G.M. Carter, “Experimental validation of a realistic receiver model for systems with unpolarized noise”, *Conference on Lasers and Electro-Optics 2003*, Baltimore, MD, June 1–6, 2003
23. **J. Zweck**, S.E. Minkoff, A.O. Lima, I.T. Lima, Jr., and C.R. Menyuk, “A comparative study of feedback controller sensitivity to all orders of PMD for a fixed DGD compensator”, *Optical Fiber Communications 2003*, Atlanta, GA, March 22–27, 2003
24. T. Wanner, B.S. Marks, C.R. Menyuk, and **J. Zweck**, “Polarization mode dispersion, decorrelation, and diffusion in optical fibers with randomly varying elliptical birefringence”, *Optical Fiber Communications 2003*, Atlanta, GA, March 22–27, 2003
25. O.V. Sinkin, **J. Zweck**, and C.R. Menyuk, “Effects of the nonlinearly-induced timing and amplitude jitter on the performance of different modulation formats in WDM optical fiber communications systems”, *Optical Fiber Communications 2003*, Atlanta, GA, March 22–27, 2003
26. I.T. Lima Jr., A.O. Lima, **J. Zweck**, and C.R. Menyuk, “Computation of the Q -factor in optical fiber systems using an accurate receiver model”, *Optical Fiber Communications 2003*, Atlanta, GA, March 22–27, 2003
27. W. Xi, T. Adali, A.O. Lima, W. Wang, **J. Zweck**, and C.R. Menyuk, “Electrical estimation of polarization mode dispersion parameters for compensation”, *Optical Fiber Communications 2003*, Atlanta, GA, March 22–27, 2003

28. H. Xu, J. Wen, **J. Zweck**, L. Yan, C.R. Menyuk, and G.M. Carter, “The effects of distributed PMD, PDL, and loop scrambling on BER distributions in a recirculating loop used to emulate a long-haul terrestrial transmission”, *Optical Fiber Communications 2003*, Atlanta, GA, March 22–27, 2003
29. H. Xu, H. Jiao, J. Wen, **J. Zweck**, L. Yan, C.R. Menyuk, and G.M. Carter, “Quantitative experimental study of intra-channel nonlinear timing jitter in a 10 Gb/s terrestrial WDM return-to-zero system”, *Optical Fiber Communications 2003*, Atlanta, GA, March 22–27, 2003
30. Y. Sun, I.T. Lima Jr., A.O. Lima, H. Jiao, **J. Zweck**, L. Yan, C.R. Menyuk, and G.M. Carter “Effects of partially polarized noise in a receiver”, *Optical Fiber Communications 2003*, Atlanta, GA, March 22–27, 2003
31. Y. Sun, A.O. Lima, I.T. Lima Jr., L. Yan, **J. Zweck**, C.R. Menyuk, and G.M. Carter, “Accurate Q -factor distributions in optical transmission systems with polarization effects”, *Optical Fiber Communications 2003*, Atlanta, GA, March 22–27, 2003
32. I.T. Lima, Jr., A.O. Lima, Y. Sun, **J. Zweck**, B.S. Marks, G.M. Carter, and C.R. Menyuk, “Computation of the outage probability due to the polarization effects using importance sampling”, *Optical Fiber Communications 2002*, Anaheim, CA, Mar. 17–22, 2002
33. **J. Zweck** and C.R. Menyuk, “Reduction of intra-channel four-wave mixing using subcarrier multiplexing”, *Optical Fiber Communications 2002*, Anaheim, CA, Mar. 17–22, 2002, [*Poster*]
34. L.R. Williams and **J. Zweck**, “A rotation and translation invariant discrete saliency network”, *Advances in Neural Information Processing Systems 14*, Vancouver, Canada, Dec. 3–8, 2001, [*Full Oral Presentation*]
35. O.V. Sinkin, **J. Zweck**, and C.R. Menyuk, “A comparative study of pulse interactions in optical fiber transmission systems with different modulation formats”, *IEEE Lasers and Electro-Optics Society Annual Meeting*, La Jolla, CA, paper TuK2, November 12–15, 2001, [*Winner of IEEE-LEOS Best Student Paper Award*]
36. L.R. Williams and **J. Zweck**, “Euclidean group invariant computation of stochastic completion fields using shiftable-twistable functions”, *European Conference on Computer Vision*, Dublin, Ireland, June 26 – July 1, 2000
37. L.R. Williams and **J. Zweck**, “A wavelet basis for Euclidean group invariant computation of stochastic completion fields”, *Learning Workshop*, Snowbird, Utah, April 6–9, 1999

