Michael Allen Jensen

Department of Electrical and Computer Engineering
Brigham Young University
459 Clyde Building
Provo, UT 84602

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Education

Ph.D. in Electrical Engineering/Electromagnetics (1995) GPA: 4.0/4.0
University of California, Los Angeles
Minors: Quantum Electronics, Circuits and Signal Processing
Dissertation: *Time-Domain Finite-Difference Methods in Electromagnetics: Application to Personal Communications*

M.S. in Electrical Engineering/Electrosciences (1991) GPA: 4.0/4.0
Brigham Young University
Thesis: *Controllable Cladding Removal for In-Fiber Integrated Optics Components*

B.S. in Electrical Engineering/Electronics (1990 – Summa Cum Laude) GPA: 4.0/4.0
Brigham Young University

Experience

Professor (2005-present)
Department of Electrical and Computer Engineering, Brigham Young University

Department Chair (2006-2012)
Department of Electrical and Computer Engineering, Brigham Young University

Associate Professor (2000-2005) and **Assistant Professor** (1994-2000)
Department of Electrical and Computer Engineering, Brigham Young University

Founder (2004-Present)
RFWare, LLC

Co-Founder
AJ Design Group, Inc (1998) and Wavetronix, LLC (2000)

Visiting Researcher (June-July 1995)
Department of Electrical Engineering, UCLA

Consultant (1993-present)
Antenna design, wireless communications system design, legal issues and expert witness

Honors

University Professorship, Brigham Young University, 2013.
Elevated to Fellow of the Institute of Electrical and Electronics Engineers, 2008.
Karl G. Maeser Research and Creative Arts Award, BYU, August 2005.
Best Overall Conference Paper Award: *40th International Telemetering Conference*, 2004.
Ward Endowed Chair Recipient: Dept. of Electrical and Computer Engineering, 2003-2006.
Harold A. Wheeler Applications Prize Paper Award, *IEEE Trans. Antennas and Propag.*, 2002.
Educator of the Year Award, Dept. of Electrical and Computer Engineering, BYU, 2002, 2003, 2007.
Outstanding Faculty Member Award, Dept. of Electrical and Computer Engineering, BYU, 1998.
Best PhD Award, UCLA School of Engineering and Applied Science, 1995
NASA Certificate of Achievement, 1994
Best Student Paper Award, IEEE AP-S Symposium, 1993

Graduate Fellowship, UCLA, 1991-1994
Ranked first in the Ph.D. qualifying examinations, UCLA
National Science Foundation Graduate Fellowship, 1990-1993
Hewlett-Packard – BYU Electrical Engineer of the Year, 1990

Professional Activities

Publications Committee Member, IEEE Antennas and Propagation Society, 2010-present
Editor-in-Chief, *IEEE Trans. on Antennas and Propag*ation, 2010-2013
Symposium Co-Chair, 2010 and 2012 IEEE International Conference on Wireless Information Technology and Systems, Honolulu, HI
Propagation Corner Editor, *IEEE Antennas and Propagation Magazine*, 2009-2010
Associate Editor, *IEEE Antennas and Wireless Propagation Letters*, 2009-2010
Guest Editor, *EURASIP Journal on Wireless Communications and Networking,* Special Issue on Advances in Propagation Modeling for Wireless Systems, 2008-2009
Chair, Joint AP-S/URSI Meetings Committee, 2008-2010
Guest Editor, *IEEE Trans. Antennas Propag.*, Special Issue on Wireless Communications, 2006
Elected to IEEE AP-S Administrative Committee: 3 year term 2005-2007
Symposium Co-Chair, 2007 IEEE AP-S International Symposium, Honolulu, HI
Symposium Co-Chair, 2005 IEEE Intl. Conf. on Wireless Comm. and Appl. Comp. Electromagnetics, Honolulu, HI
Chair, IEEE AP-S Ad Hoc committee on symposium format, 2004
Associate Editor, *IEEE Trans. Antennas Propag*., 2003-2007
Member, Joint AP-S/URSI Meetings Committee, 2002-2007
Technical Program Committee, 2004 IEEE INFOCOMM
Symposium Co-Chair, 2003 IEEE AP-S Topical Conf. on Wireless Comm. Technology, Honolulu, HI
Technical Program Committee, IEEE Vehicular Technology Conference: Fall 2003, Spring 2005, Fall 2005, Fall 2008, Fall 2009
Special Session Organizer, 2002, 2004, 2005, 2008, 2010 IEEE AP-S International Symposia
Technical Program Committee, 2002-2013 IEEE AP-S International Symposia
Technical Program Co-Chair, 2000 IEEE AP-S International Symposium, Salt Lake City, UT
Organizer, 1999 NSF Workshop in Radio Frequency MEMS
Symposium Co-Chair, 1998 and 1999 Applied Computational Electromagnetics Symposia
Short Course Presentation, 1996, 1997, 1998 IEEE AP-S International Symposia
Regular Session Chair at International Symposia
Frequent Reviewer, *IEEE Trans. Antennas Propag*., *IEEE Trans. Wireless Comm.*, *IEEE Trans. Veh. Tech*., etc.
IEEE Student Chapter Advisor, BYU, 1995
Member of Eta Kappa Nu and Tau Beta Pi

University Committee Work

University Department Chair Coordinating Committee, 2009-2012
Department Chair, 2006-2012
College of Engineering Dean's Search Committee Member, 2004
Graduate Coordinator, Associate Chair, and Department Executive Committee Member, 2003-2006
Department Faculty Recruiting Chair, 1999-2000
Graduate Committee Member, 1995-2003
Student Chapter Advisor of the Institute of Electrical and Electronics Engineers, 1995

International Academic Service

PhD Dissertation Co-Referee:	Technical University of Karlsruhe, Germany, May 2004.
PhD Dissertation Reviewer:	University of Newcastle, Australia, June 2003
	Helsinki University of Technology, January 2009
PhD External Examiner:	Simon Fraser University, Canada, June 2011
	University of Waterloo, Canada, December 2011
PhD Committee Member:	University of Hawaii, February 2009
	Lund University, Sweden, March 2009
PhD Defense Opponent:	Uppsala University, Sweden, October 2002
	Chalmers University, Sweden, May 2005, April 2013
	Lund University, Sweden, March 2009

Aalborg University, Denmark, November 2011

Courses Taught

ECEn 191	Freshman Seminar
ECEn 360/361	Electromagnetics/Electromagnetics Lab
ECEn 380	Signals and Systems
ECEn 391	Junior Seminar
ECEn 460/461	Applied Electromagnetics/Applied Electromagnetics Lab
ECEn 462	Applied Electromagnetics
ECEn 464	Wireless Communication Circuits
ECEn 491	Senior Seminar
ECEn 560	Advanced Electromagnetic Theory
ECEn 561	High-Frequency Circuits
ECEn 563	Computational Electromagnetics
ECEn 665	Antennas and Propagation for Wireless Communications
ECEn 686	Advanced Digital Communications

Teaching Evaluations:

1994-2002: Average score of 6.4 out of a possible 7.0 (Department average: 5.4)
2002-Present: Average score of 7.0 out of a possible 8.0 (Department average: 6.4)

Mentored Graduate Students:

PhD	
Rashid Mehmood	current
Attiya Mahmood	current
Farnaz Karimdady	2013
Britton Quist	2013
Yan Shi	2011
Chan Chen	2010
Nicolas Bikhazi	2006
Matthew Morris	2005
Jon Wallace	2002
James Freeze	1998

MS	
Benjamin Arnold	current
Yanling Yang	2010
Daniel Evans	2009
Britton Quist	2006
Adam Anderson	2004
Scott Gunyan	2004
Justin Holzer	2004
Brandon Hunter	2003
Jed Pack	2002
David Zaugg	2001
Thomas Karlinsey	1998
Bruce Green	1997
Michael LeFevre	1997

PUBLICATIONS

Journals

1. B. T. Quist and M. A. Jensen, "Maximizing the secret key rate for informed radios under different channel conditions" *IEEE Trans. Wireless Commun.,* to appear, 2013.

