
Jon W. Wallace

Curriculum Vitae

Education

Ph.D. Electrical Engineering (2002)

Brigham Young University, Provo, Utah, USA

Adviser: Prof. Michael A. Jensen

Dissertation: *Modeling Electromagnetic Wave Propagation in Electrically Large Structures*

B.S. Electrical Engineering (1997, Summa Cum Laude)

Brigham Young University, Provo, Utah, USA

Minors: Mathematics, Music

Employment

Associate Professor (2015-present)

Department of Electrical and Computer Engineering, Lafayette College, Easton, USA

Adjunct Professor (2013-2015)

Department of Electrical and Computer Engineering, Brigham Young University, Provo, USA

Senior Engineer (2012-2015)

Wavetronix, LLC, Provo, USA

Assistant Professor (2006-2011), **Associate Professor** (2012) of **Electrical Engineering School of Engineering and Science, Jacobs University, Bremen, Germany**

Research Associate and Teaching Faculty (2004-2006)

Department of Electrical and Computer Engineering, Brigham Young University, Provo, USA

Visiting Scientist (July 2004)

Department of Electrical, Electronic and Computer Engineering, University of Pretoria, South Africa

Visiting Scientist (2003)

The Institute of Communications and Radio-Frequency Engineering, Vienna University of Technology, Vienna, Austria

Research Assistant (1998-2002)

Department of Electrical and Computer Engineering, Brigham Young University, Provo, USA

Member of Technical Staff I (1997)

Lucent Technologies, Denver, USA

Software Tester/Developer (1995-1996)

Novell, Inc., Provo, USA

Honors/Other Experience

2014 Licensed as Private Airplane Pilot

2013 Senior Member IEEE

2002 Harold A. Wheeler Paper Award, *IEEE Transactions on Antennas and Propagation*

1998 National Science Foundation Fellowship Recipient, 1998-2001 NSF Fellow

Foreign Languages Spoken: German, Spanish

Grants

Awarded

J. Wallace (PI) “MRI: Acquisition of a 4-40 GHz VNA-Based material and channel sounder for wireless communications and radar research,” NSF Major Research Instrumentation (MRI) Grant, Project Span: Sep. 15, 2017 - Aug. 2020, \$169,545.

W. Henkel (PI) and J. Wallace (Co-PI), “Unequal error protection and security approaches in wireless and network coding – a study of continuous and discrete number designs,” German Research Foundation, Focus Program: *Communications in Interference Limited Networks (COIN)*