Conference/Poster Presentations (Non-Refereed)

38. A. Safin, **J. Zweck**, and S. Minkoff, “A preconditioning scheme for finite element solution of the coupled pressure-temperature equations used for modeling trace gas sensors”, *International Conference on Preconditioning Techniques for Scientific and Industrial Applications*, Vancouver, CA, Jul 31-Aug 2, 2017

39. C. Contreras, J. Langford, L. Ammann, and **J. Zweck**, “A Three-Sensor Assignment Method for Multiple Target Tracking”, *SIAM Annual Meeting*, Pittsburgh, PA, June 10-14, 2017 [*Poster*]
40. A. Safin, **J. Zweck**, and S. Minkoff, “Accurate finite element solution of the fully coupled thermoacoustic equations for modeling of trace gas sensors”, Minisymposium 253, *SIAM Conference on Computational Science and Engineering*, Atlanta, GA, Feb 27-Mar 3, 2017
41. S. Minkoff and **J. Zweck**, “UTD’s EDT Program: Team Training Mathematical Scientists Through Industrial Collaborations”, *SIAM Conference on Applied Mathematics Education*, Philadelphia, PA, Sep 30-Oct 2, 2016
42. **J. Zweck**, “Developing Geometric Imagination With the Aid of 3D Printed Models”, *SIAM Conference on Applied Mathematics Education*, Philadelphia, PA, Sep 30-Oct 2, 2016
43. **J. Zweck**, Y. Shen, S. Wang, and C.R. Menyuk, “Spectra of Short Pulse Solutions of the Cubic-Quintic Complex Ginzburg Landau Equation near Zero Dispersion”, *SIAM Conference on Nonlinear Waves and Coherent Structures*, Philadelphia, PA, Aug. 8-11, 2016
44. Y. Shen, **J. Zweck**, S. Wang, and C.R. Menyuk, “Spectra of Short Pulse Solutions of the Cubic-Quintic Complex Ginzburg Landau Equation Near Zero Dispersion”, *SIAM Annual Meeting*, Boston, MA, July 11-15, 2016 [*Electronic Poster*]
45. J. Popa, **J. Zweck**, Y. Gel, and K. Nezafati, “Inferring Offline Social Networks from Online Data”, *SIAM Annual Meeting*, Boston, MA, July 11-15, 2016
46. Y. Shen and **J. Zweck** “Numerical Analysis of the Spectrum of Short Pulse Solutions of the Cubic-Quintic Ginzburg Landau Equation near Zero Dispersion”, *The Ninth IMACS International Conference on Nonlinear Evolution Equations and Wave Phenomena: Computation and Theory*, Athens, GA, April 1-4, 2015
47. Y. Chen, Y. Shen, **J. Zweck**, and M. Goekner, “Boltzmann Collision Operator for Cylindrically Symmetric Velocity Distributions in Plasmas,” *2015 SIAM Conference on Computational Science and Engineering, Salt Lake City Utah, March 14-18, 2015*, CSE Methods Session, PP6, [*Poster*]
48. **J. Zweck** and C.R. Menyuk, “Minimization of Timing Jitter near Zero-Average Dispersion in an Amplifier Similariton Fiber Laser” *The Eighth IMACS International Conference on Nonlinear Evolution Equations and Wave Phenomena: Computation and Theory*, Athens, GA, March 25-28, 2013 [*Poster*]
49. **J. Zweck** and C.R. Menyuk, “Dynamics and Noise Minimization of Femto-Second Similariton Pulses in a Fiber Laser with Zero Average Dispersion”, *SIAM Annual Meeting*, Minneapolis, MN, July 9-13, 2012 [*Poster*]
50. M. Barouti, N. Petra, **J. Zweck**, S.E. Minkoff, A.A. Kosterev, J.H. Doty III, and F.K. Tittel, “Modeling and Optimization of QEPAS sensors”, *NSF MIRTHE Site Visit Review*, Princeton University, Mar. 20, 2012 [*poster*]