2. B. T. Quist and M. A. Jensen, "Optimal channel estimation in beamformed systems for common-randomness-based secret key establishment," *IEEE Trans. Information Forensics and Security,* vol. 8, pp. 1211-1220, Jul. 2013.

3. F. K. Sharifabad, M. A. Jensen, and Z. Yun, "Closed-form evaluation of the MIMO channel spatial covariance," *IEEE Trans. Antennas Propag.,* vol. 61, pp. 901-909, Feb. 2013.

4. F. K. Sharifabad, M. A. Jensen, J. Medbo, and J. Furuskog, "Measurement-based performance analysis of cooperative MIMO beamforming," *IEEE Antennas and Wireless Propag. Lett*, vol. 11, pp. 1394-1397, 2012.

5. A. L. Anderson and M. A. Jensen, "Sum-rate maximization in distributed-antenna heterogeneous MIMO downlinks: application to measured channels," *IEEE Journal on Selected Topics in Signal Processing,* vol. 6, pp. 270-280, June 2012.

6. B. K. Lau, M. A. Jensen, J. Medbo, and J. Furuskog, "Single and multi-user cooperative MIMO in a measured urban macrocellular environment," *IEEE Trans. Antennas Propag., Special issue on MIMO Systems*, vol. 60, no. 2, pp. 624-632, Feb. 2012.

7. Y. Shi and M. A. Jensen, "Improved radiometric identification of wireless devices using MIMO transmission," *IEEE Trans. Information Forensics and Security*, vol. 6, no. 4, pp. 1346-1354, Dec. 2011.

8. Y. Shi and M. A. Jensen, "Feedback reduction for CDI-based beamforming in the MIMO broadcast channel," *IEEE Communication Letters*, vol. 15, no. 4, pp. 431-433, Apr. 2011.

9. C. Chen and M. A. Jensen, "Secret key establishment using temporally and spatially correlated wireless channel coefficients," *IEEE Trans. Mobile Computing*, vol. 10, no. 2, pp. 205-215, Feb. 2011.

10. D. N. Evans and M. A. Jensen, "Near-optimal radiation patterns for antenna diversity," *IEEE Trans. Antennas Propag.*, vol. 58, no. 11, pp. 3765-3769, Nov. 2010.

11. M. A. Jensen and B. K. Lau, "Uncoupled matching for active and passive impedances of coupled arrays in MIMO systems," *IEEE Trans. Antennas Propag.*, vol. 58, no. 10, pp. 3336-3343, Oct. 2010.

12. B. T. Quist and M. A. Jensen, "Optimal antenna radiation characteristics for diversity and MIMO systems," *IEEE Trans. Antennas Propag.*, vol. 57, no. 11, pp. 3474-3481, Nov. 2009.

13. J. W. Wallace and M. A. Jensen, "Sparse power angle spectrum estimation," *IEEE Trans. Antennas Propag.*, vol. 57, no. 8, pp. 2452-2460, Aug. 2009.

14. C. Chen and M. A. Jensen, "A stochastic model of the time-variant MIMO channel based on experimental observations," *IEEE. Trans. Vehicular Technology*, vol. 58, no. 6, pp. 2618-2625, Jul. 2009.

15. N. W. Bikhazi, M. A. Jensen, and A. L. Anderson, "MIMO signaling over the MMF optical broadcast channel with square-law detection," *IEEE Trans. Communications*, vol. 57, no. 3, pp. 614-617, Mar. 2009.

16. N. W. Bikhazi and M. A. Jensen, "Impact of coupling on MIMO capacity in correlated fast fading environments," *IEEE Trans. Vehicular Technology*, vol. 58, no. 3, pp. 1595-1597, Mar. 2009.

17. A. L. Anderson, J. R. Zeidler, and M. A. Jensen, "Reduced-feedback linear precoding with stable performance for the time-varying MIMO broadcast channel," *IEEE Journal on Selected Areas in Communications*, vol. 26, pp. 1483-1493, Oct. 2008.

18. B. T. Maharaj, J. W. Wallace, and M. A. Jensen, "A low-cost open-hardware wideband multiple-input multiple-output (MIMO) wireless channel sounder," *IEEE Trans. Instrum. Meas.*, vol. 57, pp. 2283-2289, Oct. 2008.

19. M. A. Jensen, B. T. Quist, and N. W. Bikhazi, "Antenna design for mobile MIMO systems," *IEICE Trans. on Communications, Special Issue on 2007 International Symposium on Antennas and Propagation*, vol. E91-B, No. 6, p. 1705-1712, Jun. 2008. ***Invited***

20. A. L. Anderson, J. R. Zeidler, and M. A. Jensen, "Stable transmission in the time-varying MIMO broadcast channel," *EURASIP Journal on Advances in Signal Processing, Special Issue on MIMO Transmission with Limited Feedback*, vol. 2008, Article ID 617020, 14 pages, 2008. doi:10.1155/2008/617020

21. D. Pinchera, J. W. Wallace, M. D. Migliore, and M. A. Jensen "Experimental analysis of a wideband adaptive-MIMO antenna," *IEEE Trans. Antennas Propag.*, vol. 56, pp. 908-913, Mar. 2008.

22. J. W. Wallace and M. A. Jensen, "Electromagnetic considerations for communicating on correlated MIMO channels with covariance information," *IEEE Trans. Wireless Communications*, vol. 7, pp. 543-551, Feb. 2008.

23. M. A. Jensen and J. W. Wallace, "Capacity of the continuous-space electromagnetic channel," *IEEE Trans. Antennas Propag.*, vol. 56, pp. 524-531, Feb. 2008.

24. S. Wang, A. Abdi, J. Salo, H. El-Sallabi, J. Wallace, P. Vainikainen, M. A. Jensen, "Time-varying MIMO channels: parametric statistical modeling and experimental results," *IEEE Trans. Vehicular Technology*, vol. 56, part 2, pp. 1949-1963, July 2007.

25. K. F. Warnick and M. A. Jensen, "Optimal noise matching for mutually-coupled arrays," *IEEE Trans. Antennas Propag.*, vol. 55, pp. 1726-1731, June 2007.

26. J. W. Wallace, M. A. Jensen, A. Gummalla, and H. Lee, "Experimental characterization of the outdoor MIMO wireless channel temporal variation," *IEEE Trans. Vehicular Technology*, vol. 56, pp. 1041-1049, May 2007.

27. N. W. Bikhazi and M. A. Jensen, "The relationship between antenna loss and superdirectivity in MIMO systems," *IEEE Trans. Wireless Communications*, vol. 6, pp. 1796-1802, May 2007.