Phase I: Nov. 2009 - Dec. 2011, € 300,000

Phase II: Jan. 2012 - Jan. 2014, € 290,000

Publications

Journals

1. R. Mehmood, J. Wallace, and M. Jensen, "Secure Array Synthesis in Multipath Channels," *IEEE Transactions on Antennas and Propagation*, vol. 66, pp. 3383 - 3390, July 2018.
2. J. Wallace, Y. Yang, W. Ahmad, R. Mehmood, J. Wallace, and M. Jensen, "A comparison of indoor MIMO measurements and ray-tracing at 24 GHz and 2.55 GHz," *IEEE Transactions on Antennas and Propagation*, Special Issue on Antennas and Propagation Aspects of 5G Communications, vol. 65, pp. 6656-6668, Dec. 2017.
3. R. Mehmood, J. Wallace, and M. Jensen, "Secure array synthesis," *IEEE Transactions on Antennas and Propagation*, vol. 63, pp. 3887-3896, Sep. 2015.
4. R. Mehmood, J. Wallace, and M. Jensen, "Key establishment employing reconfigurable antennas: impact of antenna complexity," *IEEE Transactions on Wireless Communications*, vol. 13, pp. 6300-6310, Nov. 2014.
5. R. Mehmood and J. Wallace, "MIMO capacity enhancement using parasitic reconfigurable aperture antennas (RECAPs)," *IEEE Transactions on Antennas and Propagation*, vol. 60, pp. 665-673, Feb. 2012.
6. J. Wallace and R. Mehmood, "On the accuracy of equivalent circuit models for multi-antenna systems," *IEEE Transactions on Antennas and Propagation*, vol. 60, pp. 540-547, Feb. 2012.
7. A. Eid and J. Wallace, "Accurate modeling of body area network channels using surface-based method of moments," *IEEE Transactions on Antennas and Propagation*, vol. 59, pp. 3022-3030, Aug. 2011.
8. R. Sharma and J. Wallace, "Correlation-based sensing for cognitive radio networks: bounds and experimental assessment," *IEEE Sensors Journal*, vol. 11, pp. 657-666, Mar. 2011.
9. J. Wallace and R. Sharma, "Automatic secret keys from reciprocal MIMO wireless channels: measurement and analysis," *IEEE Transactions on Information Forensics and Security*, vol. 5, pp. 381-392, Sep. 2010.
10. R. Mehmood and J. Wallace, "Diminishing returns with increasing complexity in reconfigurable aperture antennas," *IEEE Antennas and Wireless Propagation Letters*, vol. 9, pp. 299-302, 2010.
11. A. Eid and J. Wallace, "Ultrawideband speech sensing," *IEEE Antennas and Wireless Propagation Letters*, vol. 8, pp. 1414-1417, 2009.
12. J. Wallace and M. Jensen, "Sparse power angle spectrum estimation," *IEEE Transactions on Antennas and Propagation*, vol. 57, pp. 2452-2460, Aug. 2009.
13. B. Maharaj, J. Wallace, M. Jensen, and L. Linde "A low-cost open-hardware wideband multiple-input multiple-output (MIMO) wireless channel sounder," *IEEE Transactions on Instrumentation and Measurement*, vol. 57, pp. 2283-2289, Oct. 2008.
14. D. Pinchera, J. Wallace, M. Migliore, and M. Jensen "Experimental analysis of a wideband adaptive-MIMO antenna," *IEEE Transactions on Antennas and Propagation*, vol. 56, pp. 908-913, Mar. 2008.

15. J. Wallace and M. Jensen, "Electromagnetic Considerations for communicating on correlated MIMO channels with covariance information," *IEEE Transactions on Wireless Communications*, vol. 7, pp. 543-551, Feb. 2008.