51. **J. Zweck** and C.R. Menyuk, “Dynamics and timing jitter of a Ytterbium fiber laser”, *SIAM Conference on Nonlinear Waves and Coherent Structures*, Philadelphia, PA, Aug. 16-19, 2010
52. **J. Zweck**, S. Zhang, L. Younes, and T. Ratnanather, “A diffeomorphic mean curvature flow for the processing of anatomical surfaces”, *SIAM Annual Meeting*, Pittsburgh, PA, July 12-16, 2010 [*Poster*]
53. N. Petra, **J. Zweck**, S.E. Minkoff, and A.A. Kosterev, “Theoretical analysis of an optoacoustic sensor”, *MIRTHE Summer Workshop*, New York City, August 5, 2009 [*poster*]
54. N. Petra, **J. Zweck**, and S.E. Minkoff, “Application of BEM in Photoacoustic Spectroscopy”, *SIAM Annual Meeting*, Denver, CO, July 9, 2009
55. N. Petra, **J. Zweck**, S.E. Minkoff, and A.A. Kosterev, “Models of QEPAS and ROTADE sensors”, *NSF MIRTHE Site Visit Review*, Princeton University, Feb. 4, 2009 [*poster*]
56. N. Petra, **J. Zweck**, S.E. Minkoff, and A.A. Kosterev, “Theoretical Analysis of a Quartz-Enhanced Photoacoustic Spectroscopy Sensor”, *MIRTHE Summer Workshop*, Baltimore, August 6, 2008 [*poster*]
57. N. Petra, **J. Zweck**, S.E. Minkoff, and A.A. Kosterev, “Theoretical Analysis of a Quartz-Enhanced Photoacoustic Spectroscopy Sensor”, *NSF MIRTHE Site Visit Review*, Princeton University, Jan. 30, 2008 [*poster*]
58. N. Zakarias, S.E. Minkoff, and **J. Zweck**, “Computational Modeling of Quartz-Enhanced Photoacoustic Spectroscopy (QEPAS) Sensors”, *SIAM Conference on Mathematics for Industry*, Philadelphia, PA, October 9-11, 2007
59. N. Petra, **J. Zweck**, S.E. Minkoff, and A.A. Kosterev, “Computational Modeling of QEPAS”, *MIRTHE Summer Workshop*, Princeton University, August 6-10, 2007 [*poster*]
60. N. Petra, **J. Zweck**, S.E. Minkoff, and A.A. Kosterev, “Computational Modeling of QEPAS”, *NSF-ERC MIRTHE Start-up Site Visit Review*, Princeton University, Nov. 14-15, 2006 [*poster*]
61. **J. Zweck** and S.E. Minkoff, “Optimization of polarization-mode dispersion compensators in optical fiber communications”, *Conference on Nonlinearity and Randomness in Complex Systems*, SUNY Buffalo, NY, March 31 – April 2, 2006 [*Invited*]
62. **J. Zweck**, W. Pellegrini, C.R. Menyuk, and R. Holzlöhner, “Deterministic and Stochastic Methods for Computing the Bit Error Ratio in an Optical Fiber Communication System”, *The Fourth IMACS International Conference on Nonlinear Evolution Equations and Wave Phenomena: Computation and Theory*, Athens, GA, April 11-14, 2005
63. **J.W. Zweck**, O. Sinkin, W. Pellegrini, and C. Menyuk, “Applications of Multicanonical Monte Carlo Sampling to Nonlinear Optical Communications Systems”, *First SIAM Nonlinear Waves and Coherent Structures*, Orlando, FL, MS2, paper 4, October 2–5, 2004