28. M. A. Jensen, M. D. Rice, and A. L. Anderson, "Aeronautical telemetry using multiple-antenna transmitters," *IEEE Trans. Aerospace Electronic Systems*, vol. 43, pp. 262-272, Jan. 2007.

29. J. W. Wallace and M. A. Jensen, "Time varying MIMO channels: measurement, analysis, and modeling," *IEEE Trans. Antennas Propag., Special Issue on Wireless Communications*, vol. 54, pp. 3265-3273, Nov. 2006.

30. M. Zorzi, J. Zeidler, A. Anderson, B. Rao, and J. Proakis, A. L. Swindlehurst, M. Jensen, S. Krishnamurthy, "Cross-layer issues in MAC protocol design for MIMO ad hoc networks," *IEEE Wireless Communications*, vol. 13, pp. 62-76, Aug. 2006. ***Invited Overview Article***

31. B. T. Maharaj, J. W. Wallace, L. P. Linde, and M. A. Jensen, "Linear dependence of double-directional spatial power spectra at 2.4 and 5.2 GHz from indoor MIMO channel measurements," *Electronics Lett*., vol. 41, issue. 24, pp. 1338-1340, 24 Nov, 2005.

32. M. L. Morris and M. A. Jensen, "Impact of receive amplifier signal coupling on MIMO system performance," *IEEE Trans. Vehicular Technology*, vol. 54, pp. 1678-1683, Sept. 2005.

33. M. L. Morris, M. A. Jensen, and J. W. Wallace, "Superdirectivity in MIMO systems," *IEEE Trans. Antennas Propag.*, vol. 53, pp. 2850-2857, Sept. 2005.

34. K. F. Warnick and M. A. Jensen, "Effects of mutual coupling on interference mitigation with a focal plane array," *IEEE Trans. Antennas Propag*., *Special Issue on Applications of Antennas and Propagation*, vol. 53, pp. 2490-2498, Aug. 2005.

35. M. L. Morris and M. A. Jensen, "Improved network analysis of coupled antenna diversity performance," *IEEE Trans. Wireless Communications*, vol. 4, pp. 1928-1934, July 2005.

36. B. T. Maharaj, J. W. Wallace, L. P. Linde, and M. A. Jensen, "Frequency scaling of spatial correlation from co-located 2.4 GHz and 5.2 GHz wideband indoor MIMO channel measurements," *Electronics Lett*., vol. 41, issue 6, pp. 336-337, 17 March, 2005.

37. M. A. Jensen and M. L. Morris, "Efficient capacity-based antenna selection for MIMO systems," *IEEE Trans. Vehicular Technology*, vol. 54, pp. 110-116, Jan. 2005.

38. M. L. Morris and M. A. Jensen, "Network model for MIMO systems with coupled antennas and noisy amplifiers," *IEEE Trans. Antennas Propag.*, vol. 53, pp. 545-552, Jan. 2005.

39. M. A. Jensen and J. W. Wallace, "A review of antennas and propagation for MIMO wireless communications," *IEEE Trans. Antennas Propag*., vol. 52, pp. 2810-2824, Nov. 2004. ***Invited Review Article, Top 100 Documents Accessed in IEEE Xplore, Feb 2005 (#97), Top IEEE Xplore download for AP Transactions in 2004 and 2nd for 2005 and 2006.***

40. M. Jensen and J. Wallace, "Analysis of coupling in multi-antenna communication systems," *IEICE Trans., Special Issue on Wave Technologies for Wireless and Optical Communications*, vol. E87-C, pp. 1418-1424, Sep. 2004.

41. J. W. Wallace and M. A. Jensen, "Mutual coupling in MIMO wireless systems: a rigorous network theory analysis," *IEEE Trans. Wireless Commun*., vol. 3, pp. 1317-1325, Jul. 2004.

42. M. A. Jensen and K. W. Warnick, "Comment on `Coulomb Torque - A General Theory for Electrostatic Forces in Many-body Systems'", *J. Phys. A: Mathematical and General*, vol. 37, pp. 6409-6411, 18 Jun. 2004.

43. T. Svantesson, M. A. Jensen, and J. W. Wallace, "Analysis of electromagnetic field polarizations in multi-antenna systems," *IEEE Trans. Wireless Commun.*, vol. 3, pp. 641-646, Mar. 2004.

44. C. Furse, R. Woodward, and M. A. Jensen, "Laboratory project in wireless FSK receiver design," *IEEE Trans. Educ.*, vol. 47, pp. 18-25, Feb. 2004.

45. J. W. Wallace and M. A. Jensen, "Termination-dependent diversity performance of coupled antennas: network theory analysis," *IEEE Trans. Antennas and Propag*., vol. 52, pp. 98-105, Jan. 2004.

46. 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 Trans. Wireless Commun*., vol. 2, pp. 335-343, Mar. 2003.

47. J. W. Wallace and M. A. Jensen, "Modeling the indoor MIMO wireless channel," *IEEE Trans. Antennas Propag., Special Issue on Wireless Communications*, vol. 50, pp. 591-599, May 2002. ***Winner of Harold A. Wheeler Applications Prize Paper Award***

48. J. W. Wallace and M. A. Jensen, "Analysis of optical waveguide structures by use of a combined finite-difference/finite-difference time-domain method," *J. Optical Soc. Am. A*, vol. 19, pp. 1-10, Mar. 2002.

49. M. A. Jensen, R. H. Selfridge, and K. F. Warnick, "System level microwave design projects," *IEEE Antennas Propag. Magazine*, vol. 43, pp. 138-142, Oct. 2001.

50. M. A. Jensen and G. P. Nordin, "Characterization of two-dimensional finite-aperture wire grid polarizers by a spectral-domain technique," *Applied Optics*, vol. 40, pp. 4738-4745, Sep. 2001.

51. M. A. Jensen and G. P. Nordin, "Finite-aperture wire grid polarizers," *J. Optical Soc. Am. A*, vol. 17, pp. 2191-2198, Dec. 2000.

52. M. A. Jensen, D. V. Arnold, and D. E. Crockett, "System level microwave design: radar-based laboratory projects," *IEEE Trans. Educ*., vol 43, pp. 414-419, Nov. 2000.

53. B. M. Green and M. A. Jensen, "Diversity performance of dual-antenna handsets near operator tissue," *IEEE Trans. Antennas Propag*., vol 48, pp. 1017-1024, July 2000.

54. Q. H. Spencer, B. D. Jeffs, M. A. Jensen, and A. L. Swindlehurst, "Modeling the statistical time and angle of arrival characteristics of an indoor multipath channel," *IEEE J. Selected Areas Commun*., vol 18, pp. 347-360, Mar. 2000.

55. M. A. Jensen and J. D. Freeze, "A recursive Green's function method for boundary integral analysis of inhomogeneous domains," *IEEE Trans. Antennas Propag*., vol. 46, pp. 1810-1816, Dec. 1998.

56. J. S. Colburn, Y. Rahmat-Samii, M. A. Jensen, and G. J. Pottie, "Evaluation of personal communications dual antenna handset diversity performance," *IEEE Trans. Veh. Tech*., vol. 47, pp. 737-746, Aug. 1998.

57. M. A. Jensen, "A recursive Green's function technique for acoustic scattering from heterogeneous objects," *J. Acoust. Soc. Am*., vol. 103, pp. 713-720, Feb. 1998.

