John R. Buck

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Higher Education

1996 **Ph.D.** Massachusetts Institute of Technology and Woods Hole Oceanographic Institution Joint Program in Oceanographic and Electrical Engineering.
1992 **E.E.** MIT/WHOI Joint Program.
1991 **S.M.** MIT/WHOI Joint Program.
1989 **S.B.** MIT. Electrical Engineering and Computer Science
1989 **S.B.** MIT. Humanities (English Lit.)

Teaching Experience

2019–Present **Chancellor Professor** University of Massachusetts Dartmouth
Department of Electrical and Computer Engineering
Department of Estuarine and Ocean Sciences (Joint Appointment)
2007–2019 **Professor** University of Massachusetts Dartmouth
2001–2007 **Associate Professor** University of Massachusetts Dartmouth
1996–2001 **Assistant Professor** University of Massachusetts Dartmouth

Other Experience

University of St. Andrews
Visiting Scholar, Scottish Oceans Institute, 2018
University of Illinois Urbana-Champaign
Visiting Professor, ECE Dept., 2017
George Mason University
Visiting Affiliate Professor, Dept. of ECE, 2010–2011
University of New South Wales
Visiting Professor, School of Biological, Earth and Environmental Sciences, 2010
Brown University
Visiting Faculty, Dept. of Neuroscience, 2004–2007
Australian Defence Science and Technology Organisation
Visiting Scientist, Marine Operations Div., 2003–2004
University of Sydney
Visiting Scientist, Civil Engineering Dept., 2003–2004
Woods Hole Oceanographic Institution
Guest Investigator, Biology Dept., 1996–2003 (intermittently)

Academic and Professional Honors

2025 **Outstanding Undergraduate Faculty Research Mentor**, UMass Dartmouth
2024 **Regional Distinguished Teaching Award**, IEEE Signal Processing Society
2018 **EURASIP Best Paper Award for 2013-2016**
2016 **Manning Prize for Excellence in Teaching**, Univ. of Massachusetts President's Office
2014 **Provost's Best Practice Award for Innovative Use of Technology**, UMass Dartmouth Provost
2014 **Fellow**, Acoustical Society of America
2013 **Senior Member**, IEEE
2009 **Scholarship of Teaching and Learning Award**, UMass Dartmouth Provost
2008 **Leo M. Sullivan Teacher of the Year Award**, UMass Dartmouth Faculty Federation
2005 **Mac Van Valkenburg Early Career Teaching Award**, IEEE Education Society
2003 **Fulbright Senior Scholar for Australia**, US State Dept.
2000 **Young Investigator Award**, Office of Naval Research
1998 **Faculty Early Career Development Award**, National Science Foundation
1996 **Graduate Fellowship**, Collegium Institute on Faith and Intellectual Life
1994 **The Goodwin Medal** for conspicuously effective teaching, MIT
1992 **Graduate Instructor**, Dept. of EECS, MIT.
1991 **Carlton E. Tucker Teaching Award**, Dept. of EECS, MIT.

Graduate Students Supervised

Ph.D Students

1. Radienxe "Ray" Bautista, In progress.

2. David Campos Anchieta, In progress.

3. Savas Erdim, 2025
   Dissertation: *Mitigating Interferer Motion with Universal Hybrid Adaptive Beamformers*

4. Ian M. Rooney, 2018
   Dissertation: *Variance Reduction Techniques for Power Spectral Density Estimation with Coprime Sensor Arrays*

5. Yang Liu, 2017
   Dissertation: *Source Enumeration, Localization and Spectral Estimation using Co-Prime and Other Sparse Sensor Arrays*

6. Kaushallya Adhikari, 2016
   Dissertation: *Performance Analysis of Product Processing of Colinear Sparse Arrays*

7. Saurav R. Tuladhar, 2015
   Dissertation: *Improved Sample Matrix Inversion Adaptive Beamformers for Uniform Linear Arrays using Array Polynomials*

8. David A. Hague, 2015
   Dissertation: *The Generalized Sinusoidal Frequency Modulated Waveform for Active Sonar Systems*

9. Prakash Manandhar, 2014, Bio-engineering, jointly supervised with P. Calvert
   Dissertation: *An Ionic Elastomeric Hydrogel Sensor for Large Strain Sensors*

M.S. Students

All students were MS Thesis students except those denoted ^{P} were MS Project students.

1. Nathanael Winchell, In Progress
2. Md. Mudassir Jawaid, In Progress
3. Marvin Mboya, In Progress
4. James Bourgeois, 2025
5. Christopher Gravelle, 2025
6. CJ Berg, 2023
7. Tasnim Abir, 2022
8. Abigail Keith, 2021
9. Savas Erdim, 2021
10. David Campos Anchieta, 2021
11. Jawanza Foster, 2020
12. Matthew Tidwell, 2019
13. Ferdousi S. Rawnaque, 2017
14. Colin J. Ryan, 2017
15. Radienxe "Ray" Bautista, 2017
16. Yang Liu, 2014
17. Ian M. Rooney, 2014
18. David A. Hague, 2013
19. Saurav R. Tuladhar, 2011
20. Aaron Sikora^P, 2010
21. Eric Jamieson^P, 2010
22. Jeffrey Magalhaes, 2010
23. Xiaoli Zhu, 2010
24. Nabin Sharma, 2009
25. Erik Siggelkoe, 2009

26. Clifton Mathews^{P}, 2008
27. Aditya Joshi, 2007
28. Tianzhu Meng, 2003
29. Tsung-Jieh "Jay" Shiao, 2003
30. Keenan Ball, 2003
31. Xiaozhou Huang, 2002
32. Ashok Charry, 2000
33. Hu Dou, 1999

Undergraduate Research Interns

1. Craig Bellanger, 2025
2. Nathanael Winchell, 2024–2025
3. Piper Dienst, 2024
4. Isaiah Ortiz, 2024
5. James Bourgeois, 2023–2024
6. Connor Kramer, 2023–2024
7. Isaiah LaCombe, 2022
8. CJ Berg, 2021–2022
9. Rylee Gant, 2021
10. Matt Tidwell, 2016–2017
11. Gbade Ogunwumi, 2016
12. Ray Bautista, 2014–2015
13. Colin Ryan, 2014–2015
14. Ian Rooney, 2010
15. Kyle Tobin, 2007
16. Jeff Chalas, 2007
17. Doug Harvey, 2006
18. Phil Rashkovetsky, 2005
19. Ryuji Suzuki, 1998–1999

Postdocs

1. C. Mallary, 2021–2023
2. Leonard Varghese, 2019–2020
3. Laura N. Kloepper, 2012–2015
4. Jennfier L. Miksis-Olds, 2005–2006

Publications

Note: * *denotes graduate student working under my supervision or co-supervision at the time of the research,* ^{U} *denotes undergraduate intern working under my supervision or co-supervision at the time of the research,* † *denotes postdoc working under my supervision or co-supervision at the time of the research.* $^{\triangle}$ *denotes graduate student or postdoc not under my supervision. All others co-authors are peer colleagues. Unless otherwise stated, all co-authors had equal contribution to the publication.*

Books

1. J. R. Buck, M. M. Daniel, and A. C. Singer, "Computer Explorations for Signals and Systems Using Matlab, Second Edition," *Prentice-Hall*, 2002.
2. A. V. Oppenheim and R. W. Schafer with J. R. Buck, "Discrete-time Signal Processing, Second Edition," *Prentice-Hall*, 1999. *Note:* For this edition, I had sole responsibility for developing the problems and examples, and contributed to the structural changes in the books organization and some of the sections of the text.
3. J. R. Buck, M. M. Daniel, and A. C. Singer, "Computer Explorations for Signals and Systems Using Matlab," *Prentice-Hall*, 1997.

Book Chapters

1. M. A. Hjalmarson, J. K. Nelson, J. R. Buck, and K. E. Wage, "Concept Images of Signals and Systems: Bringing Together Mathematics and Engineering," in *Practice-Oriented Research in Tertiary Mathematics Education*, Biehler, Liebendorfer, Gueudet, Rasmussen, Winslow (eds), Springer, 2023, pp. 649-668.

Refereed Journal Publications

1. J. Tucker$^{\triangle}$, K. E. Wage, J. R. Buck, L. J. Van Uffelen, "Performance weighted blended spectrogram," *J. of the Acous. Soc. Am.*, Vol. 157, No. 3, pp. 2106–2116. `https://doi.org/10.1121/10.0036216`
2. D. Campos Anchieta* and J. R. Buck "Robust Power Spectral Density Estimation With a Truncated Linear Order Statistics Filter," *IEEE J. Oceanic Eng*, Vol. 50, No. 1, pp. 25-30, Jan. 2025, `doi:10.1109/JOE.2024.3463700.`

3. S. Erdim* and J. R. Buck "A Hybrid Double Zero MVDR Beamformer That Is Universal Over The Number of Second Order Notches" *IEEE Access*, Vol. 12, Dec. 2024, pp. 195575-195588. doi:10.1109/ACCESS.2024.3520561

4. S. Erdim* and J. R. Buck, "Mitigating Multiple Moving Interferers with the Hybrid Double Zero MVDR Beamformer," *IEEE Access*, Vol. 12, Aug. 2024, pp. 111206-111217.

5. C. Mallary†, C.J. Berg*, J. R. Buck, and A. Tandon, "Listening for rain: Principal component analysis and linear discriminant analysis for broadband acoustic rainfall detection," *J. of the Acous. Soc. Am.*, Vol. 154, No. 1, July 2023, pp. 556-570.

6. D. Campos Anchieta* and J. R. Buck, "Improving the Robustness of the Dominant Mode Rejection Beamformer with Median Filtering," *IEEE Access*, Vol. 10, Nov. 2022, pp. 120146-120154.

7. K. E. Wage, J. R. Buck, J. K. Nelson and M. A. Hjalmarson, "What Were They Thinking?: Refining Conceptual Assessments Using Think-Aloud Problem Solving," *IEEE Signal Processing Magazine*, Vol. 38, No. 3, May 2021, pp. 85-93.