64. “Numerical and statistical challenges in comparative studies of brain surface curvatures”, *Institute for Pure and Applied Mathematics, Graduate Summer School: Mathematics in Brain Imaging*, UCLA July 12 - 23, 2004 [*Impromptu 10 minute talk*]
65. “Numerical and statistical challenges in comparative studies of brain surface curvatures”, *South East Geometry Conference*, University of Georgia, Athens, GA, March 20, 2004 [*Invited*]
66. C.R. Menyuk, B.S. Marks, **J. Zweck**, A.O. Lima, J. Hu, A. Kalra, A. Onuorah, O.V. Sinkin, Y. Sun, “*Short Course: Advances in modeling high data rate optical fiber communications systems*”, *Optical Fiber Communications 2004*, Los Angeles, CA, Feb. 22–27, 2004
67. **J. Zweck** and L.R. Williams, “Euclidean Invariant Computation of Salient Closed Contours in Images”, *SIAM 2003 Annual Meeting, Montreal Canada*, June 16, 2003
68. C.R. Menyuk, V.S. Grigoryan, R.-M. Mu, D. Wang, T. Yu, I.T. Lima, Jr., **J. Zweck**, B.S. Marks, J. Maloney, and Q. Zhang, “*Short Course: Modeling high-data-rate optical fiber communications systems*”, *Optical Fiber Communications 2003*, Atlanta, GA, Mar. 22–27, 2003; *Optical Fiber Communications 2002*, Anaheim, CA, Mar. 17–22, 2002
69. **J. Zweck**, I.T. Lima, Jr., R. Holzlöhner, and C.R. Menyuk, “New advances in modeling optical fiber communication systems”, *Optical Society of America Integrated Photonics Research*, Vancouver, Canada, July 17–19, 2002, [*Invited*]
70. **J. Zweck** and C.R. Menyuk, “Mitigation of nonlinear impairments in high-data-rate optical fiber communication systems,”, *SIAM 50th Anniversary and 2002 Annual Meeting*, Philadelphia, PA, July 8–12, 2002
71. **J. Zweck** and C.R. Menyuk, “Reduction of nonlinear effects in optical fiber communications systems”, *Southeast Conference on Applied Mathematics*, North Carolina State University, November 9–11, 2001
72. L.R. Williams and **J. Zweck**, “Euclidean invariant computation of stochastic completion fields using shifttable-twistable wavelets”, *Sixth International Conference on Applications of High-Performance Computing in Engineering*, Maui, Hawaii, Jan. 2000
73. “Secondary characteristic currents”, *Special Session on Geometric Analysis, American Mathematical Society Meeting*, Corvallis, Oregon, Apr. 19, 1997, [*Invited*]
74. “Secondary characteristic currents”, *Joint Mathematics Meetings*, San Diego, Jan. 10, 1997
75. “Stiefel-Whitney currents”, *Joint Mathematics Meetings*, Orlando, Jan. 12, 1996
76. “Characteristic currents of singular connections associated with a compactified bundle”, *Differential Geometry Workshop, University of Adelaide, Australia*, Jun. 30, 1993, [*Invited*]
77. “Chern currents of singular connections associated with a compactified bundle”, *Texas Topology and Geometry Conference*, Rice University, Apr. 17, 1993, [*Invited*]

Other Professional Presentations

Colloquia

78. “Spectra of Short Pulse Solutions of the Cubic-Quintic Complex Ginzburg Landau Equation near Zero Dispersion”, *Department of Mathematics, UT Arlington*, Sept 11th, 2015.
79. “An Analysis of the Methods Used to Predict the Flight Path of Malaysia Airlines Flight 370”, *Department of Mathematics, Texas A&M Commerce*, Nov 3rd, 2014.
80. “A Preliminary Analysis of the Mathematical Method Used to Determine the Flight Path of the Missing Malaysian Airliner”, *Department of Mathematics, University of New Mexico*, May 15, 2014.
81. “How Satellite Engineers are Using Math to Deduce the Flight Path of the Missing Malaysian Airliner”, *Department of Mathematical Sciences, University of Texas at Dallas*, Apr 4th, 2014
82. “Modeling and Algorithms for Optical Fiber Systems”, *Department of Mathematics, Southern Methodist University*, Oct 10th, 2013
83. “A Diffeomorphic Mean Curvature Flow for the Processing of Anatomical Surfaces”, *Department of Mathematics, Texas Christian University*, Mar 8th, 2013
84. “Diffeomorphic Flows for Computational Anatomy and Performance Quantification for Optical Systems”, *Department of Mathematical Sciences, University of Texas at Dallas*, May 10, 2012
85. “A diffeomorphic mean curvature flow for the processing of anatomical surfaces” *Department of Mathematics and Statistics, University of Maryland Baltimore County*, Sept. 14th, 2007
86. “Modeling, analysis and simulation of fiber optic communication systems”, *Department of Mathematics, United States Naval Academy*, Feb. 24th, 2003
87. “Modeling, analysis and simulation of fiber optic communication systems”, *Department of Mathematics and Statistics, University of Maryland Baltimore County*, Feb. 5th, 2003
88. “Euclidean invariant contour completion using shiftable-twistable functions”, *UMBC; University of North Texas; Texas Christian University; Portland State University; Connecticut College*, March–May 2000
89. “Euclidean group invariant computation of stochastic completion fields in a steerable-shiftable wavelet basis”, *NEC Research Institute*, Jun. 21, 1999
90. “A biologically plausible Euclidean invariant solution of the illusory contour problem in human and computer vision”, *Dept of Mathematics and Computer Science, Metropolitan State College of Denver*, Apr. 18, 1999
91. “Stiefel–Whitney currents”, *Department of Mathematics University of Georgia*, Nov. 1, 1996