58. J. D. Freeze, M. A. Jensen, and R. H. Selfridge, "A unified Green's function analysis of complicated DFB lasers," *IEEE J. Quantum Electron*., vol. 33, pp. 1253-1259, Aug. 1997.

59. M. A. Jensen and Y. Rahmat-Samii, "Finite difference and finite volume time domain techniques in electromagnetics: A comparative study," *Radio Science*, vol. 31, pp. 1823-1836, Nov.-Dec. 1996. ***Invited***

60. A. Fijany, M. A. Jensen, Y. Rahmat-Samii, and J. Barhen, "A massively parallel computation strategy for FDTD: The concept of time and space parallelism," *IEEE Trans. Antennas Propag*., vol. 43, pp. 1441-1449, Dec. 1995.

61. M. A. Jensen and Y. Rahmat-Samii, "EM interaction of handset antennas and a human in personal communications," *IEEE Proc*., vol. 83, pp. 7-17, Jan. 1995.

62. Y. Rahmat-Samii and M. A. Jensen, "Characterization of antennas for personal wireless communications applications," *International Journal of Wireless Information Networks*, vol. 1, pp. 165-176, 1994. ***Invited***

63. M. A. Jensen and Y. Rahmat-Samii, "Performance analysis of antennas for hand-held transceivers using FDTD," *IEEE Trans. Antennas Propagat*., vol. 42, pp. 1106-1113, Aug. 1994.

64. M. A. Jensen and Y. Rahmat-Samii, "Characterization of electromagnetically coupled superquadric loop antennas for mobile communications applications," *IEE Proc. H – Microw. Antennas Propag*., vol. 141, pp. 85-93, Apr. 1994.

65. M. A. Jensen and Y. Rahmat-Samii, "Electromagnetic characteristics of superquadric wire loop antennas," *IEEE Trans. Antennas Propag*., vol. 42, pp. 264-269, Feb. 1994.

66. M. A. Jensen and R. H. Selfridge, "Analysis of diffraction gratings based on D-shaped fiber," *J. Opt. Soc. Am. A*, vol. 9, pp. 1086-1090, Jul. 1992.

67. M. A. Jensen and R. H. Selfridge, "Analysis of etching-induced birefringence changes in elliptic core fibers," *Appl. Optics*, vol. 31, pp. 2011-2016, 20 Apr. 1992.

Journals - In Review

68. R. Mehmood, J. W. Wallace, and M. A. Jensen, "Key establishment employing reconfigurable antennas: impact of antenna complexity" *IEEE Trans. Information Forensics and Security*, submitted Oct. 2013.

69. B. T. Quist and M. A. Jensen, "Bound on the key establishment rate for multi-antenna reciprocal electromagnetic channels" *IEEE Trans. Antennas and Propagation*, submitted Sep. 2013.

70. F. K. Sharifabad, M. A. Jensen, and A. L. Anderson, "Iterative beamforming for point-to-point MIMO communication," *IEEE Wireless Communications Letters*, submitted Sep. 2013.

71. A. L. Anderson and M. A. Jensen, "Simple sum-rate optimizer for a wide variety of multiuser massive MIMO link topologies and hardware constraints" *IEEE Journal on Selected Topics in Signal Processing*, submitted Sep. 2013.

72. B. T. Quist and M. A. Jensen, "Efficient channel estimation for secret key establishment in MIMO systems" *IEEE Trans. Mobile Computing*, submitted Dec. 2012.

Book Chapters

73. M. A. Jensen and J. W. Wallace, "Antenna Design Considerations for MIMO and Diversity Systems," chapter 23 in *Modern Antenna Handbook*, C. A. Balanis, Ed., pp. 1327-1375, John Wiley & Sons: New Jersey, September, 2008.

74. M. A. Jensen and J. W. Wallace, "MIMO Wireless Channel Modeling and Experimental Characterization," chapter 1 in *Space-Time Processing for MIMO Communications*, A. B. Gershman and N. D. Sidiropoulos, Eds., John Wiley & Sons, Ltd.:UK, 2005.

75. Y. Rahmat-Samii, K. Kim, and M. A. Jensen, "Antennas and Humans in Personal Communications," chapter 7 in *Mobile Antenna Systems Handbook*, 2nd Edition, K. Fujimoto and J. R. James, Eds., Artech House: Boston, 2000.

Conferences

76. A. Mahmood and M. A. Jensen, "Data-dependent transmitter fingerprints for radio authentication," *2014 IEEE Radio and Wireless Symposium*, Newport Beach, CA, Jan. 19-22, 2014, to appear.

77. B. T. Quist and M. A. Jensen, "Multi-antenna channel estimation for key establishment in Rician propagation," *2013 IEEE AP-S International Symposium Digest*, Orlando, FL, Jul. 7-12, 2013.

78. B. T. Quist and M. A. Jensen, "Channel estimation for secret key establishment in MIMO systems," *2013 IEEE AP-S International Symposium Digest*, Orlando, FL, Jul. 7-12, 2013.

79. R. Mehmood, J. W. Wallace, and M. A. Jensen, "Physical-layer wireless security of reconfigurable antennas in line-of-sight channels," *2013 IEEE AP-S International Symposium Digest*, Orlando, FL, Jul. 7-12, 2013.

80. B. T. Quist and M. A. Jensen, "MIMO channel estimation for secret key establishment," *Proceedings of 2013 European Conference on Antennas and Propagation (EuCAP)*, pp. 1-2, Gothenburg, Sweden, Apr. 8-12, 2013.

81. M. A. Jensen, "Wireless communication security: physical-layer techniques exploiting radio and propagation characteristics," *Proceedings of the 2012 IEEE International Conference on Wireless Information Technology and Systems*, pp. 1-2, Wailea, HI, Nov. 11-16, 2012. ***Invited Plenary Talk***

82. F. K. Sharifabad and M. A. Jensen, "Covariance-based MIMO beamforming," *Proceedings of the 2012 IEEE International Conference on Wireless Information Technology and Systems*, pp. 1-4, Wailea, HI, Nov. 11-16, 2012.

83. F. K. Sharifabad and M. A. Jensen, "Cooperative MIMO beamforming performance using measured urban channels," *Proceedings of the 2012 IEEE International Conference on Wireless Information Technology and Systems*, pp. 1-4, Wailea, HI, Nov. 11-16, 2012. ***Invited***

84. B. T. Quist and M. A. Jensen, "Optimizing the common-randomness secret key rate in beamformed communication systems," *Proceedings of the 2012 IEEE International Conference on Wireless Information Technology and Systems*, pp. 1-4, Wailea, HI, Nov. 11-16, 2012.

85. F. K. Sharifabad and M. A. Jensen, "Series expansion of the MIMO spatial covariance," *2012 IEEE AP-S International Symposium Digest*, pp. 1-2, Chicago, IL, July 8-14, 2012.

86. A. L. Anderson and M. A. Jensen, "Cooperative MIMO beamforming with a per-antenna power constraint," *2012 IEEE AP-S International Symposium Digest*, pp. 1-2, Chicago, IL, July 8-14, 2012.