8. M. A. Hjalmarson, J. K. Nelson, L. G. Huettel, K. E. Wage, J. R. Buck, W. T. Padgett, "Practices for Implementing Interactive Teaching Development Groups," *Advances in Engineering Education*, Vol. 9 (4), 2021.

9. K. Adhikari and J. R. Buck, "Gaussian Signal Detection with product arrays," *IEEE Access*, Vol. 8, April 2020, pp. 36256-36266.

10. S. R. Tuladhar* and J. R. Buck, "Unit Circle Rectification of the Minimum Variance Distortionless Response Beamformer," *IEEE J. Oceanic Eng*, Vol. 45, No. 2, April 2020, pp. 500-510.

11. D. A. Hague* and J. R. Buck, "An experimental evaluation of the generalized sinusoidal frequency modulated waveform for active sonar systems," *J. of the Acous. Soc. Am.*, Vol. 145, No. 6, June 2019, pp. 3741-3755.

12. R. Bautista* and J. R. Buck, "Detecting Gaussian Signals Using Coprime Sensor Arrays in Spatially Correlated Gaussian Noise," *IEEE Trans. Sig. Proc.*, Vol. 67, No. 5, May 2019, pp. 1296-1306.

13. V. Chavali△, K. E. Wage and J. R. Buck, "Multiplicative and min processing of experimental passive sonar data from thinned arrays," *J. of the Acous. Soc. Am.*, Vol. 144, No. 6, December 2018, pp. 3262-3274.

14. I. M. Rooney* and J. R. Buck, "Spatial Power Spectral Density Estimation Using a Welch Coprime Sensor Array Processor," *J. of the Acous. Soc. Am.*, Vol. 145, No. 4, April 2019, pp. 2350-2362.

15. R. Bautista* and J. R. Buck, "Processor dependent bias of spatial spectral estimates from coprime sensor arrays," *J. of the Acous. Soc. Am.*, Vol. 143, No. 6, June 2018, pp. 3972-3978.

16. I. M. Rooney*, Y. Liu* and J. R. Buck, "Spatial power spectral density estimation using a multitapered coprime sensor array minimum processor," *J. of the Acous. Soc. Am.*, Vol. 143, No. 6, June 2018, pp. 3959-3971.

17. L. N. Kloepper†, J. R. Buck, Y. Liu* and P. E. Nachtigal, "Off-axis targets maximize bearing Fisher Information in broadband active sonar," *J. of the Acous. Soc. Am.*, Vol. 143, No. 1, January 2018, EL43-EL48. *Note:* I developed the broadband Fisher Information model, supervised L. N. Kloepper† and Y. Liu* in analyzing the data, drafted the model portion of the manuscript, and edited the rest of the manuscript.

18. Y. Liu* and J. R. Buck, "Gaussian Source Detection and Spatial Spectral Estimation Using a Coprime Sensor Array With the Min Processor," *IEEE Trans. Sig. Proc.*, Vol. 66, No. 1, January 2018, pp. 186-199.

19. F. S. Rawnaque* and J. R. Buck, "Comparing the effect of aperture extension on the peak sidelobe level of sparse arrays," *J. of the Acous. Soc. Am.*, Vol. 142, No. 5, November 2017, EL467-EL472.

20. K. Adhikari* and J. R. Buck, "Spatial Spectral Estimation with Product Processing of a Pair of Colinear Arrays," *IEEE Trans. Sig. Proc.*, Vol. 65, No. 9, May 2017, pp. 2389-2401.

21. R. Müller, A. K. Gupta, H. Zhu, M. Pannala, U. S. Gillani, Y. Fu, P. Caspers, and J. R. Buck, "Dynamic Substrate for the Physical Encoding of Sensory Information in Bat Biosonar," *Phys. Rev. Ltrs*, **118**, May 2017, 158102. *Note:* I collaborated with R. Müller developing the information theory analysis in this project and interpreting the results of that analysis. I also drafted some of the analysis description and edited the manuscript.

22. Y. Liu*, J. R. Buck, and V. I. Ikonomidou, "Generalized min-max bound-based MRI pulse sequence design framework for wide-range T1 relaxometry: A case study on the tissue specific imaging sequence," *PLoSOne*, Vol. 12, No. 2, e0172573.

23. D. A. Hague* and J. R. Buck, "The Generalized Sinusoidal Frequency Modulated Waveform for Active Sonar," *IEEE J. Oceanic Eng*, Vol. 42, No. 1, January 2017, pp. 109-123.

24. L. N. Kloepper†, J. R. Buck, A. B. Smith△, A. Y. Supin, J. E. Gaudette△, and P. E. Nachtigal, "Support for the beam focusing hypothesis in the false killer whale," *J. Exp. Bio.* **2015**:218, August 2015, pp. 2455–2462. *Note:* I supervised L. N. Kloepper† developing the signal analysis in this work and edited the manuscript.

25. L. N. Kloepper†, J. E. Gaudette△, J. A. Simmons and J. R. Buck, "Mouth gape angle has little effect on the transmitted signals of big brown bats (*Eptesicus fuscus*)," *J. of the Acous. Soc. Am.*, Vol. 136, No. 4, October 2014, pp. 1964–1971. *Note:* I supervised L. N. Kloepper† developing the signal analysis in this work and edited the manuscript.

26. K. Adhikari*, J. R. Buck and K. E. Wage, "Extending coprime sensor arrays to achieve the peak side lobe height of a full uniform linear array," *EURASIP Journal on Advances in Signal Processing*, September 2014, DOI: `10.1186/1687-6180-2014-148`.
EURASIP Best Paper award for 2013–2016, presented September 2018.

27. L. N. Kloepper†, A. B. Smith△, P. E. Nachtigal, J. R. Buck, J. A. Simmons, and A. F. Pacini△, "Cognititive Adaptation of Sonar Gain Control in the Bottlenose Dolphin," *PLoSOne*, Vol. 9, No. 8, August 2014.

28. K. E. Wage and J. R. Buck, "Snapshot performance of the Dominant Mode Rejection Beamformer," *IEEE J. Oceanic Eng*, Vol. 39, No. 2, April 2014, pp. 212–225, DOI:`10.1109/JOE.2013.2251538`.

29. D. A. Hague*, J. R. Buck and I. Bilik, "A deterministic compressive sensing model for bat biosonar," *J. of the Acous. Soc. Am.*, Vol. 132, No. 6, December 2012, pp. 4041–4052.

30. P. Manandhar*, P. D. Calvert and J. R. Buck, "Elastomeric Ionic Hydrogel Sensor for Large Strains," *IEEE Sensors J.*, Vol. 12, No. 6, 2012, pp. 2056–2061. *Note:* I supervised P. Manandhar* developing the signal analysis portion of this work and edited the manuscript.

31. I. Bilik, K. Adhikari$^{\triangle}$ and J. R. Buck, "Shannon Capacity Bound on Mobile Station Localization Accuracy in Urban Environments," *IEEE Trans. Sig. Proc.*, Vol. 59, No. 12, December 2011, pp. 6206–6216. *Note:* I developed the analytic bound for this paper and edited the manuscript. Ms. Adhikari and Dr. Bilik implemented the bound for the wireless multipath environment. This research was done as part of Ms. Adhikari's MS thesis supervised by Dr. Bilik before she began working under my supervision for her PhD.

32. S. R. Tuladhar* and J. R. Buck, "Optimal array design to maximize Fisher Information for bearing estimation," *J. of the Acous. Soc. Am.*, Vol. 130, No. 5, November 2011, pp. 2797–2806.

33. N. S. Sharma*, J. R. Buck and J. A. Simmons, "Trading detection for resolution in active sonar receivers," *J. of the Acous. Soc. Am.*, Vol. 130, No. 3, September 2011, pp. 1272–1281.

34. X. Zhu* and J. R. Buck, "Designing Nonuniform Linear Arrays to Maximize Mutual Information for Bearing Estimation," *J. of the Acous. Soc. Am.*, Vol. 128, No. 5, November 2010, pp. 2926–2939.

35. T. Meng* and J. R. Buck, "Rate Distortion Bounds on Passive Sonar Performance," *IEEE Trans. Sig. Proc.*, Vol. 58, No. 1, January 2010, pp. 326–336.

36. J. L. Miksis-Olds†, J. R. Buck, M. J. Noad, D. H. Cato and D. Stokes, "Information theory analysis of Australian humpback whale song," *J. of the Acous. Soc. Am.*, Vol. 124, No. 4, October 2008, pp. 2385–2393. *Note:* I designed the analysis algorithms jointly with R. Suzuki* (see 2006 paper below), supervised Dr. Miksis-Olds in conducting the analysis, participated in the field work in Queensland, Australia, and edited the manuscript.

37. R. Müller, H. Lu$^{\triangle}$ and J. R. Buck, "Sound-diffracting flap in the ear of a bat generates spatial information," *Phys. Rev. Ltrs*, **100**, March 2008, 108701. *Note:* I formulated the Cramer-Rao bound for angle and bearing estimation for a broadband sonar reception. R. Müller and H. Lu$^{\triangle}$ modeled the bat ear reception patterns and evaluated the bound for this ear.

38. R. Suzuki^{*U}, J. R. Buck and P. L. Tyack, "Information entropy of humpback whale songs," *J. of the Acous. Soc. Am.*, Vol. 119, No. 3, March 2006, pp. 1849–1866.

39. K. E. Wage, J. R. Buck, C. H. G. Wright and T. B. Welch, "The Signals and Systems Concept Inventory," *IEEE Trans. Educ.*, August 2005, pp. 448–461.

40. J. R. Buck and K. E. Wage, "Active and Cooperative Learning in Signal Processing Courses," *IEEE Signal Processing Magazine*, March 2005, pp. 76–81.

