Résumé

William M. Robertson, Ph.D.

Education:

Imperial College	London, UK	Physics	B.Sc., 1980
Purdue University	West Lafayette, IN	Physics	M.S., 1982
Purdue University	West Lafayette, IN	Physics	Ph.D., 1988

Professional Appointments:

Argonne National Laboratory	Materials Research	Postdoc, 1988 -1990
IBM Thomas J. Watson Research Center	Optics	Postdoc, 1990 -1992 National
Research Council Canada	Photonics	Research Officer, 1992-1995

Middle Tennessee State University

Assistant Professor	Department of Physics and Astronomy	1995-2000
Associate Professor	Department of Physics and Astronomy	2000-2004
Professor	Department of Physics and Astronomy	2004-present
Interim Director	Computational Science Ph.D. Program	2010-2011

Publications:

Book: W. M. Robertson, Optoelectronic techniques for microwave and millimeter-wave engineering, Artech House Publishers, 1995. (42)

Articles in Refereed Journals since coming to MTSU (Total Career Refereed Publications >50)
[Undergraduate co-authors are underlined. Value in parentheses is the number of times the article has been cited, if known.]

William M. Robertson, Carina Vazquez, Jennifer Lopez, Alexander LaVerde, and R. J. Giuntini. Acoustic waveguide demultiplexer based on Fano resonance: Experiment and simulation. *AIP Advances* **12**, 045018 (2022); https://doi.org/10.1063/5.0087034 (2)

William M. Robertson, Carina Vazquez, Alexander LaVerde, Austin Wassenberg, Colleen Olson, and Jennifer Lopez. Acoustic ring resonator: Experiments and simulations. *AIP Advances* **12**, 015006 (2022); https://doi.org/10.1063/5.0077330 (1)

William M. Robertson, Stephen Wright, Andrienne Friedli, Jeffery Summers, and Alex Kaszynski. Design and characterization of an ultra-low-cost 3D-printed optical sensor based on Bloch surface wave resonance, *Biosensors and Bioelectronics: X*, 5 100049 (2020). (7)

William M. Robertson, Isaac Shirk, Elizabeth Campbell. Acoustic waveguide impedance matching via Helmholtz resonator mediated extraordinary acoustic transmission, *AIP Advances* **9**, 035013. (3)

Khem Narayan Poudel and William M. Robertson. Maximum length sequence dielectric multilayer reflector, OSA Continuum 1, 358-372 (2018). (11)

Vijay Koju and William M. Robertson. Leaky Bloch-like surface waves in the radiation-continuum for sensitivity enhanced biosensors via azimuthal interrogation. *Scientific Reports* 7 no. 1: 3233, 2017. (26)

Vijay Koju and William M. Robertson. Excitation of Bloch-like surface waves in quasi-crystals and aperiodic dielectric multilayers. *Optics Letters* 41.13: 2915-2918, 2016. (23)

Brian C. Crow, Jordan M. Cullen, William W. McKenzie, Vijay Koju, and William M. Robertson. Experimental realization of extraordinary acoustic transmission using Helmholtz resonators. *AIP Advances* 5.2: 027114, 2015. (17)

Vijay Koju, Ebony Rowe, and William M. Robertson. Extraordinary acoustic transmission mediated by Helmholtz resonators. *AIP Advances* 4.7: 077132, 2014. (12)

Vijay Koju, W. M. Robertson. Slow light by Bloch surface wave tunneling, *Optics Express* 22 (13), 15679-15685, 2014. (8)

J. W. Herlan, S. S. LePard, W. M. Robertson. Loop filters as resonant elements for acoustic metamaterials and stop band structures, *Journal of Applied Physics* 113 (12), 124903, 2013. (6)

A. Farmer, A. C. Friedli, S. M. Wright, W. M. Robertson. Biosensing using surface electromagnetic waves in photonic band gap multilayers, *Sensors and Actuators B: Chemical* 173, 79-84, 2012 (37).

W. M. Robertson, J. M. Parker. Acoustic impulse response method as a source of undergraduate research projects and advanced laboratory experiments, *The Journal of the Acoustical Society of America* 131 (3), 2488-2494, 2012. (2)

J. Fey, W. M. Robertson. Compact acoustic bandgap material based on a subwavelength collection of detuned Helmholtz resonators, *Journal of Applied Physics* 109 (11), 114903, 2011. (38)

W.M. Robertson, J. Pappafotis, P. Flannigan, J. Cathey, B. Cathey and C. Klaus. Sound beyond the speed of light: Measurement of negative group velocity in an acoustic loop filter, *Appl. Phys. Lett.*, 90 014102, 2007. (31)

J.N. Munday and W.M. Robertson. Observation of negative group delays within a coaxial photonic crystal using an impulse response method, *Optics Communications*, Vol. 273(1): 32-361, 2007. (16)

M. Shinn, W. M. Robertson. Surface plasmon-like sensor based on surface electromagnetic waves in a photonic band-gap material, *Sensors and Actuators B: Chemical* 105 (2), 360-364, 2005. (146)

J. Ash, W. M. Robertson. Acoustic band gap measurements in waveguides with periodic resonant structures, Zeitschrift für Kristallographie-Crystalline Materials 220 (9-10), 824-828, 2005. (2)