16. M. Jensen and J. Wallace, "Capacity of the continuous-space electromagnetic channel," *IEEE Transactions on Antennas and Propagation*, vol. 56, pp. 524-531, Feb. 2008.
17. J. Wallace, M. Jensen, A. Gummalla and H. Lee "Experimental characterization of the outdoor MIMO wireless channel temporal variation," *IEEE Transactions on Vehicular Technology*, vol. 56, pp. 1041-1049, May 2007.
18. J. Wallace and M. Jensen, "Time-varying MIMO channels: measurement, analysis, and modeling," *IEEE Transactions on Antennas and Propagation*, vol. 54, pp. 3265-3273, Nov. 2006.
19. B. Maharaj, J. Wallace, L. Linde, and M. Jensen, "Linear dependence of double-directional spatial power spectra at 2.4 and 5.2 GHz from indoor MIMO channel measurements", *Electronics Letters*, vol. 41, pp. 1338-1340, Nov. 2005.
20. M. Morris, M. Jensen, and J. Wallace, "Superdirectivity in MIMO systems," *IEEE Transactions on Antennas and Propagation*, vol. 53, pp. 2850-2857, Sep. 2005.
21. B. Maharaj, J. Wallace, L. Linde, and M. Jensen, "Frequency scaling of spatial correlation from colocated 2.4 GHz and 5.2 GHz wideband indoor MIMO channel measurements," *Electronics Letters*, vol. 41, pp. 336-337, Mar. 2005.
22. M. Jensen and J. Wallace, "A review of antennas and propagation for MIMO wireless communications," *IEEE Transactions on Antennas and Propagation*, vol. 52, pp. 2810-2824, Nov. 2004. *Invited review article*
23. M. Jensen and J. Wallace, "Analysis of coupling in multi-antenna communication systems," *IEICE Transactions on Electronics*, vol. E87-C, pp. 1418-1424, Sep. 2004.
24. J. Wallace and M. Jensen, "Mutual coupling in MIMO wireless systems: a rigorous network theory analysis," *IEEE Transactions on Wireless Communications*, vol. 3, pp. 1317-1325, July 2004.
25. T. Svantesson, M. A. Jensen, and J. W. Wallace, "Analysis of electromagnetic field polarizations in multi-antenna systems," *IEEE Transactions on Wireless Communications*, vol. 3, pp. 641-646, Mar. 2004.
26. J. W. Wallace and M. A. Jensen, "Termination-dependent diversity performance of coupled antennas: Network theory analysis," *IEEE Transactions on Antennas and Propagation*, vol. 52, pp. 98-105, Jan. 2004.
27. H. Özcelik, M. Herdin, W. Weichselberger, J. Wallace, and E. Bonek, "Deficiencies of 'Kronecker' MIMO radio channel model," *Electronics Letters*, vol. 39, pp. 1209-1210, 7 Aug. 2003.
28. J. W. Wallace, M. A. Jensen, A. L. Swindlehurst, and B. D. Jeffs, "Experimental characterization of the MIMO wireless channel: data acquisition, analysis, and modeling," *IEEE Transactions on Wireless Communications*, vol. 2, pp. 335-343, Mar. 2003.
29. J. W. Wallace and M. A. Jensen, "Modeling the indoor MIMO wireless channel," *IEEE Transactions on Antennas and Propagation, Special Issue on Wireless Communications*, vol. 50, pp. 591-599, May 2002. *Winner of Harold A. Wheeler Applications Prize Paper Award*
30. J. W. Wallace and M. A. Jensen, "Analysis of optical waveguide structures by use of a combined finite-difference/finite-difference time-domain method," *Journal of the Optical Society of America*, vol. 19, pp. 1-10, Mar. 2002.