41. K. R. Ball* and J. R. Buck, "A beamforming video recorder for integrated observations of dolphin behavior and vocalizations (L)," *J. of the Acous. Soc. Am.*, Vol. 117, No. 3, March 2005, pp. 1005–1008.

42. R. Suzuki*, J. R. Buck and P. L. Tyack, "The use of Zipf's law in animal communication analysis," *Animal Behaviour*, Vol. 69, No. 1, January 2005, pp. F9–F17.

43. J. L. Miksis$^{\triangle}$, P. L. Tyack and J. R. Buck, "Captive dolphins, *Tursiops truncatus*, develop signature whistles that match acoustic features of human-made model sounds," *J. of the Acous. Soc. Am.*, Vol. 112, No. 2, August 2002, pp. 728–739. *Note:* I designed the quantitative measures of dolphin whistle modulation and bootstrap resampling protocol for the study. I supervised Ms. Miksis in implementing these techniques, and I edited the manuscript. Note that at this time Ms. Miksis was a research student working for P. L. Tyack. It was several years later she joined my lab as a postdoc.

44. J. R. Buck, H. B. Morgenbesser* and P. L. Tyack, "Synthesis and modification of the whistles of the bottlenose dolphin, *Tursiops truncatus*," *J. of the Acous. Soc. Am.*, Vol. 108, No. 1, July 2000, pp. 407–416.

45. J. R. Buck, J. C. Preisig and K. E. Wage, "A Unified Framework for Mode Filtering and the MAP Mode Filter," *J. of the Acous. Soc. Am.*, Vol. 103, No. 4, April 1998, pp. 1813–1824.

46. J. R. Buck, J. C. Preisig, M. Johnson and J. Catipovic "Single Mode Excitation in the Shallow Water Channel Using Feedback Control," ***invited paper*** for *IEEE J. Oceanic Eng* Special Issue on Shallow Water Acoustics, Vol. 22, No. 2, April 1997, pp. 281–291.

47. E. Weinstein, A. V. Oppenheim, M. Feder and J. R. Buck, "Iterative and Sequential Algorithms for Multisensor Signal Enhancement," *IEEE Trans. Sig. Proc.*, Vol. 42, April 1994, pp. 846–859. *Note:* I implemented the algorithm and conducted all of the numerical experiments.

48. J. R. Buck and P. L. Tyack, "A quantitative measure of similarity for *Tursiops truncatus* signature whistles," *J. of the Acous. Soc. Am.*, Vol. 94, No. 5, Nov. 1993, pp. 2497-2506.

Conference Proceedings with Peer Reviewed Papers or Summaries

1. Y. Zhuang$^{\triangle}$, J. R. Buck, and A. C. Singer, "Universal Partitioning of a Large Array for Communications in Environments with Limited Spatial Coherence," *Proc. 2024 Asilomar Conference on Signals, Systems, and Computers (ASILOMAR 2024)*, Pacific Grove, CA, pp. 142-146, `doi:10.1109/IEEECONF60004.2024.10942916`

2. S. Erdim*, J. R. Buck, and C.J. Berg*, "Covariance Matrix Tapered Beamformer That Is Universal Over Notch Width," *Proc. 2022 Asilomar Conference on Signals, Systems and Computers (ASILOMAR 2022)*, Asilomar, CA, November 2022.

3. S. Erdim*, J. R. Buck, C. Gravelle*, C.J. Berg* and I. Lacombe, "Doubly Adaptive Covariance Matrix Taper Universal Beamformer," *Proc. Oceans 2022,* Hampton Roads, VA, October 2022.

4. M. Tidwell* and J. R. Buck, "Designing linear FM active sonar waveforms for continuous line source transducers to maximize the Fisher Information at a desired bearing," *Proc. 2019 Sensor Signal Processing for Defence Conference (SSPD),* Brighton, UK, May 2019.

5. J. R. Buck and A. C. Singer, "A Performance-Weighted Blended Dominant Mode Rejection Beamformer," *2018 Tenth IEEE Sensor Array and Multichannel Signal Processing Workshop*, Sheffield, UK, July 2018, pp. 124-128.

6. K. E. Wage and J. R. Buck, "Experimental Evaluation of a Universal Dominant Mode Rejection Beamformer," *2018 Tenth IEEE Sensor Array and Multichannel Signal Processing Workshop*, Sheffield, UK, July 2018, Sheffield, UK, July 2018, pp. 119-123.

7. M. Silva, M. Tidwell*, D. Kasilingam and J. R. Buck, "Experimental Validation of Super-Resolution Beamforming using Multiplicative Array Processing," Proc. USNC-URSI Radio Science Meeting, Boston, MA, July 2018, pp. 41-42.

8. Y. Liu* and J. R. Buck, "High-resolution direction-of-arrival estimation in SNR and snapshot challenged scenarios using multi- frequency coprime arrays," *Proceedings of the 2017 IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP '17)*, New Orleans, LA, March 2017, pp. 3434-3438.

9. C. Ryan* and J. R. Buck, "Applying the unit circle constraint to the diagonally loaded minimum variance distortionless response beamformer," *Proceedings of the 2017 IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP '17)*, New Orleans, LA, March 2017, pp. 3366-3370.

10. Y. Liu* and J. R. Buck, "Super-resolution DOA estimation using a coprime sensor array with the min processor," *2016 Conference Record of the 50th Asilomar Conference on Signals, Systems and Computers (ASILOMAR 2016)*, November 2016, pp. 944-948.

11. Y. Liu* and J. R. Buck, "Spatial spectral estimation using a coprime sensor array with the min processor," July 2016, *Proceedings of the Ninth IEEE Workshop on Sensor Array and Multichannel Processing (SAM-2016)* Rio de Janero, Brazil, July 2016, pp. 1–5.

12. I. M. Rooney* and J. R. Buck, "Multitapered power spectral density estimation for co-prime sensor arrays," *2015 Conference Record of the Forty Ninth Asilomar Conference on Signals, Systems and Computers (ASILOMAR),* November 2015, pp. 375–379.

13. Y. Liu* and J. R. Buck, "Detecting Gaussian signals in the presence of interferers using the coprime sensor arrays with the min processor," *2015 Conference Record of the Forty Ninth Asilomar Conference on Signals, Systems and Computers (ASILOMAR),* November 2015, pp. 370–374.

14. Y. Liu*, J. R. Buck, S. Zheng, and V. I. Ikonomidou, "Optimizing and Comparing the Efficiencies of Relaxometry Sequences in Quantitative T1 and T2 Imaging," *Int'l Society for Magnetic Resonance in Medicine Annual Meeting,* Toronto, Ontario, Canada, June 2015, No. 1689.

15. D. A. Hague* and J. R. Buck, 'The generalized sinusoidal frequency modulated waveform for continuous active sonar," *OCEANS 2015 - Genova,* Genova, Italy, May 2015, DOI: 10.1109/OCEANS-Genova.2015.7271615, pp. 1-8. ***Invited Paper***

16. S. R. Tuladhar* and J. R. Buck, "Unit Circle MVDR Beamformer," *Proceedings of the 2015 International Conference on Acoustics, Speech, and Signal Processing*, Brisbane, Australia, April 2015, pp. 2484-2488.

17. K. Adhikari* and J. R. Buck, "Gaussian signal detection by coprime sensor arrays," *Proceedings of the 2015 International Conference on Acoustics, Speech, and Signal Processing*, Brisbane, Australia, April 2015, pp. 2379-2383.

18. K. E. Wage and J. R. Buck, "SINR loss of the dominant mode rejection beamformer," *Proceedings of the 2015 International Conference on Acoustics, Speech, and Signal Processing*, Brisbane, Australia, April 2015, pp. 2499-2503

19. D. A. Hague* and J. R. Buck, "The generalized sinusoidal frequency modulated waveform for high duty cycle active sonar," *2014 Conference Record of the Forty Eighth Asilomar Conference on Signals, Systems and Computers (ASILOMAR),* Pacific Grove, CA, Nov. 2014, pp. 148-152.

20. V. Chavali$^{\triangle}$, K. E. Wage and J. R. Buck, "Coprime Processing for the Elba Island Sonar Data Set," *2014 Conference Record of the Forty Eighth Asilomar Conference on Signals, Systems and Computers (ASILOMAR),* Pacific Grove, CA, Nov. 2014, pp. 1864-1868.

21. K. E. Wage and J. R. Buck, "Convergence rate of the Dominant Mode Rejection beamformer for a single interferer," *Proceedings of the 2013 International Conference on Acoustics, Speech, and Signal Processing*, Vancouver, B.C., May 2013.

22. K. Adhikari*, J. R. Buck and K. E. Wage, "Beamforming with Co-Prime Sensor Arrays," *Proceedings of the 2013 International Conference on Acoustics, Speech, and Signal Processing*, Vancouver, B.C., May 2013.

23. D. A. Hague* and J. R. Buck, "A generalized Sinusoidal Frequency Modulated waveform for active sonar," *2012 Conference Record of the Forty Sixth Asilomar Conference on Signals, Systems and Computers (ASILOMAR),* Pacific Grove, CA, Nov. 2012, pp. 876–879.

24. J. R. Buck and K. E. Wage, "A random matrix theory model for the dominant mode rejection beamformer notch depth," *2012 IEEE Statistical Signal Processing Workshop (SSP)*, Ann Arbor, MI, Aug. 2012, pp. 820–823.

25. K. E. Wage, J. R. Buck, M. A. Dzieciuch and P. F. Worcester, "Experimental validation of a random matrix theory model for dominant mode rejection beamformer notch depth," *2012 IEEE Statistical Signal Processing Workshop (SSP)*, Ann Arbor, MI, Aug. 2012, pp. 816–819.

26. S. R. Tuladhar*, J. R. Buck and K. E. Wage, "Approximate eigenvalue distribution of a cylindrically isotropic noise sample covariance matrix," *2012 IEEE Statistical Signal Processing Workshop (SSP)*, Ann Arbor, MI, Aug. 2012, pp. 824–827.