92. “The theory of characteristic currents”, *Department of Mathematics, University of Houston*, Apr. 14, 1995
93. “Forms, currents and the local Gauss-Bonnet theorem”, *Department of Mathematics, University of Nevada Reno*, Apr. 3, 1995
94. “Compactification problems in the theory of characteristic currents”, *Department of Mathematics, Brown University*, Feb. 10, 1994
95. “Characteristic currents, divisors and singular connections”, *Department of Mathematics, University of Georgia*, Jan. 6, 1994

Seminars

96. “A Diffeomorphic Mean Curvature Flow for the Processing of Anatomical Surfaces”, *Department of Radiation Oncology, UT Southwestern Medical Center*, Apr 1, 2016
97. “Spectra of Short Pulse Solutions of the Cubic-Quintic Complex Ginzburg Landau Equation near Zero Dispersion”, *Department of Mathematical Sciences, UT Dallas*, Sept 4th, 2015.
98. “Nonlinear Pulse Dynamics in a Fiber Laser”, *Differential Equations Seminar, Department of Mathematics, UMBC*, Oct 4, 2010
99. “A receiver model for optical communications systems with polarization effects”, *Electrical Engineering Graduate Seminar, UMBC*, Feb. 26, 2010
100. “A receiver model for optical communications systems with polarization effects”, *Differential Equations Seminar, Department of Mathematics, UMBC*, Nov. 10, 2008
101. “Curvature-driven diffeomorphic flows of surfaces”, *GADGET Seminar, Department of Mathematics, University of Texas at Austin*, Mar. 27th, 2007
102. “Applications of multicanonical Monte Carlo sampling to nonlinear optical communications systems”, *Electrical Engineering Graduate Seminar, UMBC*, Oct. 8, 2004
103. “Level Set Methods and Fast Marching Methods”, *Differential Equations Seminar, Department of Mathematics, UMBC*, Nov. 17 & 24, 2003
104. “Euclidean invariant computation of salient closed contours in images”, *Numerical Analysis Seminar, Department of Mathematics, University of Maryland, College Park*, Sept. 23, 2003
105. “Euclidean invariant contour completion using shiftable-twistable functions”, *Compute Vision Seminar, Department of Computer Science, University of Maryland, College Park*, March 2000
106. “Euclidean invariant contour completion using shiftable-twistable functions”, *Vision Seminar, Computer Science Department, Yale University*, Dec. 8th, 1999
107. “Euclidean invariant contour completion using shiftable-twistable functions”, *Applied Mathematics Pattern Theory and Vision Seminar, Brown University*, Dec. 1st, 1999

108. “Euclidean invariant computation in human vision using wavelets to solve a Fokker-Planck equation”, *Department of Mathematics, University of New Mexico*, Nov. 4, 1999
109. “Computing visual contours in a Euclidean invariant manner using wavelets”, *Albuquerque High Performance Computing Center*, Oct. 27, 1999
110. “The theory of primary and secondary characteristic currents”, *Department of Mathematics, University of New Mexico*, Nov. 14, 1997
111. “Characteristic currents of vector bundle maps”, *University of Texas at Austin*, Sept. 4, 1996
112. “Characteristic currents of C^∞ -meromorphic sections of a vector bundle”, *Department of Mathematics, University of Georgia*, Jan. 7, 1994

TEACHING

Postdoctoral Research Associates

1. Dr. Yannan Shen, 2013-2015, (nonlinear optics) [Current Position: Assistant Professor, Mathematics, California State University, Northridge]

Ph.D. Students

1. Jonathan Popa (Mathematical Sciences, UTD), committee member
2. Sonam Lama (Mathematical Sciences, UTD), co-mentor with Dr. Matthew Goeckner
3. Artur Safin (Mathematical Sciences, UTD), co-mentor with Dr. Susan Minkoff
4. Georgia Stuart (Mathematical Sciences, UTD), committee member
5. Jordan Kaderli (Mathematical Sciences, UTD), committee member
6. Yanping Chen, (Mathematical Sciences, UTD), December 2016, “Deterministic computation of the low probability tail of the velocity distribution due to particle collisions in spatially homogeneous plasmas”, co-mentor with Dr. Matthew Goeckner [Current Position: Data Scientist, Elevate, Dallas]
7. Justin Jacobs, (Math&Stat, UMBC), April 2014, “Nonparametric Bayesian density estimation on Riemannian manifolds”, co-mentor with Dr. Anindya Roy (Statistics, UMBC) [Dr. Jacobs was awarded a Presidential Early Career Award in Science and Engineering (PECASE) in December 2014 for his research at the National Security Agency.]
8. Noemi Petra, (Math&Stat, UMBC), August 2010, “Mathematical modeling, analysis, and simulation of trace gas sensors”, co-mentor with Dr. Susan Minkoff (Mathematics, UMBC) [From 2010-2014 Dr. Petra was a Research Associate in the Center for Computational Geosciences and Optimization in the Institute for Computational Engineering and Sciences, at The University of Texas at Austin. She is currently an Assistant Professor in the Department of Applied Mathematics at the University of California Merced.]