Book Chapters

1. J. Wallace, R. Mehmood, R. Sharma, W. Henkel, O. Graur, N. Islam, and A. Filip, “Physical-layer key generation and reconciliation,” in *Communications in Interference Limited Networks*, Springer, 2016.
2. M. Jensen and J. Wallace, “Antenna design considerations for MIMO and diversity systems,” in *Modern Antenna Handbook*, C. Balanis, Ed., Wiley & Sons, 2008.
3. Q. Spencer, J. Wallace, C. Peel, T. Svantesson, A. Swindlehurst, H. Lee, and A. Gumalla, “Performance of multi-user spatial multiplexing with measured channel data,” in *MIMO System Technology for Wireless Communications*, G. Tsoulos, Ed., CRC Press, 2006.
4. M. Jensen and J. Wallace, “MIMO wireless channel modeling and experimental characterization,” in *Space-Time Processing for MIMO Communications*, A. B. Gershman and N. D. Sidiropoulos, Eds., Wiley, 2005.

Conference Articles

1. M. Arnold, R. Mehmood, J. Wallace, and M. Jensen, “Plane wave synthesis in a reconfigurable over-the-air chamber,” *IEEE Antennas and Propagation Society International Symposium (APS '18)*, Boston, MA, July 8-13, 2018.
2. J. Wallace, R. Mehmood, and M. Jensen, “4-40 GHz transmission measurement of indoor building materials at normal incidence,” *IEEE Antennas and Propagation Society International Symposium (APS '18)*, Boston, MA, July 8-13, 2018.
3. R. Mehmood, J. Wallace, *W. Ahmad, *Y. Yang and M. Jensen, “A comparison of 24 GHz and 2.55 GHz MIMO measurements in two indoor scenarios,” *IEEE Antennas and Propagation Society International Symposium (APS '17)*, San Diego, CA, July 9-14, 2017.
4. A. Mahmood, J. Wallace and M. Jensen, “UAV attitude estimation using antenna arrays,” *IEEE Antennas and Propagation Society International Symposium (APS '17)*, San Diego, CA, July 9-14, 2017.
5. M. Arnold, R. Mehmood, J. Wallace and M. Jensen, “Efficient optimization method for a reconfigurable OTA chamber,” *IEEE Antennas and Propagation Society International Symposium (APS '17)*, San Diego, CA, July 9-14, 2017.
6. A. Mahmood, J. Wallace, and M. Jensen, “Radio frequency UAV attitude estimation using direction of arrival and polarization,” *2017 European Conference on Antennas and Propagation (EuCAP '17)*, Paris, France, Mar. 19-24, 2017.
7. M. Arnold, R. Mehmood, M. Jensen and J. Wallace, “Gradient ascent based optimization for a reconfigurable OTA chamber,” *2017 European Conference on Antennas and Propagation (EuCAP '17)*, Paris, France, Mar. 19-24, 2017.
8. *C. Lombardo, *I. Miller, and J. Wallace, “Studying the interaction of UAS and human pilots using the X-Plane flight simulator,” *IEEE International Conference on Unmanned Aircraft Systems (ICUAS '16)*, Arlington, VA, July 7-10, 2016.
9. R. Mehmood, J. Wallace, and M. Jensen, “LOS and NLOS millimeter-wave MIMO measurements at 24 GHz in a hallway environment,” *IEEE Antennas and Propagation Society International Symposium (APS '16)*, Fajardo, Puerto Rico, June 26-July 1, 2016.

10. R. Mehmood, J. Wallace, and M. Jensen, "Secure array synthesis for encryption key establishment in multipath channels," *European Conference on Antennas and Propagation (EuCAP '16)*, Davos, Switzerland, Apr. 10-15, 2016.
11. R. Mehmood, J. Wallace, and M. Jensen, "Reconfigurable OTA chamber for MIMO wireless device testing," *European Conference on Antennas and Propagation (EuCAP '16)*, Davos, Switzerland, Apr. 10-15, 2016.
12. R. Mehmood, M. Jensen, and J. Wallace, "Reconfigurable OTA chamber: A new paradigm for testing of MIMO wireless devices," *IEEE International Symposium on Microwave, Antenna, Propagation, and EMC Technologies (MAPE '15)*, Shanghai, Oct. 28-30, 2015.
13. R. Mehmood, J. Wallace, and M. Jensen, "PAS control in a reconfigurable OTA chamber," *IEEE Antennas and Propagation Society International Symposium (APS '15)*, Vancouver, BC, Canada, July 19-25, 2015.
14. R. Mehmood, J. Wallace, and M. Jensen, "24 GHz indoor MIMO channel measurements," *IEEE Antennas and Propagation Society International Symposium (APS '15)*, Vancouver, BC, Canada, July 19-25, 2015.
15. R. Mehmood, J. Wallace, and M. Jensen, "An experimental reconfigurable OTA chamber," *2015 European Conference on Antennas and Propagation (EuCAP '15)*, Lisbon, Portugal, April 12-17, 2015.
16. R. Mehmood, J. Wallace, and M. Jensen, "Optimal array signaling for key establishment in static multipath channels," *2015 European Conference on Antennas and Propagation (EuCAP '15)*, Lisbon, Portugal, April 12-17, 2015.
17. R. Mehmood, J. Wallace, and M. Jensen, "Optimal array patterns for encryption key establishment in LOS channels," *IEEE Antennas and Propagation Society International Symposium (APS '14)*, Memphis, TN, July 6-11, 2014.
18. A. Filip, R. Mehmood, J. Wallace, and W. Henkel, "Variable guard band construction to support key reconciliation," *IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP '14)*, Florence, Italy, May 4-9, 2014.
19. S. ur Rehman, J. Wallace, "Efficient Newton-based pattern synthesis of reconfigurable parasitic arrays," *European Conference on Antennas and Propagation (EuCAP '14)*, The Hague, The Netherlands, Apr. 6-11, 2014.
20. J. Wallace, R. Mehmood, and M. Jensen, "Electronically reconfigurable reverberation chambers," *European Conference on Antennas and Propagation (EuCAP'14)*, The Hague, The Netherlands, Apr. 6-11, 2014.
21. R. Mehmood, J. Wallace, and M. Jensen, "Experimental characterization of channel-based key establishment using reconfigurable antennas," *European Conference on Antennas and Propagation (EuCAP '14)*, The Hague, The Netherlands, Apr. 6-11, 2014.
22. R. Mehmood, J. Wallace, and M. Jensen, "Physical-layer wireless security of reconfigurable antennas in line-of-sight channels," *IEEE Antennas and Propagation Society International Symposium (APS '13)*, Orlando, FL, July 7-13, 2013.
23. A. Filip, R. Mehmood, J. Wallace, and W. Henkel, "Physical-Layer Key Generation Supported by RECAP Antenna Structures," *ITG International Conference on Systems, Communication and Coding (SCC '13)*, Munich, Germany, Jan. 21-24, 2013.
24. R. Mehmood and J. Wallace, "Measurement of capacity enhancement with parasitic reconfigurable aperture antennas in interference-limited scenarios," *ITG Workshop on Smart Antennas (WSA '12)*, Dresden, Germany, Mar. 7-8, 2012.