27. K. E. Wage, J. R. Buck, J. K. Nelson and M. A. Hjalmarson, "Signals and systems assessment: Comparison of responses to multiple choice conceptual questions and open-ended final exam problems," *Proceedings of the 14th IEEE DSP/SPE Workshop*, Sedona, AZ, January 2011, pp. 198–203.

28. J. K. Nelson, M. A. Hjalmarson, K. E. Wage and J. R. Buck, "Students' interpretation of the importance and difficulty of concepts in signals and systems," *Proceedings of the 2010 IEEE Frontiers in Education Conference (FIE)*, Washington, DC, October 2010.

29. I. Bilik, K. Adhikari$^{\triangle}$ and J. R. Buck, "Information Theoretic Bounds on Mobile Source Localization in a Dense Urban Environment," *Proceedings of the Sixth IEEE Workshop on Sensor Array and Multichannel Processing (SAM-2010)*, Jerusalem, Israel. October 2010.

30. K. Gilbert$^{\triangle}$, I. Bilik, J. R. Buck and K. Payton, "Prequential Bayesian Mixture Approach for Gaussian Mixture Order Selection," *Proceedings of the Sixth IEEE Workshop on Sensor Array and Multichannel Processing (SAM-2010)*, Jerusalem, Israel. October 2010.

31. N. S. Sharma* and J. R. Buck, "Generalized linear approach for sonar receivers," *Proceedings of the 13th IEEE DSP/SPE Workshop*, Marco Island, FL, January 2009, 507–512.

32. J. R. Buck, K. E. Wage and M. A. Hjalmarson, "Item response analysis of the Signals and Systems Concept Inventory," *Proceedings of the 13th IEEE DSP/SPE Workshop*, Marco Island, FL, January 2009, 726–730.

33. J. R. Buck, K. E. Wage, M. A. Hjalmarson and J. K. Nelson, "Comparing Student Understanding of Signals and Systems Using a Concept Inventory, A Traditional Exam and Interviews," *Proceedings of 37th ASEE/IEEE Frontiers in Education Conference*, Milwaukee, WI. October 2007, S1G-1–6.

34. K. E. Wage, J. R. Buck and M. A. Hjalmarson, "Analyzing Misconceptions Using the Signals and Systems Concept Inventory and Student Interviews," *Proceedings of the Fourth IEEE Signal Processing Education Workshop*, Grand Teton, WY. September 2006, 123–128.

35. T. Meng* and J. R. Buck, "Rate distortion bounds on passive sonar performance," *Proceedings of the Fourth IEEE Workshop on Sensor Array and Multichannel Processing (SAM-2006)*, Waltham, MA. July 2006, 636–640.

36. J. R. Buck, "Fading Channel Capacity and Passive Sonar Performance Bounds," ***Invited paper*** for the *Proceedings of the Fourth IEEE Workshop on Sensor Array and Multichannel Processing (SAM-2006)*, Waltham, MA. July 2006, 294–298.

37. K. E. Wage, J. R. Buck and C. H. G. Wright, "Obstacles in Signals and Systems Conceptual Learning," *Proceedings of the Third IEEE Signal Processing Education Workshop*, Taos Ski Valley, NM. August 2004, 58–62.

38. K. E. Wage, J. R. Buck, T. B. Welch and C. H. G. Wright, "Testing and Validation of the Signals and Systems Concept Inventory," *Proceedings of the Second IEEE Signal Processing Education Workshop*, Pine Mountain, GA. October 2002, 151–156.

39. J. R. Buck, "Information Theoretic Bounds on Source Localization Performance," *Proceedings of the Second IEEE Workshop on Sensor Array and Multichannel Signal Processing (SAM-2002)*, Washington, DC. August 2002, 184–188.

40. K. E. Wage, J. R. Buck, T. B. Welch and C. H. G. Wright, "The Signals and Systems Concept Inventory," *Proceedings of the American Society of Engineering Education*, Montreal, Quebec. June 2002, 1–29.

41. K. E. Wage, J. R. Buck, T. B. Welch and C. H. G. Wright, "The Continuous-Time Signals and Systems Concept Inventory," *Proceedings of the International Conference on Acoustics, Speech, and Signal Processing*, Orlando, FL. May 2002, IV-4112–4115.

42. J. R. Buck and N. A. Pendergrass, "Signal Processing Studio," ***Invited paper*** for the *Proceedings of the First IEEE Signal Processing Education Workshop*, Hunt, TX. October 2000.

43. J. R. Buck, J. C. Preisig, M. Johnson and J. Catipovic, "Monochromatic single-mode excitation in shallow water using feedback control," *Proceedings of the International Conference on Acoustics, Speech, and Signal Processing* Detroit, MI. May 1995, pp. 3107-3110.

PAPERS IN EDITOR REVIEWED CONFERENCE PROCEEDINGS

Note: These conference proceedings papers were reviewed by a single editor, and are subjected to the same level of review by multiple peers for the conferences above.

1. D. Campos Anchieta* and J. R. Buck, "Robust power spectral density estimation via a performance-weighted blend of order statistics," Proc. Mtgs. on Acoustics, Vol. 52, No. 1, 2023. ***Best Student Paper Award Winner.***
2. J. Foster* and J. R. Buck, "Designing a waveguide to transmit sound to a dolphin in a functional magnetic response imaging machine," Proc. Mtgs. on Acoustics, 2019.
3. S. R. Tuladhar* and J. R. Buck, "Double zero minimum variance distortionless response beamformer," Proc. Mtgs. on Acoustics, 2015.
4. K. Adhikari* and J. R. Buck, "Lattice theory models for sampling of space-time signals," *Proceedings of the Twenty-first International Congress on Acoustics (ICA 2013)*, Montreal, QC, June 2013.
5. I. M. Rooney*, J. R. Buck and K. E. Wage, "Implementing physical constraints for noise only normal mode shape estimation," *Proceedings of the Twenty-first International Congress on Acoustics (ICA 2013)*, Montreal, QC, June 2013.
6. K. E. Wage and J. R. Buck, "Performance Analysis of Dominant Mode Rejection Beamforming," *Proc. of the Twentieth International Congress on Acoustics (ICA-2010)*, Sydney, Australia. August 2010.
7. D. A. Hague*, J. R. Buck and I. Bilik, "A Deterministic Filterbank Compressive Sensing Model for Bat Biosonar," *Proc. of the Twentieth International Congress on Acoustics (ICA-2010)*, Sydney, Australia. August 2010.

CONFERENCE PRESENTATIONS AND ABSTRACTS

1. Y. Zhuang$^{\triangle}$, D. Campos Anchieta*, A. C. Singer, and J. R. Buck, "An asymptotically exact estimate of the median noise eigenvalue of sample covariance matrices," *186th Meeting of the Acoustical Society of America*, Ottawa, Ontario, May 2024.
2. J. Bourgeois^{U} and J. R. Buck, "Rainfall Estimation from Hydrophone Spectra at Different Depths," 2024 Northeast Regional Environmental Acoustics Symposium, UNH, Durham NH.
3. C. Kramer^{U} and J. R. Buck, "Investigating Targets to Decrease Detection Probability for Infotaxis Experiments," 2024 Northeast Regional Environmental Acoustics Symposium, UNH, Durham NH.
4. D. Campos Anchieta* and J. R. Buck, "Passive acoustic source localization of marine mammals in hydrophone array recordings with time domain beamforming," 2024 Northeast Regional Environmental Acoustics Symposium, UNH, Durham NH.

5. C.J. Berg*, J. R. Buck, A. Tandon, "Estimating Rainfall from Shallow Acoustic Recordings using Principal Component Analysis and Support Vector Machines," Ocean Sciences Meeting (OSM) 2024, New Orleans, LA, Feb. 2024.

6. D. Campos Anchieta* and J. R. Buck, "Robust power spectral density estimation via a performance-weighted blend of order statistics," *185th Meeting of the Acoustical Society of America*, Sydney, NSW, Australia, Dec. 2023.

7. J. R. Buck, "Building bridges: Doug Cato's remarkable career spanning underwater acoustics and animal bioacoustics," *185th Meeting of the Acoustical Society of America*, Sydney, NSW, Australia, Dec. 2023.

8. J. R. Buck, A. C. Singer, and K. E. Wage, "The further adventures of Lynn Ear, Ty Minvariant, and Connie Volution" *184th Meeting of the Acoustical Society of America*, Chicago, IL, May 2023. ***Invited Presentation.***

9. S. Erdim* and J. R. Buck, "A double zero MVDR beamformer that is universal over number of second-order notches," *184th Meeting of the Acoustical Society of America*, Chicago, IL, May 2023.

10. J. R. Buck, "Reflecting on reflections: A case study of disappointment in student writing assignments," *184th Meeting of the Acoustical Society of America*, Chicago, IL, May 2023. ***Invited Presentation.***

11. C. Mallary†, C.J. Berg*, J. R. Buck, and A. Tandon, "Detection and estimation of rainfall from broadband acoustic signals," *184th Meeting of the Acoustical Society of America*, Chicago, IL, May 2023.

12. C. Gravelle* and J. R. Buck, "Experimental demonstration of magnitude-only bearing estimation," *184th Meeting of the Acoustical Society of America*, Chicago, IL, May 2023.

13. W.-J. Lee, M. Ladegaard, J. R. Buck, P. T. Madsen, K. Beedholm, P. L. Tyack, "Learning from Freja the harbor porpoise to appreciate movements as an important behavioral readout to understand echolocation-based target discrimination," *184th Meeting of the Acoustical Society of America*, Chicago, IL, May 2023.

14. C. Gravelle* and J. R. Buck, "Bio-Inspired Magnitude-Only Bearing Estimation Experiment," 2023 Northeast Regional Environmental Acoustics Symposium, UNH, Durham NH.