9. Jiping Wen, (CSEE, UMBC), July 2007, “Investigation of performance statistics in a high bit-rate terrestrial WDM system”, member
10. Hua Jiao, (CSEE, UMBC), March 2007, “Investigation of the combined effect of polarization-mode dispersion and polarization-dependent loss on system performance”, co-mentor with Dr. Gary Carter (CSEE, UMBC)
11. Aurenice O. Lima, (CSEE, UMBC), July 2005, “Advanced Monte Carlo methods for computation of penalties induced by polarization-mode dispersion in optical fiber transmission systems”, member and reader
12. Hai Xu, (CSEE, UMBC), June 2005, “Investigation of polarization mode dispersion effects in recirculating loop systems”, member
13. Wenze Xi, (CSEE, UMBC), May 2005, “Maximum likelihood electrical equalization and integrated coding and equalization for optical communications systems”, member
14. Ivan T. Lima, Jr., (CSEE, UMBC), December 2003, “Investigation of the performance degradation due to polarization effects in optical fiber communications systems”, member
15. Ronald Holzlöhner, (CSEE, UMBC), May 2003, “A covariance matrix method for the computation of bit errors in optical transmission systems”, member

Master’s Students

1. Wesley Griffin, (CSEE, UMBC), April 2010, “Real time GPU surface curvature estimation”, member
2. Stephen Thompson, (Math&Stat, UMBC), March 2009, “A generalization of Browder’s non-ejective fixed point theorem”, member
3. John Kloetzli (CSEE, UMBC), November 2008, “Real-time high quality volume iso-surface rendering”, member
4. Sean Griffith, (Math&Stat, UMBC), July 2008, “Use of operator upscaling for seismic inversion: computationally feasible forward and adjoint calculations”, member
5. Venkatakrisnan Veerasubramanian, (CSEE, UMBC), December 2007, “Propagation analysis of an 80 Gb/s wavelength-converted signal utilizing cross-phase modulation”, member
6. Anshul Kalra, (CSEE, UMBC), January 2006, “Comparative study of receiver models for optical communications systems”, member
7. Walter Pellegrini, (University of Padua, Italy), December 2004, “Comparison of the covariance matrix and multicanonical Monte Carlo methods for computing bit error ratios for wavelength division multiplexed systems”, [*Primary advisor of Masters-level thesis work performed at UMBC*]

Undergraduate Research Students

1. Ximone Willis, 2015, (UTD) “Printed 3D models of curves and surfaces for Calculus III”

2. James Gerity, 2010–2011, (UMBC) “Electromagnetics modeling and simulation for surface enhanced Raman spectroscopy”, mentor, [*Senior Thesis in Mathematics and Statistics, May 2011*]
3. William Hardesty, 2010–2011, (UMBC) “Electromagnetics modeling and simulation for surface enhanced Raman spectroscopy”, mentor
4. Michael Reid, 2008, (UMBC) “Computational modeling of a quartz-enhanced thermal wave spectroscopy sensor”, mentor
5. Austin Rochford, 2006–2008, (UMBC) “Statistical study of local area and curvature of the cingulate gyrus”, mentor, [*Senior Thesis in Mathematics and Statistics, May 2008*]
6. Brian Krummel, 2004–2006, (UMBC) “Analysis of curvature of discrete surfaces”, mentor, [*UMBC Undergraduate Research Award, 2005, Senior Thesis in Mathematics and Statistics, May 2006*]
7. Lawrence Fomundam, 2004–2005, (UMBC) “Modeling uncertainty in optical communications systems”, mentor, [*UMBC Undergraduate Research Award, 2004, Senior Thesis in Mathematics and Statistics, June 2005*]
8. Kevin Li, 2003–2004, (UMBC) Performed research on discrete differential geometry and computational anatomy, mentor

Classroom Teaching (UT Dallas)