25. M. Hammouda and J. Wallace, "Noise uncertainty in cognitive radio sensing: analytical modeling and optimal detector performance," *ITG Workshop on Smart Antennas (WSA '12)*, Dresden, Germany, Mar. 7-8, 2012.
26. R. Mehmood and J. Wallace, "Experimental assessment of secret key generation using parasitic reconfigurable apertures," *European Conference on Antennas and Propagation (EuCAP'12)*, Prague, Czech Republic, Mar. 26-30, 2012.
27. S. Rehman and J. Wallace, "Optimization of parasitic reconfigurable aperture antennas with a hybrid direct-Newton approach," *IEEE Antennas and Propagation Society International Symposium (APS '11)*, Spokane, WA, July 3-8, 2011.
28. R. Sharma and J. Wallace, "Physical layer key generation methods for arbitrary fading channels," *IEEE Antennas and Propagation Society International Symposium (APS '11)*, Spokane, WA, July 3-8, 2011.
29. P. Baniya and J. Wallace, "Efficient optimization of reconfigurable parasitic antenna arrays using geometric considerations," *European Conference on Antennas and Propagation (EuCAP'11)*, Rome, Italy, Apr. 12-16, 2011.
30. R. Mehmood and J. Wallace, "Channel security enhancement using reconfigurable aperture antennas," *European Conference on Antennas and Propagation (EuCAP'11)*, Rome, Italy, Apr. 12-16, 2011. **Invited**
31. R. Mehmood and J. Wallace, "Interference suppression using parasitic reconfigurable aperture (RECAP) antennas," *IEEE International Workshop on Antenna Technology (IWAT'11)*, Hong Kong, Mar. 7-9, 2011. **Invited**
32. R. Sharma and J. Wallace, "Bit error rate and efficiency analysis of wireless reciprocal channel key generation," *IEEE International Conference on Wireless Information Technology and Systems (ICWITS '10)*, Honolulu, Hawaii, Aug. 28 - Sep. 3, 2010.
33. A. Eid and J. Wallace, "Green's function models and measurements for body area network (BAN) channels," *IEEE International Conference on Wireless Information Technology and Systems (ICWITS '10)*, Honolulu, Hawaii, Aug. 28 - Sep. 3, 2010.
34. R. Sharma and J. Wallace, "Measured statistics of reciprocal channel key generation of indoor MIMO channels," *IEEE Antennas and Propagation Society International Symposium (APS '10)*, Toronto, Canada, July 11-17, 2010.
35. R. Mehmood and J. Wallace, "Investigation of complexity-constrained performance of planar reconfigurable aperture antennas (RECAPs)," *IEEE Antennas and Propagation Society International Symposium (APS '10)*, Toronto, Canada, July 11-17, 2010.
36. J. Wallace and R. Sharma, "Experimental investigation of MIMO reciprocal channel key generation," *IEEE International Conference on Communications (ICC '10)*, Cape Town, South Africa, May 23-27, 2010.
37. R. Mehmood and J. Wallace, "Exploring beamforming performance versus complexity in reconfigurable aperture antennas," *ITG Workshop on Smart Antennas (WSA '10)*, Bremen, Germany, Feb. 23-24, 2010.
38. R. Sharma and J. Wallace, "Improved autocorrelation-based sensing using correlation distribution information," *ITG Workshop on Smart Antennas (WSA '10)*, Bremen, Germany, Feb. 23-24, 2010.
39. J. Wallace, "Secure physical layer key generation schemes: Performance and information theoretic limits," *IEEE International Conference on Communications (ICC '09)*, Dresden, Germany, June 14-18, 2009.