15. C.J. Berg*, D. Campos Anchieta* and J. R. Buck, "A Comparison of Three Methods for Acoustic Rainfall Estimation in Buzzards Bay," 2023 Northeast Regional Environmental Acoustics Symposium, UNH, Durham NH.

16. D. Campos Anchieta* and J. R. Buck, "Improving the robustness of spectral estimation to loud transients with a truncated order statistics filter," *183rd Meeting of the Acoustical Society of America*, Nashville, TN, Dec. 2022.

17. C.J. Berg*, C. Mallary†, J. R. Buck, A. Tandon and A. Andonian△, "Acoustic rainfall estimation with support vector machines and error correcting output codes," *183rd Meeting of the Acoustical Society of America*, Nashville, TN, Dec. 2022

18. J. R. Buck, S. Erdim* and Y. Liu, "Focusing on motion and averaging the diagonal: Lisa Zurk's many contributions to passive sonar array processing," *183rd Meeting of the Acoustical Society of America*, Nashville, TN, Dec. 2022.

19. D. A. Brown, P. J. Gendron and J. R. Buck, "Graduate education in acoustic engineering, transduction, and signal processing University of Massachusetts Dartmouth," *183rd Meeting of the Acoustical Society of America*, Nashville, TN, Dec. 2022.

20. J. R. Buck, K. E. Wage and A. C. Singer, "Are universal beamformers passive congnitive sonar systems?" *182nd Meeting of the Acoustical Society of America*, Denver, CO, May 2022. ***Invited Presentation.***

21. C. Mallary†, C.J. Berg^{U}, J. R. Buck, A. Tandon and A. Andonian, "Acoustic rainfall detection with linear discriminant functions of principal components," *182nd Meeting of the Acoustical Society of America*, Denver, CO, May 2022.

22. W.-J. Lee, M. Ladegaard, J. R. Buck, P. T. Madsen, K. Beedholm, and P. L. Tyack. "Is broad angular coverage necessary for echolocation-based discrimination involving aspect-dependent targets?" *182nd Meeting of the Acoustical Society of America*, Denver, CO, May 2022.

23. C. Mallary† and J. R. Buck, "Linear Discriminant Analysis Detection of Rainfall from Broadband Acoustic Signatures," 2022 Northeast Regional Environmental Acoustics Symposium, UNH, Durham NH

24. S. Erdim*, C.J. Berg^{U} and J. R. Buck, "Experimental evaluation of a universal covariance matrix tapered adaptive beamformer," *181st Meeting of the Acoustical Society of America*, Seattle, WA, Dec. 2021.

25. J. Tucker$^{\triangle}$, K. E. Wage and J. R. Buck "Performance Weighted Blended Power Spectral Density Estimation," *IEEE Underwater Acoustic Signal Processing Workshop*, E. Greenwich, RI, Oct. 2021.

26. D. Campos Anchieta* and J. R. Buck, "The Median Dominant Mode Rejection Beamformer Improves Robustness Against Array Element Perturbations," *IEEE Underwater Acoustic Signal Processing Workshop*, E. Greenwich, RI, Oct. 2021.

27. S. Erdim*, C.J. Berg^{U} and J. R. Buck, "Covariance Matrix Tapered MVDR Beamformer that is Universal over Notch Width," *IEEE Underwater Acoustic Signal Processing Workshop*, E. Greenwich, RI, Oct. 2021.

28. S. Erdim* and J. R. Buck, "Designing a covariance matrix tapered beamformer that is universal over notch width," *180th Meeting of the Acoustical Society of America*, Acoustics in Focus, Virtual Meeting, Jun. 2021.

29. D. Campos Anchieta* and J. R. Buck, "Performance of the median dominant mode rejection beamformer against array element perturbations," *179th Meeting of the Acoustical Society of America*, Acoustics Virtually Everywhere, Virtual Meeting, Dec. 2020.

30. J. R. Buck and K. E. Wage, "Interpreting the environmental information embodied in universal adaptive beamformers," *179th Meeting of the Acoustical Society of America*, Acoustics Virtually Everywhere, Virtual Meeting, Dec. 2020. ***Invited Presentation.***

31. J. R. Buck, "Compensating for adaptive beamformer overfitting with random matrix theory," *179th Meeting of the Acoustical Society of America*, Acoustics Virtually Everywhere, Virtual Meeting, Dec. 2020.

32. D. Campos Anchieta* and J. R. Buck, "Improving the dominant mode rejection beamformer with median filtering," *178th Meeting of the Acoustical Society of America*, San Diego, CA, Dec. 2019.

33. J. Foster* and J. R. Buck, "Designing a waveguide to transmit sound to a dolphin in a functional magnetic response imaging machine," *178th Meeting of the Acoustical Society of America*, San Diego, CA, Dec. 2019.

34. J. R. Buck, "Universal adaptive beamforming for moving interferers," *178th Meeting of the Acoustical Society of America*, San Diego, CA, Dec. 2019.

35. J. R. Buck, "Research group meetings as a professional development book club," *178th Meeting of the Acoustical Society of America*, San Diego, CA, Dec. 2019.

36. W.-J. Lee, J. R. Buck, P. L. Tyack, and B. Shinn-Cunningham, "Active infotaxis as a model for echolocation," *178th Meeting of the Acoustical Society of America*, San Diego, CA, Dec. 2019.

37. J. R. Buck, "Designing universal adaptive beamformers for moving interferers," *IEEE Underwater Acoustic Signal Processing Workshop*, E. Greenwich, RI, Oct. 2019.

38. J. Tucker$^{\triangle}$, K. E. Wage and J. R. Buck, "Performance Weighted Blended Power Spectrum Estimates," *IEEE Underwater Acoustic Signal Processing Workshop*, E. Greenwich, RI, Oct. 2019.

39. D. Campos Anchieta* and J. R. Buck "Improving the Robustness of the Dominant Mode Rejection Beamformer with Median Filtering," *IEEE Underwater Acoustic Signal Processing Workshop*, E. Greenwich, RI, Oct. 2019.

40. J. R. Buck and K. E. Wage, "Measuring students' learning gains with pre/post assessment," *176th Meeting of the Acoustical Society of America*, Victoria, BC, Nov. 2018. ***Invited Presentation.***

41. J. R. Buck, A. C. Singer and K. E. Wage, "The blended dominant mode rejection adaptive beamformer," *175th Meeting of the Acoustical Society of America*, Minneapolis, MN, May 2018.

42. M. Tidwell* and J. R. Buck "Investigating how transmitted signal spectrum impacts bearing Fisher Information in broadband active sonar," 2018 Northeast Regional Environmental Acoustics Symposium, UNH, Durham NH.

43. M. Tidwell^{U} and J. R. Buck, "Experimental investigation of the unit circle minimum variance distortionless response adaptive beamformer," *174th Meeting of the Acoustical Society of America*, New Orleans, LA, Nov. 2017.

44. K. Adhikari* and J. R. Buck, "Detection performance analysis of product processing of colinear arrays," *174th Meeting of the Acoustical Society of America*, New Orleans, LA, Nov. 2017.

45. Y. Liu* and J. R. Buck, "Spatial Correlation Resampling for Wideband Source Enumeration and Direction-of-Arrival Estimation on Sparse Arrays," *IEEE Underwater Acoustic Signal Processing Workshop*, E. Greenwich, RI, Oct. 2017. ***Best Student Presentation Award Winner.***

46. R. Bautista* and J. R. Buck, "Performance Prediction of Coprime Sampled Arrays in Spatially Correlated Noise," *IEEE Underwater Acoustic Signal Processing Workshop*, E. Greenwich, RI, Oct. 2017.

47. Y. Liu* and J. R. Buck, "Wideband source enumeration and direction-of-arrival estimation using sparse array periodogram averaging in low snapshot scenarios," *173rd Meeting of the Acoustical Society of America*, Boston, MA, Jun. 2017. ***Invited Presentation.***

48. R. Bautista* and J. R. Buck, "Statistical characterization of coprime sensor arrays: Array gain vs. spatially correlated noise," *173rd Meeting of the Acoustical Society of America*, Boston, MA, Jun. 2017.

49. F. S. Rawnaque* and J. R. Buck, "Comparing the effect of aperture extension on the peak sidelobe level of sparse arrays," *173rd Meeting of the Acoustical Society of America*, Boston, MA, Jun. 2017.

50. J. R. Buck and T. L. Rodgers, "Examining the temporal structure and information entropy of leopard seal calling bouts," *172nd Meeting of the Acoustical Society of America*, Honolulu, HI, Dec. 2016. ***Invited Presentation.***

51. C. Ryan* and J. R. Buck, "Applying the unit circle constraint to the diagonal loaded minimum variance distortionless response beamformer," *172nd Meeting of the Acoustical Society of America*, Honolulu, HI, Dec. 2016.

52. R. Müller, A. Gupta, H. Zhu, M. Pannala, U.S. Gillani, Y. Fu, P. Caspars, and J. R. Buck, "Information-theoretic assessment of the peripheral dynamics in the biosonar system of horseshoe bats," *172nd Meeting of the Acoustical Society of America*, Honolulu, HI, Dec. 2016.

53. K. Adhikari* and J. R. Buck, "Estimating the spatial spectra of Gaussian processes with co-prime sensor arrays," *171st Meeting of the Acoustical Society of America*, Salt Lake City, UT, May 2016.***Invited Presentation.***

54. Y. Liu*, J. R. Buck and R. Bautista*, "Spatial power spectral estimation using coprime sensor array with the min processor," *171st Meeting of the Acoustical Society of America*, Salt Lake City, UT, May 2016.

55. L. N. Kloepper†, Y. Liu*, and J. R. Buck, "Bottlenose dolphins direct sonar clicks off-axis of targets to maximize Fisher Information about target bearing," *170th Meeting of the Acoustical Society of America*, Jacksonville, FL, November 2015.

56. I. M. Rooney* and J. R. Buck, "Multitaper for Co-prime Sensing Arrays," *IEEE Underwater Acoustic Signal Processing Workshop*, E. Greenwich, RI, Oct. 2015.