87. B. T. Quist and M. A. Jensen, "The impact of multiple antennas in physical layer encryption key establishment," *Proceedings of the 2012 IEEE International Workshop on Antenna Technology (iWAT 2012)*, 4 pages, Tucson, AZ, Mar. 5-7, 2012. ***Invited***

88. D. Maas, N. Patwari, S. K. Kasera, D. Wasden, and M. A. Jensen, "Experimental performance evaluation of location distinction for MIMO channels," *Proceedings of the 2012 4th International Conference on Communication Systems and Networks (COMSNETS)*, pp. 1-10, Bangalore, India, Jan. 3-7, 2012.

89. M. D. Rice and M. A. Jensen, "A comparison of L-band and C-band multipath propagation at Edwards AFB," *Proceedings of the 47th International Telemetering Conference*, 17 pages, Las Vegas, NV, Oct 24-27, 2011.

90. M. D. Rice and M. A. Jensen, "Wideband multipath propagation for helicopter-to-ground telemetry links," *Proceedings of the 47th International Telemetering Conference*, 10 pages, Las Vegas, NV, Oct 24-27, 2011.

91. M. D. Rice and M. A. Jensen, "Multipath propagation for helicopter-to-ground MIMO links," *2011 IEEE Military Communications Conference*, pp. 447-452, Baltimore, MD, Nov. 7-10, 2011.

92. M. A. Jensen and M. D Rice, "Multi-antenna communication for fixed-wing and rotary-wing aircraft," *2011 URSI/USNC National Radio Science Meeting Digest*, Spokane, WA, July 3-8, 2011.

93. Y. Shi and M. A. Jensen, "Identifying MIMO wireless devices based on radiometric signatures," *2011 IEEE AP-S International Symposium Digest*, pp. 1-4, Spokane, WA, July 3-8, 2011. ***Invited***

94. M. A. Jensen, "MIMO wireless propagation: modern channel characterization for emerging applications," *European Conference on Antennas and Propagation (EuCAP)*, Rome, Italy, Apr. 11-15, 2011. ***Invited Plenary Address***

95. Y. Shi and M. A. Jensen, "Scheduling multi-user MIMO communication based on physical channel parameters," *Proceedings of 2011 European Conference on Antennas and Propagation (EuCAP)*, pp. 3611-3614, Rome, Italy, Apr. 11-15, 2011. ***Invited***

96. M. A. Jensen, B. K. Lau, J. Medbo, and J. Furuskog, "Performance of cooperative MIMO based on measured urban channel data," *Proceedings of 2011 European Conference on Antennas and Propagation (EuCAP)*, pp. 2441-2444, Rome, Italy, Apr. 11-15, 2011. ***Invited***

97. Y. Shi and M. A. Jensen, "Efficient link scheduling for MIMO ad hoc networks in time-varying channels," *Proc. of the 2010 IEEE Global Communications Conference (Globecom)*, pp. 1-5, Miami, FL, Dec. 6-10, 2010.

98. M. A. Jensen, C. Chen, and Y. Shi, "Physical layer security enhancement using MIMO systems: Authentication and key establishment," *Proc. of the 3rd Student Organizing International Mini-Conference on Information Electronics Systems*, 4 pages, Sendai, Japan, Oct. 19-20, 2010. ***Invited Keynote Address***

99. Y. Yang and M. A. Jensen, "MIMO channel spatial covariance estimation: analysis using a closed-form model", *Proc. of 2010 IEEE Intl. Conf. on Wireless Information Technology and Systems*, pp. 1-4, Honolulu, HI, Aug. 28 - Sep. 3, 2010.

100. C. Chen and M. A. Jensen, "Improved channel quantization for secret key establishment in wireless systems", *Proc. of 2010 IEEE Intl. Conf. on Wireless Information Technology and Systems*, pp. 1-4, Honolulu, HI, Aug. 28 - Sep. 3, 2010.

101. C. Chen and M. A. Jensen, "Encryption key establishment using space-time correlated MIMO channels," *2010 IEEE AP-S International Symposium Digest*, pp. 1-4, Toronto, CN, July 11-17, 2010. ***Invited***

102. M. A. Jensen, "Location dependence of the MIMO propagation channel spatial correlation," *2010 URSI/USNC National Radio Science Meeting Digest*, Toronto, CN, July 11-17, 2010.

103. Y. Shi, Y. Yang, and M. A. Jensen, "Channel covariance modeling for multi-user MIMO systems", *Proceedings of 2010 European Conference on Antennas and Propagation (EuCAP)*, pp. 1-5, Barcelona, Spain, Apr. 12-16, 2010. ***Invited***

104. M. A. Jensen and B. K. Lau, "Uncoupled impedance matching for coupled multi-antenna systems", *Proceedings of 2010 European Conference on Antennas and Propagation (EuCAP)*, pp. 1-4, Barcelona, Spain, Apr. 12-16, 2010.

105. C. Chen and M. A. Jensen, "Secrecy extraction from increased randomness in a time-varying MIMO channel," *Proc. of the 2009 IEEE Global Communications Conference (Globecom)*, pp. 1-6, Honolulu, HI, Nov. 30-Dec 4, 2009.

106. D. Maas, N. Patwari, J. Zhang, S. K. Kasera, and M. A. Jensen, "Location distinction in a MIMO channel," *2009 Virginia Tech Symposium on Wireless Personal Communications*, pp. 1-9, Blacksburg, VA, June, 2009.

107. C. Chen and M. A. Jensen, "Random number generation from multipath propagation: MIMO-based encryption key establishment," *2009 IEEE AP-S International Symposium Digest*, pp. 1-4, Charleston, SC, June 1-5, 2009.

108. D. N. Evans and M. A. Jensen, "Element radiation characteristics for optimal antenna diversity," *2009 IEEE AP-S International Symposium Digest*, pp. 1-4, Charleston, SC, June 1-5, 2009.

109. J. W. Wallace, C. Chen, and M. A. Jensen, "Key generation exploiting MIMO channel evolution: algorithms and theoretical limits", *Proceedings of 2009 European Conference on Antennas and Propagation*, pp. 1499-1503, Berlin, Germany, Mar. 23-27, 2009. ***Invited***

110. D. Evans and M. A. Jensen, "Near-optimal radiation characteristics for diversity antenna design," *Proceedings of the 2009 IEEE International Workshop on Antenna Technology (iWAT 2009)*, 4 pages, Santa Monica, CA, Mar. 2-4, 2009. ***Invited***

111. A. L. Anderson, J. R. Zeidler, and M. A. Jensen, "Instantaneous and average rate maximization in MIMO multiple-access channels (MAC) with linear processing," *Conference Record of the 42nd Asilomar Conference on Signals, Systems, and Computers*, pp. 1-5, Pacific Grove, CA, Oct. 26-29, 2008.

112. Y. Shi and M. A. Jensen, "Stable transmission in the frequency-selective MIMO broadcast channel," *2008 IEEE 68th Vehicular Technology Conference Digest (VTC Fall 2008)*, pp. 1-5, Calgary, Alberta, CA, Sep. 21-24, 2008.

113. A. L. Anderson, J. R. Zeidler, and M. A. Jensen, "Regularized channel distribution inversion (RCDI) and parameterization in the MIMO broadcast channel," *2008 IEEE 68th Vehicular Technology Conference Digest (VTC Fall 2008)*, pp. 1-5, Calgary, Alberta, CA, Sep. 21-24, 2008.