40. R. Sharma and J. Wallace, "Indoor Shadowing Correlation Measurements for Cognitive Radio Studies," *IEEE Antennas and Propagation Society International Symposium (APS '09)*, Charleston, SC, June 1-5, 2009.
41. A. Eid and J. Wallace, "Ultra-wideband sensing of speech production," *IEEE Antennas and Propagation Society International Symposium (APS '09)*, Charleston, SC, June 1-5, 2009.
42. R. Sharma and J. Wallace, "Improving spectrum sensing by utilizing signal autocorrelation," *IEEE Spring Vehicular Technology Conference (Spring VTC '09)*, Barcelona, Spain, Apr. 26-29, 2009.
43. J. Wallace, C. Chen, and M. Jensen "Key generation exploiting MIMO channel evolution: algorithms and theoretical limits," *European Conference on Antennas and Propagation (EuCAP '09)*, pp 1499-1503, Berlin, Germany, Mar. 23-27, 2009. **Invited**
44. R. Sharma and J. Wallace, "Experimental characterization of indoor multiuser shadowing for collaborative cognitive radio," *European Conference on Antennas and Propagation (EuCAP '09)*, Berlin, Germany, Mar. 23-27, 2009.
45. R. Sharma and J. Wallace, "Analysis of fusion and combining for wireless source detection," *ITG Workshop on Smart Antennas (WSA '09)*, Berlin, Germany, Feb. 17-18, 2009.
46. J. Wallace, "A non-separable directional channel model and observations for future mobile air interfaces," *The XXIXth General Assembly of International Union of Radio Science*, Chicago, Aug. 7-16, 2008. **Invited**
47. J. Wallace, "Directional channel modeling with sparse power azimuth spectrum estimation," *The XXIXth General Assembly of International Union of Radio Science*, Chicago, Aug. 7-16, 2008. **Invited**
48. R. Sharma and J. Wallace, "A novel correlation sum method for cognitive radio spectrum sensing," *The XXIXth General Assembly of International Union of Radio Science*, Chicago, Aug. 7-16, 2008.
49. N. Murtaza and J. Wallace, "A sparse estimation technique for near field UWB target detection in medical imaging," *The XXIXth General Assembly of International Union of Radio Science*, Chicago, Aug. 7-16, 2008.
50. L. Nair, B. Maharaj, and J. Wallace, "Capacity and robustness of single- and dual-polarized MIMO systems in office and industrial indoor environments," *IEEE Global Communications Conference (GLOBECOM'07)*, Washington, D.C., Nov. 26-30, 2007.
51. J. Wallace and B. Maharaj, "Accurate MIMO channel modeling: correlation tensor vs. directional approaches," *IEEE Global Communications Conference (GLOBECOM'07)*, Washington, D.C., Nov. 26-30, 2007.
52. J. Wallace, "The accuracy of tensor and directional methods for MIMO channel modeling," *Proceedings of the 2nd European Conference on Antennas and Propagation (EuCAP '07)*, Edinburgh, UK, Nov. 11-16, 2007.
53. M. Jensen and J. Wallace, "Modeling the time-Variant MIMO channel," *Proceedings of the 2nd European Conference on Antennas and Propagation (EuCAP '07)*, Edinburgh, UK, Nov. 11-16, 2007.
54. M. Jensen and J. Wallace, "Experimental characterization of the MIMO channel temporal behavior," *Proceedings of the 2nd European Conference on Antennas and Propagation (EuCAP '07)*, Edinburgh, UK, Nov. 11-16, 2007.