57. Y. Liu* and J. R. Buck, "Gaussian Signal Detection and Spectral Estimation Using a Co-prime Sensor Array With the Min Processor," *IEEE Underwater Acoustic Signal Processing Workshop*, E. Greenwich, RI, Oct. 2015.

58. D. A. Hague* and J. R. Buck, "The Generalized Sinusoidal Frequency Modulated Waveform for Continuous Active Sonar," *IEEE Underwater Acoustic Signal Processing Workshop*, E. Greenwich, RI, Oct. 2015.

59. S. R. Tuladhar* and J. R. Buck, "Double zero minimum variance distortionless response beamformer," *170th Meeting of the Acoustical Society of America*, Jacksonville, FL, November 2015.

60. V. Chavali$^{\triangle}$, K. E. Wage and J. R. Buck, "Design of Nested and Coprime Arrays for the North Elba Sea Trial," *IEEE Underwater Acoustic Signal Processing Workshop*, E. Greenwich, RI, Oct. 2015.

61. R. Bautista* and J. R. Buck, "Testing spatial co-prime sampling theory," *169th Meeting of the Acoustical Society of America*, Pittsburgh, PA, May 2015. *Runner-up, Best student presentation award.*

62. C. Ryan*, J. R. Buck, and L. N. Kloepper†, "Experimental verification of a Fisher Information Model for azimuth estimation in broadband active sonar," *169th Meeting of the Acoustical Society of America*, Pittsburgh, PA, May 2015.

63. V. Chavali$^{\triangle}$, K. E. Wage and J. R. Buck, "Design of a coprime array for the North Elba sea trial," *168th Meeting of the Acoustical Society of America*, Indianapolis, IN, October 2014.

64. L. N. Kloepper†, J. A. Simmons and J. R. Buck, "Using the dynamics of mouth opening in echolocating bats to predict pulse parameters among individual *Eptesicus fuscus*," *168th Meeting of the Acoustical Society of America*, Indianapolis, IN, October 2014.

65. L. N. Kloepper†, P. E. Nachtigal, absmith, J. R. Buck and J. E. Gaudette$^{\triangle}$, "Testing the beam focusing hypothesis in a false killer whale using hydrophone arrays," *168th Meeting of the Acoustical Society of America*, Indianapolis, IN, October 2014.

66. L. N. Kloepper†, J. E. Gaudette$^{\triangle}$, J. A. Simmons and J. R. Buck, "Influence of mouth opening and gape angle on the transmitted signals of big brown bats (*Eptesicus fuscus*)," *167th Meeting of the Acoustical Society of America*, Providence, RI, May 2014.

67. I. M. Rooney*, J. R. Buck and K. E. Wage, "Implementing physical constraints for noise-only mode shape estimation on real data," *167th Meeting of the Acoustical Society of America*, Providence, RI, May 2014.

68. S. R. Tuladhar*, J. R. Buck and K. E. Wage, "Random matrix theory model for mean notch depth of the diagonally loaded minimum variance distortionless response beamformer for a single interferer case," *167th Meeting of the Acoustical Society of America*, Providence, RI, May 2014.

69. K. Adhikari* and J. R. Buck, "Detection performance of coprime sensor arrays," *166th Meeting of the Acoustical Society of America*, San Francisco, CA, Dec. 2013. ***Invited presentation.***

70. K. L. Bell, R. E. Zarnich, J. R. Buck, and T. E. Luginbuhl, "Fractionally Spaced Passive Synthetic Aperture Sonar for Operation Above the Design Frequency," *2013 IEEE Underwater Acoustic Signal Processing Workshop*, W. Greenwich, RI. October 2013.

71. K. E. Wage and J. R. Buck, "Convergence Rate of the Dominant Mode Rejection Beamformer," *2013 IEEE Underwater Acoustic Signal Processing Workshop*, W. Greenwich, RI. October 2013.

72. J. R. Buck and K. E. Wage, "Rank Adaptive Dominant Mode Rejection Beamformer," *2013 IEEE Underwater Acoustic Signal Processing Workshop*, W. Greenwich, RI. October 2013.

73. S. R. Tuladhar*, J. R. Buck and K. E. Wage, "A Random Matrix Theory Model for the Mean Notch Depth of a Diagonally Loaded MVDR Beamformer," *2013 IEEE Underwater Acoustic Signal Processing Workshop*, W. Greenwich, RI. October 2013.

74. D. A. Hague* and J. R. Buck, "The Generalized SFM Waveform for Continuous Active Sonar," *2013 IEEE Underwater Acoustic Signal Processing Workshop*, W. Greenwich, RI. October 2013.

75. K. Adhikari* and J. R. Buck, "Detection performance of coprime sensor arrays," *2013 IEEE Underwater Acoustic Signal Processing Workshop*, W. Greenwich, RI. October 2013.

76. K. E. Wage and J. R. Buck, "Random matrix theory analysis of the dominant mode rejection beamformer," *164th Meeting of the Acoustical Society of America*, Kansas City, MO, Oct. 2012.

77. D. A. Hague* and J. R. Buck, "A generalized sinusoidal frequency modulated waveform for active sonar," *164th Meeting of the Acoustical Society of America*, Kansas City, MO, Oct. 2012. ***Second Place, Best Student Presentation Award.***

78. S. R. Tuladhar*, J. R. Buck and K. E. Wage, "Computational model for the eigenvalue density function of a cylindrically isotropic noise sample covariance matrix," *164th Meeting of the Acoustical Society of America*, Kansas City, MO, Oct. 2012.

79. D. A. Hague*, J. R. Buck and I. Bilik, "A Deterministic Filterbank Compressive Sensing Model for Active Remote Sensing," *1st International Workshop on Compressed Sensing Applied to Radar*, Bonn, Germany, May 2012.

80. J. R. Buck and K. E. Wage, "Modeling dominant mode rejection beamformer notch depth using random matrix theory," *162nd Meeting of the Acoustical Society of America*, San Diego, CA, Nov. 2011. ***Invited Presentation.***

81. K. E. Wage, J. R. Buck, M. A. Dzieciuch and P. F. Worcester, "Dominant mode rejection beamformer notch depth: Theory versus experiment," *162nd Meeting of the Acoustical Society of America*, San Diego, CA, Nov. 2011. ***Invited Presentation.***

82. J. R. Buck and K. E. Wage, "Modeling the Dominant Mode Rejection Beamformer Notch Depth with Random Matrix Theory," *2011 IEEE Underwater Acoustic Signal Processing Workshop*, W. Greenwich, RI. October 2011.

83. K. E. Wage, J. R. Buck, M. A. Dzieciuch and P. F. Worcester, "Comparing Experimental Data with Model Predictions for the Dominant Mode Rejection Beamformer Notch Depth," *2011 IEEE Underwater Acoustic Signal Processing Workshop*, W. Greenwich, RI. October 2011.

84. D. A. Hague* and J. R. Buck, "A Gammatone Filterbank Compressive Sensing Model for Active Sonar Receivers," *2011 IEEE Underwater Acoustic Signal Processing Workshop*, W. Greenwich, RI. October 2011.

85. D. A. Hague* and J. R. Buck, "A deterministic filterbank compressive sensing model for bat biosonar," *161st Meeting of the Acoustical Society of America*, Seattle, WA. May 2011.

86. S. R. Tuladhar*and J. R. Buck, "Optimum array design to maximize Fisher information for bearing estimation in a spatially correlated noise environment," *161st Meeting of the Acoustical Society of America*, Seattle, WA. May 2011.

87. J. R. Buck, "Bayesian bounds on passive sonar accuracy from binary performance metrics," *159th Meeting of the Acoustical Society of America*, Baltimore, MD. April 2010. ***Invited Presentation.***

88. N. S. Sharma* and J. R. Buck, "A Generalized Linear Filtering Approach for Sonar Receivers," *IEEE Workshop on Underwater Acoustic Signal Processing*, West Greenwich, RI. October 2009.

89. J. R. Buck and R. Suzuki*, "Entropy Estimation using Pattern Matching for Bioacoustic Signal Analysis," *157th Meeting of the Acoustical Society of America*, Portland, OR. May 2009. ***Invited Presentation.***

90. N. S. Sharma* and J. R. Buck, "A generalized linear filtering approach for sonar receivers," *157th Meeting of the Acoustical Society of America*, Portland, OR. May 2009.

91. X. Zhu* and J. R. Buck, "Maximizing mutual information in horizontal linear arrays," *157th Meeting of the Acoustical Society of America*, Portland, OR. May 2009.

92. J. L. Miksis-Olds†, J. R. Buck, M. J. Noad, D. H. Cato and D. Stokes, "Sing it again Sam! Redundancy and repetition in Hawaiian and Australian humpback whale songs", *Acoustic Communication by Animals.* Corvallis, OR. August 2008.

93. J. R. Buck and J. A. Simmons, "Biosonar model for obtaining fine target structure in complex targets," *155th Meeting of the Acoustical Society of America*, Paris, France. July 2008.

94. M. A. Hjalmarson, K. E. Wage and J. R. Buck, "Translating information from graphs into graphs: Signals and Systems," *Proc. 11th SIGMAA on Research in Undergrad. Math. Ed. Conf.*, San Diego, CA. February 2008.

95. R. Müller, H. Lu△ and J. R. Buck, "Frequency-swept directivity lobes – An emerging functional principle of biosonar beamforming," *154th Meeting of the Acoustical Society of America*, New Orleans, LA. December 2007.

96. J. L. Miksis-Olds††, J. R. Buck, M. J. Noad, D. H. Cato and D. Stokes, "Analysis of Australian humpback whale song using information theory," *152nd Meeting of the Acoustical Society of America*, Honolulu, HI. December 2006.