114. A. L. Anderson, J. R. Zeidler, and M. A. Jensen, "Covariance-based signaling and feedback data parameterization for the time-varying MIMO broadcast channel," *Proceedings of the 28th General Assembly of International Union of Radio Science*, pp. 1-4, Chicago, IL, Aug. 7-16, 2008. ***Invited***

115. C. Chen and M. A. Jensen, "Time-variant MIMO channels: stochastic modeling based on experimental observations," *Proceedings of the 28th General Assembly of International Union of Radio Science*, pp. 1-4, Chicago, IL, Aug. 7-16, 2008. ***Invited***

116. B. T. Quist and M. A. Jensen, "Performance analysis of optimal and practical diversity antenna designs," *2008 IEEE AP-S International Symposium Digest*, pp. 1-4, San Diego, CA, July 5-12, 2008. ***Invited***

117. C. Chen and M. A. Jensen, "Modeling time-variant multipath characteristics for MIMO channels," *2008 IEEE AP-S International Symposium Digest*, pp. 1-4, San Diego, CA, July 5-12, 2008.

118. B. T. Quist and M. A. Jensen, "Optimal antenna characteristics for MIMO systems," *Proceedings of the 2008 USNC/URSI National Radio Science Meeting*, paper # BS11-3, 1 page, Boulder, CO, Jan. 3-6, 2008. ***Invited***

119. A. L. Anderson, J. R. Zeidler, and M. A. Jensen, "Parameterized channel feedback using correlation-based channel models for multi-user MIMO systems," *Proceedings of the 2008 USNC/URSI National Radio Science Meeting*, paper # BS11-4, 1 page, Boulder, CO, Jan. 3-6, 2008. ***Invited***

120. K. F. Warnick, D. Jones, B. D. Jeffs, and M. A. Jensen, "Noise penalty due to mutual coupling for receive arrays," *Proceedings of the 2008 USNC/URSI National Radio Science Meeting*, paper # BS11-5, 1 page, Boulder, CO, Jan. 3-6, 2008. ***Invited***

121. M. A. Jensen and J. W. Wallace, "Experimental characterization of the MIMO channel temporal behavior", *Proceedings of 2007 European Conference on Antennas and Propagation*, Edinburgh, UK, Nov. 11-16, 2007. ***Invited***

122. M. A. Jensen and J. W. Wallace, "Modeling the time-variant MIMO channel", *Proceedings of 2007 European Conference on Antennas and Propagation*, Edinburgh, UK, Nov. 11-16, 2007. ***Invited***

123. K. F. Warnick and M. A. Jensen, "Signal and noise analysis of small antennas terminated with high-impedance amplifiers", *Proceedings of 2007 European Conference on Antennas and Propagation*, Edinburgh, UK, Nov. 11-16, 2007.

124. M. A. Jensen, "Antenna design and channel characterization for mobile MIMO systems," *2007 International Symposium on Antennas and Propagation (ISAP)*, Niigata, Japan, Aug. 20-24, 2007. ***Invited Keynote Address***

125. D. Pinchera, M. D. Migliore, M. A. Jensen, and J. W. Wallace, "Characterization of a wideband adaptive-MIMO antenna," *2007 IEEE AP-S International Symposium Digest*, pp. 2401-2404, Honolulu, HI, June 10-15, 2007.

126. B. T. Quist and M. A. Jensen, "Optimal antenna pattern design for MIMO systems," *2007 IEEE AP-S International Symposium Digest*, pp. 1905-1908, Honolulu, HI, June 10-15, 2007.

127. K. F. Warnick and M. A. Jensen, "Optimal noise matching condition for mutually coupled antenna arrays," *2007 IEEE AP-S International Symposium Digest*, pp. 2953-2956, Honolulu, HI, June 10-15, 2007.

128. H. Stephen and M. A. Jensen, "Optimizing diversity gain using uncoupled impedance matching with coupled antennas," *2007 IEEE AP-S International Symposium Digest*, pp. 2961-2964, Honolulu, HI, June 10-15, 2007.

129. J. W. Wallace and M. A. Jensen, "Modeling antenna coupling and correlation in rapidly fading MIMO channels," *Proceedings of 2006 European Conference on Antennas and Propagation*, Nice, France, Nov. 6-10, 2006. ***Invited***

130. M. A. Jensen and B. Booth, "Optimal uncoupled impedance matching for coupled MIMO arrays," *Proceedings of 2006 European Conference on Antennas and Propagation*, Nice, France, Nov. 6-10, 2006.

131. A. L. Anderson, J. R. Zeidler, and M. A. Jensen, "Performance of transmit precoding in time-varying point-to-point and multi-user MIMO channels," *Proceedings of the 40th Asilomar Conference on Signals, Systems, and Computers, 2006*, pp. 112-116, Pacific Grove, CA, Oct. 29-Nov. 1, 2006.

132. J. W. Wallace and M. A. Jensen, "Communicating on MIMO channels with covariance information: antenna correlation and coupling," *64th IEEE Vehicular Technology Conference Digest (VTC Fall 2006)*, pp. 1-5, Montreal, CA, Sep. 25-28, 2006.

133. N. W. Bikhazi and M. A. Jensen, "The effect of antenna loss on superdirectivity in MIMO systems," *2006 IEEE AP-S International Symposium Digest*, pp. 305-308, Albuquerque, NM, July 9-14, 2006.

134. J. W. Wallace and M. A. Jensen, "Experimental analysis of the time-varying MIMO channel," *2006 IEEE AP-S International Symposium Digest*, pp. 321-324, Albuquerque, NM, July 9-14, 2006.

135. M. A. Jensen, "Antenna design for mobile MIMO systems," *Proceedings of Antenn 06 Nordic Antenna Symposium*, pp. 17-22, Linköping, Sweden, 30 May-1 June, 2006. ***Invited Keynote Address***

136. T. Nelson, M. Rice, and M. Jensen, "Experimental results for space-time coding using ARTM Tier-1 Modulation," *Proceedings of the 41st International Telemetering Conference*, 11 pages, Las Vegas, NV, Oct 24-27, 2005.

137. B. T. Maharaj, J. W. Wallace, and M. A. Jensen, "Comparison of double directional channel response at 2.4 and 5.2 GHz from indoor co-located wideband MIMO channel measurements," *Proceedings of the 27th General Assembly of International Union of Radio Science*, paper O1722 (4 pages), New Delhi, India, Oct. 23-29, 2005. ***Invited***

138. J. W. Wallace, B. T. Maharaj, and M. A. Jensen, "Experimental evaluation of the MIMO wideband channel temporal variation," *Proceedings of the 27th General Assembly of International Union of Radio Science*, paper O849 (4 pages), New Delhi, India, Oct. 23-29, 2005. ***Invited***

139. J. W. Wallace and M. A. Jensen, "Measurement and characterization of the time variation of indoor and outdoor MIMO channels at 2.4 and 5.2 GHz," *62nd IEEE Vehicular Technology Conference Digest (VTC Fall 2005)*, vol. 2, pp. 1289-1293, Dallas, TX, Sep. 25-28, 2005.

140. M. A. Jensen and J. W. Wallace, "Recent advances in antennas and propagation for MIMO systems: multi-user networks and channel temporal variation," *Proceedings of the 2005 International Conference on Electromagnetics in Advanced Applications*, pp. 303-306, Torino, Italy, Sep. 12-16, 2005. ***Invited***

141. M. A. Jensen and J. W. Wallace, "Antenna-independent capacity bound of electromagnetic channels," *2005 IEEE AP-S International Symposium Digest*, vol. 2A, pp. 317-320, Washington, DC, July 3-8, 2005.