55. J. Wallace, "Correlation tensor and directional approaches for accurate MIMO channel modeling," *URSI North American Radio Science Meeting*, Ottawa, Canada, July 22-26, 2007. **Invited**
56. J. Wallace, "Covert wireless communications: Temporal focusing and information theoretic methods," *IEEE Antennas and Propagation Society International Symposium (APS '07)*, Honolulu, HI, June 10-15, 2007.
57. D. Pinchera, M. Migliore, M. Jensen, and J. Wallace "Characterization of a wideband adaptive-MIMO antenna," *IEEE Antennas and Propagation Society International Symposium (APS '07)*, Honolulu, HI, June 10-15, 2007.
58. J. Wallace, T. Shawcroft, and M. Jensen, "Modeling antenna coupling and correlation in rapidly fading MIMO channels," *European Conference on Antennas and Propagation (EuCAP '06)*, Nice, France, Nov. 6-10, 2006. **Invited**
59. J. Wallace and M. Jensen, "Communicating on MIMO channels with covariance information: antenna correlation and coupling," *IEEE Vehicular Technology Conference (VTC Fall '06)*, Montreal, Canada, Sep. 25-28, 2006.
60. J. Wallace and M. Jensen, "Experimental analysis of the time-varying MIMO channel," *IEEE Antennas and Propagation Society International Symposium (APS '06)*, Albuquerque, NM, July 9-14, 2006.
61. J. Wallace, B. Maharaj, and M. Jensen, "Experimental evaluation of the MIMO wideband channel temporal variation," *The XXVIIIth General Assembly of International Union of Radio Science (URSIGA '05)*, New Delhi, India, Oct. 23-29, 2005. **Invited**
62. B. Maharaj, J. Wallace and M. Jensen, "Comparison of double-directional channel response at 2.4 and 5.2 GHz from indoor co-located wideband MIMO channel measurements," *The XXVIIIth General Assembly of International Union of Radio Science (URSIGA '05)*, New Delhi, India, Oct. 23-29, 2005. **Invited**
63. M. Jensen and J. Wallace, "Recent advances in antennas and propagation for MIMO systems: multi-user networks and channel temporal variation," *International Conference on Electromagnetics in Advanced Applications (ICEAA '05)*, Torino, Italy, Sep. 12-16, 2005. **Invited**
64. J. Wallace, T. Shawcroft, and M. Jensen, "Measurement and characterization of the time variation of indoor and outdoor MIMO channels at 2.4 and 5.2 GHz" *IEEE Vehicular Technology Conference (VTC Fall '05)*, Dallas, TX, Sep. 25-28, 2005.
65. M. Jensen and J. Wallace, "Antenna-independent capacity bound of electromagnetic channels," *IEEE Antennas and Propagation Society International Symposium (APS '05)*, Washington, DC, July 3-8, 2005.
66. B. Maharaj, L. Linde, J. Wallace, and M. Jensen, "Co-located indoor 2.4 and 2.5 GHz MIMO channel measurements: frequency scaling of capacity and correlation," *International Conference on Telecommunications*, Capetown, South Africa, May 3-6, 2005.
67. B. Maharaj, L. Linde, J. Wallace, and M. Jensen, "A cost-effective wideband MIMO channel sounder and initial co-located 2.4 GHz and 5.2 GHz measurements," *IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP '05)*, Philadelphia, PA, Mar. 18-23, 2005.
68. M. Jensen and J. Wallace, "RF and algorithmic considerations for practical MIMO wireless implementation," *IEEE Radio and Wireless Conference (RAWCON '04)*, Atlanta, GA, Sep. 19-22, 2004. **Invited**