Year	Semester	Course No.	Course Name
2017	Fall	MATH 2415.001	Calculus of Several Variables
2017	Fall	MATH 2415.002	Calculus of Several Variables
2017	Spring	MATH 2415.001	Calculus of Several Variables
2016	Fall	MATH 7313.001	Partial Differential Equations
2016	Fall	MATH 2415.003	Calculus of Several Variables
2016	Spring	MATH 5302.001	Elementary Analysis II
2016	Spring	MATH 2415.001	Calculus of Several Variables
2015	Fall	MATH 2415.002	Calculus of Several Variables
2015	Fall	MATH 2415.004	Calculus of Several Variables
2015	Spring	MATH 7313.001	Partial Differential Equations
2014	Fall	MATH 2415.001	Calculus of Several Variables
2014	Fall	MATH 2415.004	Calculus of Several Variables
2014	Spring	MATH 2415.002	Calculus of Several Variables
2013	Fall	MATH 6390.001	Topics in Mathematics (Scientific Computing)
2013	Spring	MATH 7313.501	Partial Differential Equations
2012	Fall	MATH 2415.003	Calculus of Several Variables
2012	Fall	MATH 2415.005	Calculus of Several Variables

Classroom Teaching (UMBC)

Courses taught included Multivariable Calculus, Linear Algebra, Vector Calculus with Linear Algebra and Applications, Complex Analysis, Introduction to Analysis II, Matrix Analysis, Differential Geometry, and Functional Analysis.

SERVICE**Departmental (UT Dallas)**

- 2017 Teaching Assistant Training Workshop, August 2017, co-organizer with Mitek Dabkowski
- 2017 “Implementation of Active Learning in Calculus Service Courses”, presentation at departmental Teaching Assistant Training Workshop, August 2017
- 2017 “Active Learning Strategies for Math and Stat Problem Sessions”, presentation at departmental Teaching Assistant Training Workshop, January 2017
- 2016–2018 Graduate Admissions Committee
- 2016 Committee for Mid-Probationary Review of Mathematical Sciences Assistant Professor
- 2016 Promotion Committee for a Mathematical Sciences Associate Professor
- 2016 “How to study for qualifying exams”, presentation for UTD-SMU SIAM student chapter professional development session, (with P. Choudhary)
- 2015–2018 Bachelor of Arts in Mathematics Program Committee
- 2015–2018 Department Webpages Committee (Chair)
- 2015–2016 Undergraduate Curriculum Committee
- 2015 Third Year Review Committee for a Mathematical Sciences Assistant Professor
- 2014–2018 Computational Science Seminar (co-organizer)
- 2014–2017 UT Dallas Science/Mathematics Education Advisory Committee
- 2014–2015 Ad-hoc Committee for Preparation of UTD Mathematical Sciences Department Program Review
- 2014–2015 Undergraduate Curriculum Committee (co-Chair)
- 2013–2015 Departmental Web Pages liaison
- 2012–2015 Graduate Curriculum Committee
- 2014 Third Year Review Committee for a Mathematical Sciences Assistant Professor
- 2013–2014 Colloquium and Seminar Committee (Chair)
- 2013 Promotion and Tenure Committee for a Mathematical Sciences Assistant Professor
- 2012–2014 Undergraduate Curriculum Committee
- 2012–2014 Undergraduate Advising Committee

University (UT Dallas)

- 2015-2016 Committee on Educational Policy
- 2014 Promotion Committee for a Mechanical Engineering Associate Professor

Departmental (UMBC)

- 2012 Mathematics Undergraduate Program Advisor
- 2012– Pi Mu Epsilon Mathematics Honors Society Faculty Mentor (joint with Kalman Nanes)
- 2011– Department Affairs Committee (member)
- 2011– Mathematics Upper Level Elective Courses Committee (chair)
- 2010–2011 Mathematics program committee (member)
- 2010 “How to study for qualifying exams”, presentation for UMBC SIAM student chapter professional development session, (with Profs. Gowda and Roy)
- 2009 “Issues to consider when choosing a research advisor”, presentation for SIAM student chapter professional development session
- 2009 Organizer for UMBC@UMBC, Mathematics and Statistics Department graduate student recruiting event
- 2007-2009 Graduate committee (member)
- 2005–2007 Faculty Fellow on NSF sponsored “VIP K-16” project between USM, Montgomery County Public Schools, and Montgomery College
- 2005–2006 Mathematics planning committee (member) (18 month term)
- 2005–2006 Undergraduate committee (member) (18 month term)
- 2005–2006 Instigated, coordinated development and ran training program for Math/Stat undergraduate and graduate teaching assistants [Program partially funded by subgrant to department from “VIP K-16” project] (18 month project)
- 2003–2005 Applied mathematics colloquium organizer