142. M. L. Morris and M. A. Jensen, "Impact of supergain in multi-antenna systems," *2005 IEEE AP-S International Symposium Digest*, vol. 3B, pp. 430-433, Washington, DC, July 3-8, 2005. ***Invited***

143. K. W. Warnick and M. A. Jensen, "Mutual coupling analysis of a focal plane array feed," *2005 URSI/USNC National Radio Science Meeting Digest*, paper # s047p08u, 1 page, Washington, DC, July 3-8, 2005.

144. T. Nelson, M. Rice, and M. Jensen, "Experimental results with space-time coding using FQPSK," *Proceedings of the European Test and Telemetry Conference*, paper # SPA-1, 5 pages, Toulouse, France, June 7-9, 2005.

145. A. L. Anderson, J. R. Zeidler, and M. A. Jensen, "Differential space-time coding with offset quadrature phase-shift keying," *Proceedings of the 2005 IEEE 6th IEEE Workshop on Signal Processing Advances in Wireless Communications (SPAWC 2005),* pp. 430-434, New York, NY, June 5-8, 2005.

146. B. T. Maharaj, J. W. Wallace, M. A. Jensen, and L. P. Linde, "Co-located indoor 2.4 and 2.5 GHz MIMO channel measurements: frequency scaling of capacity and correlation," *Proceedings of the 12th International Conference on Telecommunications*, paper # 340, 5 pages, Capetown, South Africa, May 3-6, 2005.

147. M. A. Jensen and M. D. Rice, "Alamouti and differential transmit diversity for air-to-ground communications," *Proceedings of the 2005 IEEE/ACES International Conference on Wireless Communications and Applied Computational Electromagnetics*, pp. 470-473, Honolulu, HI, April 3-7, 2005.

148. M. L. Morris and M. A. Jensen, "Modeling front-end signal coupling in MIMO systems," *Proceedings of the 2005 IEEE/ACES International Conference on Wireless Communications and Applied Computational Electromagnetics*, pp. 622-625, Honolulu, HI, April 3-7, 2005.

149. B. T. Maharaj, L. P. Linde, J. W. Wallace, and M. A. Jensen, "A cost-effective wideband MIMO channel sounder and initial co-located 2.4 GHz and 5.2 GHz measurements," *Proceedings of the 2005 IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*, vol. 3, pp. 981-984, Philadelphia, PA, Mar. 18-23, 2005.

150. M. A. Jensen, M. D. Rice, A. L. Anderson, "Comparison of Alamouti and differential space-time codes for aeronautical telemetry dual-antenna transmit diversity," *Proceedings of the 40th International Telemetering Conference*, paper # 04-11-02, 10 pages, San Diego, CA, Oct 18-21, 2004.

151. M. A. Jensen, M. D. Rice, T. Nelson, A. L. Anderson, "Orthogonal dual-antenna transmit diversity for SOQPSK in aeronautical telemetry channels," *Proceedings of the 40th International Telemetering Conference*, paper # 04-11-01, 8 pages, San Diego, CA, Oct 18-21, 2004. ***Winner of the Conference Best Overall Paper Award.***

152. M. A. Jensen and J. W. Wallace, "RF and algorithmic considerations for practical MIMO wireless implementation," *Proceedings of the 2004 IEEE Radio and Wireless Conference (RAWCON)*, pp. 147-150, Atlanta, GA, Sep 19-22, 2004. ***Invited Keynote Paper***

153. J. W. Wallace, B. D. Jeffs, and M. A. Jensen, "A real-time multiple antenna element testbed for MIMO algorithm development and assessment," *2004 IEEE AP-S International Symposium Digest*, vol. 2, pp. 1716-1719, Monterey, CA, June 20-26, 2004. ***Invited***

154. M. L. Morris and M. A. Jensen, "Rigorous modeling of antenna and circuit coupling in MIMO systems: application to handheld devices," *2004 IEEE AP-S International Symposium Digest*, vol. 2, pp. 1255-1258, Monterey, CA, June 20-26, 2004. ***Invited***

155. J. W. Wallace, H. Ozcelik, M. Herdin, E. Bonek, and M. A. Jensen, "A diffuse multipath spectrum estimation technique for directional channel modeling," *2004 IEEE International Conference on Communications (ICC 2004), Wireless Communications Symposium*, vol. 6, pp. 3183-3187, Paris, France, Jun. 20-24, 2004.

156. J. W. Wallace and M. A. Jensen, "Impact of antenna coupling on diversity performance: complete network theory analysis," *2004 IEEE International Conference on Communications (ICC 2004), Communication Theory Symposium*, vol. 2, pp. 947-951, Paris, France, Jun. 20-24, 2004.

157. M. L. Morris and M. A. Jensen, "An improved network model for mutually coupled MIMO antennas," *2004 URSI International Symposium on Electromagnetic Theory*, vol. 1, pp. 75-77, Pisa, Italy, May 23-27, 2004. ***Invited***

158. S. Wang, K. Raghukumar, A. Abdi, J. Wallace, and M. Jensen, "Indoor MIMO channels: a parametric correlation model and experimental results," *Advances in Wired and Wireless Communication, 2004 IEEE Sarnoff Symposium*, pp. 1-5, Princeton, NJ, Apr. 26-27, 2004.

159. M. A. Jensen and A. L. Swindlehurst, "MIMO technology for point-to-point and multi-user wireless communication," *2003 IEEE Topical Conference on Wireless Communication Technology (TCWCT 2003)*, pp. 84-85, Honolulu, Hawaii, Oct. 15-17, 2003. ***Invited***

160. M. A. Jensen and J. W. Wallace, "Network theory analysis of coupled antenna diversity performance," *2003 IEEE Topical Conference on Wireless Communication Technology (TCWCT 2003)*, pp. 304-305, Honolulu, Hawaii, Oct. 15-17, 2003.

161. M. A. Jensen and A. L. Anderson, "Orthogonal transmit diversity for self-interference suppression in multi-antenna telemetry links," *2003 IEEE Topical Conference on Wireless Communication Technology (TCWCT 2003)*, pp. 302-303, Honolulu, Hawaii, Oct. 15-17, 2003.

162. J. W. Wallace, E. Bonek, and M. A. Jensen, "Power and complex envelope correlation for modeling measured indoor MIMO channels: a beamforming evaluation," *2003 IEEE 58th Vehicular Technology Conference Digest (VTC Fall 2003)*, vol. 1, pp. 363-367, Orlando, FL, Oct. 6-9, 2003.

163. J. W. Wallace and M. A. Jensen, "Validation of parametric directional MIMO channel models from wideband FDTD simulations of a simple indoor environment," *2003 IEEE AP-S International Symposium Digest*, vol. 2, pp. 535-538, Columbus, OH, June 22-27, 2003.

164. J. W. Wallace and M. A. Jensen, "MIMO capacity variation with SNR and multipath richness from full-wave indoor FDTD simulations," *2003 IEEE AP-S International Symposium Digest*, vol. 2, pp. 523-526, Columbus, OH, June 22-27, 2003.