97. J. R. Buck, "Cepstral processing for bat biosonar," *151st Meeting of the Acoustical Society of America*, Providence, RI. June 2006. ***Invited Presentation.***

98. T. Meng* and J. R. Buck, "Rate Distortion Theory Bounds on Passive Sonar Performance," *150th Meeting of the Acoustical Society of America*, Minneapolis, MN. October 2005.

99. J. R. Buck, "Fading Channel Capacity and Passive Sonar Resolution," *IEEE Workshop on Underwater Acoustic Signal Processing*, West Greenwich, RI. October 2005.

100. T. Meng* and J. R. Buck, "Rate Distortion Theory Bounds on Passive Sonar Performance," *IEEE Workshop on Underwater Acoustic Signal Processing*, West Greenwich, RI. October 2005.

101. J. R. Buck, T. L. Rodgers, and D. H. Cato, "Information entropy analysis of leopard seal vocalization bouts," *147th Meeting of the Acoustical Society of America*, New York, NY. May 2004.

102. J. R. Buck and P. L. Tyack, "Population avoidance behavior model for migrating whales," *145th Meeting of the Acoustical Society of America*, Nashville, TN. May 2003.

103. K. R. Ball* and J. R. Buck, "Localization of dolphin whistles through frequency domain beamforming using a narrow aperture handheld audio/video array," *145th Meeting of the Acoustical Society of America*, Nashville, TN. May 2003.

104. J. L. Miksis$^{\triangle}$, P. L. Tyack and J. R. Buck, "Human-made model sound incorporation in captive dolphin whistles," *14th International Biennial Conference on the Biology of Marine Mammals*, Vancouver, B.C. November 2001.

105. K. E. Wage and J. R. Buck, "Development of the Signals and Systems Concept Inventory (SSCI) Assessment Instrument," *Frontiers in Education*, Reno, NV. October 2001.

106. J. R. Buck, "Information Theory and Source Localization," *IEEE Workshop on Underwater Acoustic Signal Processing*, West Greenwich, RI. October 2001.

107. T. J. Shiao* and J. R. Buck, "Optimal array design and sensitivity for mode filtering," *IEEE Workshop on Underwater Acoustic Signal Processing*, West Greenwich, RI. October 2001.

108. J. R. Buck, "Information theory for matched field processing: preliminary results," *141st Meeting of the Acoustical Society of America*, Chicago, IL. June 2001.

109. R. Suzuki* and J. R. Buck, "An improved contour extractor for bottlenose dolphin whistles," *141st Meeting of the Acoustical Society of America*, Chicago, IL. June 2001.

110. T. J. Shiao* and J. R. Buck, "Optimal array design and sensitivity for mode filtering," *141st Meeting of the Acoustical Society of America*, Chicago, IL. June 2001.

111. R. Suzuki*, J. R. Buck and A. H. Costa, "Analysis filterbank with arbitrary frequency and bandwidth using a multitaper technique," *140th Meeting of the Acoustical Society of America*, Newport Beach, CA. December 2000.

112. R. Suzuki* and J. R. Buck, "Extraction and tracking of bottlenose dolphin whistle contours," *140th Meeting of the Acoustical Society of America*, Newport Beach, CA. December 2000.

113. X. Huang and J. R. Buck, "Autoregressive synthesis of bottlenose dolphin whistles," *140th Meeting of the Acoustical Society of America*, Newport Beach, CA. December 2000.

114. J. R. Buck and P. L. Tyack, "Response of gray whales to low-frequency sounds," *139th Meeting of the Acoustical Society of America*, Atlanta, GA. June 2000.

115. R. Suzuki*, J. R. Buck and P. L. Tyack, "Information Entropy of Humpback Whale Songs," *IEEE Workshop on Underwater Acoustic Signal Processing*, West Greenwich, RI. October 1999.

116. J. R. Buck and T. J. Shiao*, "Design of environmentally robust nonuniform arrays for shallow water mode filtering," *IEEE Workshop on Underwater Acoustic Signal Processing*, West Greenwich, RI. October 1999.

117. J. C. Preisig, J. R. Buck, M. Johnson and H. Dou, "The experimental demonstration of selective mode excitation in a shallow-water environment," *137th Meeting of the Acoustical Society of America*, Berlin, Germany. March 1999.

118. R. Suzuki*, J. R. Buck and P. L. Tyack, "Information entropy of humpback whale song," *137th Meeting of the Acoustical Society of America*, Berlin, Germany. March 1999.

119. J. R. Buck, "Preliminary results on environmentally robust vertical array design for shallow water mode filtering," *133rd Meeting of the Acoustical Society of America*, State College, PA. June 1997.

120. J. R. Buck, M. Johnson, J. C. Preisig and J. Catipovic, "Single mode excitation in a laboratory waveguide using feedback control," *128th Meeting of the Acoustical Society of America*, Austin, TX. Nov. 1994.

121. J. R. Buck, D. Peregrym, J. C. Preisig and J. Catipovic, "Shallow water single mode excitation using feedback control," *127th Meeting of the Acoustical Society of America*, Cambridge, MA. June 1994.

122. H. B. Morgenbesser*, J. R. Buck and P. L. Tyack, "Analysis, modification, and synthesis of dolphin signature whistles," *127th Meeting of the Acoustical Society of America*, Cambridge, MA. June 1994.

123. J. R. Buck, "A quantitative measure of similarity for *Tursiops truncatus* signature whistles," *9th Biennial Conference on the Biology of Marine Mammals*, Chicago, IL. Dec. 1991.

Technical Reports

1. Office of Naval Research, *Report on the Effect of Low-Frequency Manmade Sounds on Marine Mammals*, panelist and co-author, June 1999.

Curricular Materials

Graduate Courses Taught

Array Signal Processing
Machine Learning
Discrete-Time Signal Processing
Random Signals
Elements of Information Theory
Fundamentals of Physical Oceanography
Marine Mammal Signal Processing

Undergraduate Courses Taught

Continuous-time Linear Systems
Discrete-time Linear Systems
Intro to Digital Signal Processing
Computer Algorithms
Active Circuits I

Funded Research Grants

Grants as Sole PI

1. **Universal Adaptive Beamformers**
   Amount: $977,785
   Duration: Apr. 2023-Mar. 2026
   Source: ONR Undersea Signal Processing Program

2. **Random Matrix Theory Analysis of Adaptive Beamformers**
   Amount: $584,100
   Duration: Jun. 2018-May 2021
   Source: ONR Undersea Signal Processing Program

3. **Adaptive Beamforming and Random Matrix Theory**
   Amount: $385,550
   Duration: Apr. 2015–Dec. 2018
   Source: ONR Undersea Signal Processing Program

4. **Co-prime Sensor Array Processing**
   Amount: $793,741
   Duration: Jan. 2013–Sept. 2018
   Source: ONR Basic Research Challenge Program

5. **Random Matrix Theory for Adaptive Beamforming**
   Amount: $404,213
   Duration: Jan. 2012–Dec. 2014

Source: ONR Undersea Signal Processing Program

6. **Stochastic Eigen-analysis for Adaptive Array Processing**
   Amount: $337,288
   Duration: Jan. 2009–Dec. 2012
   Source: ONR Undersea Signal Processing Program

7. **Cepstral Signal Processing for Modeling Bat Biosonar**
   Amount: $233,686
   Duration: Apr. 2007–Sept. 2010
   Source: ONR Undersea Signal Processing Program

8. **The Signals and Systems Concept Inventory**
   Amount: $137,715
   Duration: Sep. 2005–Aug. 2009
   Source: NSF Division of Undergraduate Education

9. **Passive Sonar Performance Limits from Information Theory**
   Amount: $211,642
   Duration: Oct. 2004–Sep. 2007
   Source: ONR Undersea Signal Processing Program

10. **Hierarchical Codes for Humpback Whale Songs**
    Amount: $20,000
    Duration: Jul. 2003–Jun. 2004
    Source: Australian-American Fulbright Commission

11. **Information Theoretic Design of Matched Field Processing Arrays and Algorithms**
    Amount: $292,000
    Duration: May 2000–Sep. 2003
    Source: ONR Young Investigator Program

12. **Instruments and Algorithms for Marine Mammal Behavioral Acoustics**
    Amount: $390,000
    Duration: May 1998–May 2003
    Source: NSF CAREER Faculty Career Early Development Program

Grants as Sole UMassD PI on Multi-Institution Projects

1. **MURI Phase 1: Neurobehavioral, Physiological, and Computational Processes of Auditory Object Learning in Mammals**

Amount: $410,141
Duration: Mar. 2023–Feb. 2026
Source: Subcontract from Carnegie Mellon Univ. on ONR Grant N00014-23-1-2065

2. **MURI Phase 2: Specialization of neural processing during active acoustic sensing in marine mammals and humans**
Amount: $472,029
Duration: Jul. 2020–Sep. 2025
Source: Subcontract from Carnegie Mellon Univ. on ONR Grant N00014-20-1-2709

3. **MURI Phase 1: Active Sensing in Echolocating Marine Mammals and Humans**
Amount: $499,952
Duration: Dec. 2017–Nov. 2021
Source: Subcontract from Boston Univ. on ONR Grant N00014-18-1-2069

4. **Biosonar Target Classification in Target/Clutter Scenes**
Amount: $120,917
Duration: Jul. 2004–Mar. 2007
Source: Subcontract from Brown Univ. on ONR Grant N00014-04-0415

5. **Analysis of Grey Whale Migration Tracks for SURTASS-LFA Environmental Impact Statement**
Amount: $20,800
Duration: Jan. 1999–Dec. 1999
Source: Subcontract from WHOI on ONR Grant N00014-97-1-1031

6. **In-water demonstration of monochromatic single-mode excitation**
Amount: $29,700
Duration: Sep. 1997–Aug. 1998
Source: Subcontract from WHOI on ONR Grant N00014-95-1-0153,

7. **Integration of Acoustic and Behavioral Observations for Blue and Finback Whales for SURTASS-LFA Environmental Impact Statement**
Amount: $3,200
Duration: Sep. 1998–Dec. 1998
Source: Subcontract from WHOI on ONR Grant N00014-97-1-1031.