University (UMBC)

- 2010-2012 Faculty senate (member)
- 2009-2011 Special research assistantship/initiative support (SRAIS) review committee (member) (3 year term)
- 2008–2009 Undergraduate research and creative achievement day (URCAD) committee (member)

2007–2008 UMBC writing director hiring committee (committee)

Professional

- 2016 *Minisymposium organizer*: “Enhancing Mathematical Learning Experiences with 3D Printing”, *SIAM Conference on Applied Mathematics Education*, Philadelphia, PA, Sep 30-Oct 2, 2016
- 2016 *Minisymposium organizer*: “Modeling for Optical Frequency Combs and Their Applications”, *SIAM Conference on Nonlinear Waves and Coherent Structures*, Philadelphia, PA, Aug. 8-11, 2016 (Collaboration with C.R. Menyuk and S. Turitsyn)
- 2014 Graduation Address, *Department of Mathematics, University of New Mexico*, May 15, 2014.
- 2010–2012 2012 Infinite Possibilities Conference: member of local organizing committee at UMBC and of registration/outreach/publicity subcommittee
- 2000– Lead developer of the software PhoSSiL, the *Photonics Systems Simulator Library*. PhoSSiL is a library of C++ classes that models optical fiber communications and laser systems and includes efficient algorithms for the accurate calculation of the performance of such systems. PhoSSiL is freely available to the optics research community.
- 2010 *Minisymposium organizer*: “Modeling and Dynamics of Mode-Locked Lasers”, *SIAM Conference on Nonlinear Waves and Coherent Structures*, Philadelphia, PA, Aug. 16-19, 2010 (Collaboration with N. Kutz and C.R. Menyuk)
- 2009 *Minisymposium organizer*: “MS 66, 77, and 87: Dynamics, Stability, and Rare Events for Mode-locked Lasers”, *SIAM Annual Meeting*, Denver, CO, July 6-10, 2009 (Collaboration with M.J. Ablowitz and C.R. Menyuk)
- 2007 *Minisymposium organizer*: “MS10: Modeling for Mid-infrared Sensor Systems”, *SIAM Conference on Mathematics for Industry*, Philadelphia, PA, Wednesday October 10th, 2007, (Collaboration with S.E. Minkoff)
- 2004 *Minisymposium organizer*: “Nonlinear and Stochastic Effects in Optical Fibers and Short-Pulse Lasers”, *The Fourth IMACS International Conference on Nonlinear Evolution Equations and Wave Phenomena: Computation and Theory*, Athens, GA, Wednesday Session 3, April 11–14, 2005, (Collaboration with G. Biondini and W.L. Kath)
- 2004 *Minisymposium organizer*: “Methods for Simulating Rare Events in Stochastic Nonlinear Wave Systems”, *First SIAM Nonlinear Waves and Coherent Structures*, Orlando, FL, MS2, October 1–4, 2004, (Collaboration with W.L. Kath)
- 2000– Reviewer for *Applied Physics B*, *Studies in Applied Mathematics*, *Nanophotonics*, *J. Diff. Geo. Appl.*, *Proceedings of Royal Society A*, *National Science Foundation*, *SIAM J. Applied Mathematics*, *SIAM J. Dynamical Systems*, *Quarterly of Applied Mathematics*, *Communications in Mathematical Sciences*, *American Journal of Mathematics*, *Mathematica Scandinavia*,

Journal of Mathematical Imaging and Vision, Physical Review E, J. Optical Society of America B, Journal of Optical Communications and Networking, Photonics Technology Letters, Optics Letters, J. Lightwave Technology, Optics Express, J. Quantum Electronics, Mathematics and Computers in Simulation, IEE Transactions on Signal Processing, IEEE Transactions on Pattern Analysis and Machine Intelligence, Journal on Optical Communications, UMBC Review

- 2002 *Minisymposium organizer: “Recent Advances in Mathematical Modeling for Optical Fiber Communications - Parts I and II,” SIAM 50th Anniversary and 2002 Annual Meeting, Philadelphia, PA, MS7 and MS 15 8–12, July 2002, (Collaboration with B.S. Marks)*

Community

- 2017 Ambassador for Global Mathematics Week, Oct 10-17, 2017, Outreach to Schools
- 2016 Presentation on Polyhedron Models to Grade 3 Mathematics class at Barksdale Elementary, Plano