J. N. Munday, W. M. Robertson. Slow electromagnetic pulse propagation through a narrow transmission band in a coaxial photonic crystal, *Applied Physics Letters* 83 (5), 1053-1055, 2003. (31)

J. Ash, J.-M. McGaugh, and W. M. Robertson. Breaking the sound barrier: tunneling of acoustic waves through the forbidden transmission region of a one-dimensional acoustic band gap array, *Am. J. Phys.* 70: 689-693, 2002. (41)

W. M. Robertson, C. Baker, and C. Brad Bennett. Slow group velocity propagation of sound via defect coupling in a one-dimensional acoustic band gap array. *Am. J. Phys* 72 (2): 255-257, 2003. (35)

W. M. Robertson, C. Baker, C. B. Bennett. Group velocity manipulation in simple acoustic band gap filters, *The Journal of the Acoustical Society of America* 113 (4), 2284-2284, 2003. (1)

J. N. Munday, W. M. Robertson. Negative group velocity pulse tunneling through a coaxial photonic crystal, *Applied Physics Letters* 81 (11), 2127-2129, 2002. (52)

J. N. Munday, C. B. Bennett, W. M. Robertson. Band gaps and defect modes in periodically structured waveguides, *The Journal of the Acoustical Society of America* 112 (4), 1353-1358, 2002. (59)

W. M. Robertson, J. F. Rudy III. Measurement of acoustic stop bands in two-dimensional periodic scattering arrays, *The Journal of the Acoustical Society of America* 104 (2), 694-699, 1998. (102)

W. M. Robertson. Experimental measurement of the effect of termination on surface electromagnetic waves in one-dimensional photonic bandgap arrays, *Journal of Lightwave Technology* 17 (11), 2013, 1999. (117)

W. M. Robertson, M. S. May. Surface electromagnetic wave excitation on one-dimensional photonic band-gap arrays, *Applied Physics Letters* 74 (13), 1800-1802, 1999. (182)

W. M. Robertson. Transmission-line matrix modeling of superluminal electromagnetic-pulse tunneling through the forbidden gap in two-dimensional photonic band structures, *JOSA* B 14 (5), 1066-1073, 1997. (8)

Y. Liu, B. Robertson, D. V. Plant, H. S. Hinton, W. M. Robertson. Design and characterization of a microchannel optical interconnect for optical backplanes, *Applied Optics* 36 (14), 3127-3141, 1997. (16)

D. V. Plant, B. Robertson, H. S. Hinton, M. H. Ayliffe, G. C. Boisset, W. Hsiao, D. Kabal, N. H. Kim, Y. S. Liu, M. R. Otazo, D. Pavlasek, A. Z. Shang, J. Simmons, K. Song, D. A. Thompson, and W. M. Robertson. 4× 4 vertical-cavity surface-emitting laser (VCSEL) and metal–semiconductor–metal (MSM) optical backplane demonstrator system, *Applied Optics* 35 (32), 6365-6368, 1996. (40)

D. V. Plant, B. Robertson, H. S. Hinton, W. M. Robertson, G. C. Boisset, N. H. Kim, Y. S. Liu, M. R. Otazo, D. R. Rolston, A. Z. Shang. An optical backplane demonstrator system based on FET-SEED smart pixel arrays and diffractive lenslet arrays, *IEEE Photonics Technology Letters* 7 (9), 1057-1059, 1995. (30)

Patents at MTSU

1. W. M. Robertson, Scanning electromagnetic waves in photonic band gap multilayers. US Patent 10416384 (2019).
2. W. M. Robertson, Acoustic lens using extraordinary acoustic transmission. US Patent 10255901 (2019).
3. W. M. Robertson, Surface electromagnetic waves in photonic band gap multilayers. US Patent 9880354 (2018).
4. W. M. Robertson, Acoustic lens using extraordinary acoustic transmission. US Patent 9,640,171 (2017).
5. W. M. Robertson, Surface electromagnetic waves in photonic band gap multilayers. US Patent 9,207,358 (2015).
6. W. M. Robertson, Surface electromagnetic waves in photonic band gap multilayers. US Patent 8,692,211 (2014).
7. W. M. Robertson, Optical sensor based on surface electromagnetic wave resonance in photonic band gap materials and method for using same. US Patent 7,436,596 (2008).

Grants:

I have attracted external grant funding of $3,788,104 over the last 20 years as PI or co-PI.

- Experimental investigation of surface electromagnetic waves on photonic band gap arrays, Research Corporation, $54,233.
- C-RUI: Development and Applications of a Novel Biosensor, NSF-RUI MCB 0216716, $782,916.
- Ultrafast Optoelectronics for Broad Bandwidth Microwave Measurements, NSF-PFI ECCS 9988797, $96,385.
- STEPping Up Undergraduate Research, NSF-STEP DUE 0431652, $1,889,281.
- Acquisition of Polymer Characterization Equipment, NSF-ILI DMR 9977729, $137,000.
- DHS Grant: SERRI Phase I and Phase II Biosensors for the rapid detection of infectious agents, 299,904.
- REU: Computational Modeling and Simulation in Applied Sciences, NSF 1757493, $528,385.

Selected Invited Presentations and Honors:

- MTSU Career Achievement Award, 2019.
- American Association of Physics Teachers Summer Meeting, Sacramento CA, 2004.
- Workshop on Electromagnetic Crystal Structures, Laguna Beach CA, 1999.