Grants as Co-PI

1. **MUST II: Acoustic Rainfall Measurement on Global Drifters**
(A. Tandon PI, J. R. Buck co-PI)
Amount: $1,253,847
Duration: Sept. 2020-Sept 2023
Source: Office of Naval Research

Amit Tandon is lead PI for the project. I lead the signal processing efforts, and the UMass Dartmouth mooring deployments. L. Centurioni of Scripps Institute of Oceanography leads the drifter development. K. Heaney of Applied Ocean Sciences contributes to the acoustic modeling.

2. **Development of the Signals and Systems Concept Inventory Exam**
   (Co-PI with K. Wage)
   Amount: $66,000
   Duration: Oct. 2000–May 2003
   Source: NSF Foundation Coalition
   Kathleen Wage and I designed the Concept Inventory, wrote the questions, and edited them together. N. Pendergrass and later P. Fortier were the lead PIs at UMD for this multi-year project. Profs. Pendergrass and Fortier had no direct role in the SSCI development.

3. **Measurement of Acoustic Properties of Marine Mammal Tissues**
   (Co-PI with D. A. Brown)
   Amount: $15,300
   Duration: Jan. 1998–Dec. 1998
   Source: Subcontract from WHOI on Seaver Foundation Grant
   Dr. Brown developed the acoustic equipment and resonance analysis. I handled the signal processing and analysis.

Service

Note: All service is uncompensated unless otherwise noted.

Service to the Department

1. ELE Faculty Search Committee, Chair, 2011–2012, 2022-2023.
2. ECE Faculty Evaluation Committee Member, 2007–present.
3. Electrical Engineering MS Program Admissions Coordinator, 2014–2017.
4. Faculty Evaluation Committee Annual Evaluation Standards Subcommittee Member (2007–2010) and Chair (2011–2015).
5. ECE Department Faculty Mentor to Prof. A. Doblas 2023–present.
6. ECE Department Faculty Mentor to Prof. P. Gendron 2013–2018.
7. ECE Department Faculty Mentor to Prof. I. Bilik 2008–2012.
8. ECE Department Faculty Mentor to Prof. M. Geiger 2007–2008.
9. ECE Department Faculty Mentor to Prof. B. Notaros 1999-2005.
10. ELE Search Committee Member, 2006–2007, 2007–2008
11. ECE Graduate Committee Member, 2007–present, excepting sabbaticals in 2010–2011 & 2017–2018.
12. ECE Graduate Committee ELE Curriculum Review Subcommittee, 2011–2012.
13. ECE PhD Qualifying Exam Chair, 2007, 2008.
14. ECE PhD Qualifying Exam Policy Subcommittee Chair, 2008–2009.
15. ECE Open House Demonstrations, 2015, 2016, 2018

Service to the College

1. COE New Faculty Cohort Mentoring Group, 2019–2021, 2023–2024.
2. COE Workshop on Faculty Searches for Graduate Students, 2024.
3. External evaluator and Classroom Observer for Teaching Faculty Promotion Dossiers, 2023–2024 (multiple dossiers), 2024–2025
4. Honors Committee Representative, 2015–2017.
5. ARNIE Committee Representative 2015–2017.
6. UMD/NUWC partnership meeting, 2012.
7. COE Academic Council Member, 2009–2010.
8. Commencement Marshall, 2008.

Service to the University

1. Dean of Engineering Five Year Review Committee, 2024.
2. Office of Faculty Development Advisory Board Member, 2023–2025.
3. Faculty Senate Research Committee, Chair (2016–2017 AY, Spring 2022, 2022–2023 AY), Secretary (2023–2024), Member (Spring 2016 and Fall 2018–Fall 2021).
4. Manning Prize Committee, Chair, 2024.
5. Search for Director of Undergraduate Research, Member, 2023.
6. New Faculty Orientation Panelist, 2023, 2024.
7. Provost's Council Advisory Committee on Research, Scholarship and Innovation, 2015.
8. Provost Best Practices Teaching with Technology Selection Committee, 2015.
9. Teacher of the Year Committee, 2014–2016, 2018–2021.
10. Teaching and Learning with Technology Workshop Panelist, 2015.
11. Office of Faculty Development Reading Group Moderator, 2024–2025. Led reading groups on Inclusive Teaching (Fall 2024) and Teaching with AI (Spring 2025)
12. Office of Faculty Development Reading Group Moderator, 2016–2017. Led reading group for two cohorts of faculty on modern pedagogical techniques.
13. New Faculty Orientation Panelist, 2023, 2024.
14. Office of Faculty Development Discussion Panelist, 2012, 2014, 2023, 2024.
15. Provost Search Committee, Member, 2012–2013.
16. Represented UMassD to congressional delegation for two days in Washington, DC, December 2012.
17. Office of Faculty Development Faculty Fellow, 2012–2013, Led mentoring group for STEM faculty on mentoring research students.
18. Office of Faculty Development Faculty Fellow, 2011–2012. Led mentoring group for STEM faculty developing active learning and formative assessment techniques.
19. UMD Research Strategic Plan Team, 2010.
20. Chancellor Colloquium Selection Committee, 2010.
21. New Faculty Institute Presenter, 2009.
22. Center for Teaching Excellence Workshop Speaker, October 2009.
23. Center for Teaching Excellence Advisory Board Member, 2007–2008.

Service to the Profession

Leadership Positions

1. Chair, Membership Committee, Acoustical Society of America, 2025-present
2. Instructor, ONR Ocean Acoustics Bootcamp, held at SUNY Southampton, August 2024.
3. Associate Editor, *JASA Express Letters*, 2021-2024.
4. Treasurer, IEEE Underwater Acoustic Signal Processing Workshop, 2013, 2015, 2017.
5. Chair, 2011 IEEE Underwater Acoustic Signal Processing Workshop.
6. Chair, 2009 IEEE Underwater Acoustic Signal Processing Workshop.
7. Chair, 2007 IEEE Underwater Acoustic Signal Processing Workshop.
8. Associate Editor, *IEEE Journal of Oceanic Engineering,* 2005–2010.
9. Organizing Committee, 167th Meeting of the Acoustical Society of America, Providence, RI, May 2014.
10. Organizing Committee, 151st Meeting of the Acoustical Society of America, Providence, RI, June 2006.

Committee Member and Panelist

1. Nomination Committee, Acoustical Society of America, 2025
2. Organizing Committee, IEEE Underwater Acoustic Signal Processing Workshop, 2019, 2021, 2023, 2025.
3. Membership Committee, Acoustical Society of America, 2019–2025
4. Rossing Prize in Acoustics Education, Selection Committee Member, 2018–2021
5. Animal Bioacoustics Technical Committee Member, Acoustical Society of America, 2000–2008, 2014–2020.
6. Underwater Acoustics Technical Committee Member, Acoustical Society of America, 2000–Present.
7. Signal Processing Technical Committee Member, Acoustical Society of America, 2006–Present.
8. Panel Participant, Office of Naval Research Acoustic Observatory Science Plan Workshop, June 2002.
9. Panel Participant, National Oceanographic Partnership Program Proposal Review Panel, January 2002.
10. Scientific Advisor, Scientific Overview Panel for Environmental Impact Statement for Navy Surface Towed Array Sonar System – Low Frequency Active (SURTASS-LFA).
11. Panel Participant and Report Co-author, Office of Naval Research Workshop on the Effect of Manmade Sound in the Marine Environment, 10–12 February 1998.

12. Scientific Advisor, New England Aquarium, Scientific Advisory Review Board for *Sounds of the Sea* Exhibit, September 1997–May 1998.

Conference Session Organizer and Chair

1. Co-chair and co-organizer, special session on universal algorithms in signal processing for acoustics, *188th Meeting of the Acoustical Society of America*, New Orleans, LA, May 2025
2. Co-chair and co-organizer, Special Session to honor Doug Cato's contributions to acoustics, *185th Meeting of the Acoustical Society of America*, Sydney, NSW, Australia, Dec. 2023
3. Co-chair and co-organizer, Special session on Education in Acoustics, "When Doing It Right goes wrong," *184th Meeting of the Acoustical Society of America*, Chicago, IL, May 2023.
4. Co-chair and co-organizer, Special session on Education in Acoustics, "My favorite signal processing homework problem," *184th Meeting of the Acoustical Society of America*, Chicago, IL, May 2023.
5. Co-chair and co-organizer, Special Session, Random Matrix Theory in Acoustics, *179th Meeting of the Acoustical Society of America*, Acoustics Virtually Everywhere, Virtual Meeting, Dec. 2020.
6. Co-chair and co-organizer, Special Session on Random Matrix Theory, *2012 IEEE Statistical Signal Processing Workshop*, August 2012.
7. Session Chair, Signal Processing, International Congress on Acoustics, August 2010
8. Session Chair, "Animal Bioacoustics: Classification and Parameter Estimation," Acoustical Society of America Meeting, Spring 2006.
9. Session Chair, IEEE Underwater Acoustic Signal Processing Workshop, 2005.
10. Special Session Chair and Organizer, "Information Theory Analysis of Animal Acoustic Communication," Acoustical Society of America Meeting, Spring 2001.

Technical Paper Reviewer

1. Journal of the Acoustical Society of America
2. IEEE Transaction on Signal Processing
3. IEEE Journal of Oceanic Engineering
4. IEEE Signal Processing Magazine
5. IEEE Signal Processing Letters
6. IEEE Transactions on Aerospace and Electronic Systems
7. Bioacoustics
8. Physical Review Letters
9. 2012 IEEE Statistical Signal Processing Workshop

Professional Memberships

1. Fellow, Acoustical Society of America
2. Senior Member, Institute of Electrical and Electronics Engineers (IEEE)
3. Member, American Society for Engineering Education, Member
4. Member, Sigma Xi