69. J. Wallace, B. Jeffs, and M. Jensen, "A real-time multiple antenna element testbed for MIMO algorithm development and assessment," *IEEE Antennas and Propagation Society International Symposium (APS '04)*, Monterey, CA, June 20-26, 2004. **Invited**
70. J. Wallace and M. Jensen, "Impact of antenna coupling on diversity performance: complete network theory analysis," *IEEE International Conference on Communications (ICC '04)*, Paris, France, June 20-24, 2004.
71. J. Wallace, H. Özcelik, M. Herdin, E. Bonek, and M. Jensen, "A diffuse multipath spectrum estimation technique for directional channel modeling," *IEEE International Conference on Communications (ICC '04)*, Paris, France, June 20-24, 2004.
72. S. Wang, K. Raghukumar, A. Abdi, J. Wallace, and M. Jensen, "Indoor MIMO channels: a parametric correlation model and experimental results," *IEEE Sarnoff Symposium, Advances in Wired and Wireless Communication (SARNOFF'04)*, Princeton, NJ, Apr. 26-27, 2004.
73. E. Bonek, H. Özcelik, M. Herdin, M. Weichselberger, and J. Wallace, "Deficiencies of a popular stochastic MIMO radio channel model," *International Symposium on Wireless Personal Multimedia Communications (WPMC '03)*, Yokosuka, Japan, Oct. 19-22, 2003.
74. M. Jensen and J. Wallace, "Network theory analysis of coupled antenna diversity performance," *IEEE Topical Conference on Wireless Communication Technology (TCWCT '03)*, Honolulu, Hawaii, Oct. 15-17, 2003.
75. J. W. Wallace, E. Bonek, and M. A. Jensen, "Power and complex envelope correlation for modeling measured indoor MIMO channels: A beamforming evaluation," *IEEE Vehicular Technology Conference (Fall VTC '03)*, Orlando, FL, Oct. 6-9, 2003.
76. J. W. Wallace and M. A. Jensen, "Validation of parametric directional MIMO channel models from wideband FDTD simulations of a simple indoor environment," *IEEE Antennas and Propagation Society International Symposium (APS '03)*, Columbus, OH, June 22-27, 2003.
77. J. W. Wallace and M. A. Jensen, "MIMO capacity variation with SNR and multipath richness from full-wave indoor FDTD simulations," *IEEE Antennas and Propagation Society International Symposium (APS '03)*, Columbus, OH, June 22-27, 2003.
78. M. A. Jensen and J. W. Wallace, "Antenna selection for MIMO systems based on information theoretic considerations," *IEEE Antennas and Propagation Society International Symposium (APS '03)*, Columbus, OH, June 22-27, 2003.
79. T. Svantesson and J. W. Wallace, "On signal strength and multipath richness in multi-input multi-output systems," *IEEE International Conference on Communications (ICC '03)*, Anchorage, AL, 11-15 May, 2003.
80. T. Svantesson and J. W. Wallace, "Tests for assessing multivariate normality and the covariance structure of MIMO data," *IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP'03)*, Hong Kong, Apr. 6-10, 2003.
81. T. Svantesson and J. Wallace, "Statistical characterization of the indoor MIMO channel based on LOS/NLOS measurements," *Asilomar Conference on Signals, Systems and Computers (ASILOMAR '02)*, Pacific Grove, CA, Nov. 3-6, 2002.
82. J. W. Wallace and M. A. Jensen, "Intrinsic capacity of the MIMO wireless channel," *IEEE Vehicular Technology Conference (VTC Fall '02)*, Vancouver, British Columbia, Canada, Sep. 24-28, 2002.
83. J. W. Wallace and M. A. Jensen, "The capacity of MIMO wireless systems with mutual coupling," *IEEE Vehicular Technology Conference (VTC Fall '02)*, Vancouver, British Columbia, Canada, Sep. 24-28, 2002.

84. J. W. Wallace, M. A. Jensen, and A. Lee Swindlehurst, "Measurement and modeling of the MIMO wireless channel," *The XXVIIIth General Assembly of International Union of Radio Science (URSIGA '02)*, Maastricht, The Netherlands, Aug. 17-24, 2002.
85. J. W. Wallace and M. A. Jensen, "Intrinsic capacity of the MIMO wireless channel," *IEEE Antennas and Propagation Society International Symposium (APS '02)*, San Antonio, TX, June 16-21, 2002.
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