165. M. A. Jensen and J. W. Wallace, "Antenna selection for MIMO systems based on information theoretic considerations," *2003 IEEE AP-S International Symposium Digest*, vol. 2, pp. 515-518, Columbus, OH, June 22-27, 2003.

166. M. A. Jensen, R. C. Crummett, A. L. Anderson, "Orthogonal space-time coding for self-interference suppression in multi-antenna telemetry transmission," *Proceedings of the Eleventh Annual Workshop on Adaptive Sensor Array Processing (ASAP 2003)*, 6 pages, Lexington, MA, March 11-13, 2003. http://www.ll.mit.edu/asap/asap_03/Abstracts_03.htm#jensen

167. M. A. Jensen and M. D. Rice, "Space-time coding for wireless communications," *Proceedings of the 38th International Telemetering Conference*, pp. 103-112, San Diego, CA, Oct 21-24, 2002.

168. R. C. Crummett, M. A. Jensen, and M. D. Rice, "Transmit diversity scheme for dual-antenna aeronautical telemetry systems," *Proceedings of the 38th International Telemetering Conference*, pp. 113-121, San Diego, CA, Oct 21-24, 2002.

169. M. A. Jensen and C. H. Jones, "Prototype dual-band transmitter for aeronautical telemetry applications," *Proceedings of the 38th International Telemetering Conference*, pp. 442-450, San Diego, CA, Oct 21-24, 2002.

170. J. W. Wallace and M. A. Jensen, "Intrinsic capacity of the MIMO wireless channel," *2002 IEEE 56th Vehicular Technology Conference Digest (VTC Fall 2002)*, vol. 2, pp. 701-705, Vancouver, British Columbia, Canada, Sep. 24-28, 2002.

171. J. W. Wallace and M. A. Jensen, "The capacity of MIMO wireless systems with mutual coupling," *2002 IEEE 56th Vehicular Technology Conference Digest (VTC Fall 2002)*, vol. 2, pp. 696-700, Vancouver, British Columbia, Canada, Sep. 24-28, 2002.

172. J. W. Wallace, M. A. Jensen, and A. Lee Swindlehurst, "Measurement and modeling of the MIMO wireless channel," *Proceedings of the XXVIIth General Assembly URSI 2002*, paper # 471, 4 pages, Maastricht, The Netherlands, Aug. 17-24, 2002. ***Invited***

173. J. D. Pack and M. A. Jensen, "Greenland snowmelt estimation using multi-spectral passive and active microwave observations," *Proceedings of the 2002 IEEE International Geoscience and Remote Sensing Symposium*, vol. 4, pp. 2106-2108, Toronto, Canada, June 24-28, 2002.

174. M. L. Morris and M. A. Jensen, "The impact of array configuration on MIMO wireless channel capacity," *2002 IEEE AP-S International Symposium Digest*, vol. 3, pp. 214-217, San Antonio, TX, June 16-21, 2002.

175. J. W. Wallace and M. A. Jensen, "Intrinsic capacity of the MIMO wireless channel," *2002 IEEE AP-S International Symposium Digest*, vol. 3, pp. 198-201, San Antonio, TX, June 16-21, 2002.

176. M. A. Jensen, J. W. Wallace, and A. L. Swindlehurst, "Channel characterization and modeling for next-generation MIMO wireless communications," *Fifth Wireless World Research Forum Meeting Digest*, http://www.wireless-world-research.org, Tempe, AZ, Mar. 7-8, 2002.

177. J. W. Wallace and M. A. Jensen, "Statistical characteristics of measured MIMO wireless channel data and comparison to conventional models," *2001 IEEE Vehicular Technology Conference Digest (VTC 2001 Fall)*, vol. 2, pp. 1078-1082, Atlantic City, NJ, Oct. 7-11, 2001

178. J. W. Wallace and M. A. Jensen, "Measured characteristics of the MIMO wireless channel," *2001 IEEE Vehicular Technology Conference Digest (VTC 2001 Fall)*, vol. 4, pp. 2038-2042, Atlantic City, NJ, Oct. 7-11, 2001

179. D. A. Zaugg and M. A. Jensen, "Snow and ice characterization studies using a radar altimeter," *Proceedings of the 2001 IEEE International Geoscience and Remote Sensing Symposium*, vol. 4, pp. 1773-1775, Syndney, Australia, July 9-13, 2001.

180. J. D. Pack and M. A. Jensen, "Estimating snow accumulation on Greenland from SSM/I radiometer data," *Proceedings of the 2001 IEEE International Geoscience and Remote Sensing Symposium*, vol. 2, pp.946-948, Sydney, Australia, July 9-13, 2001.

181. J. D. Pack and M. A. Jensen, "A multi-channel approach to Greenland snowmelt estimation," *Proceedings of the 2001 IEEE International Geoscience and Remote Sensing Symposium*, vol. 4, pp.1789-1791, Sydney, Australia, July 9-13, 2001.

182. J. W. Wallace, M. A. Jensen, and A. L. Swindlehurst, "Measurement and modeling of the multiple-input multiple-output wireless channel," *Proceedings of the 2001 International Conference on Electromagnetics in Advanced Applications (ICEAA01)*, pp. 811-814, Torino, IT, Sep. 10-14, 2001. ***Invited***

183. J. W. Wallace and M. A. Jensen, "Characteristics of measured 4x4 and 10x10 MIMO wireless channel data at 2.4-GHz," *2001 IEEE AP-S International Symposium Digest*, vol. 3, pp. 96-99, Boston, MA, July 8-13, 2001.

184. J. W. Wallace and M. A. Jensen, "Experimental characterization of the MIMO wireless channel," *2001 IEEE AP-S International Symposium Digest*, vol. 3, pp. 92-95, Boston, MA, July 8-13, 2001.

185. M. L. Morris, J. W. Wallace and M. A. Jensen, "Performance of the V-BLAST space-time coding algorithm using measured wireless channel characteristics," *2001 URSI/USNC National Radio Science Meeting Digest*, pg. 235, Boston, MA, July 8-13, 2001.

186. J. W. Wallace and M. A. Jensen, "Spatial characteristics of the MIMO wireless channel: experimental data acquisition and analysis," *Proceedings of the 2001 IEEE International Conference on Acoustics, Speech, and Signal Processing*, vol. IV, pp. 2497-2500, Salt Lake City, UT, May 7-10, 2001.

187. A. Swindlehurst, G. German, J. Wallace, and M. Jensen, "Experimental measurements of capacity for MIMO indoor wireless channels," *Proceedings of the 2001 IEEE Workshop on Signal Processing Advances in Wireless Communications (SPAWC 01)*, pp. 30-33, Taipei, Taiwan, Mar. 2001.

188. J. W. Wallace and M. A. Jensen, "A hybrid FDTD/Radiative Transfer method for modeling remote sensing observations of snow," *Proceedings of the 2000 IEEE International Geoscience and Remote Sensing Symposium*, pp. 2394-2396, Honolulu, HI, July 24-28, 2000.

189. J. D. Pack, J. W. Wallace and M. A. Jensen, "Greenland snow ablation and accumulation observed using ERS and SSM/I data," *Proceedings of the 2000 IEEE International Geoscience and Remote Sensing Symposium*, pp. 1128-1130, Honolulu, HI, July 24-28, 2000.

190. D. A. Zaugg, D. V. Arnold, and M. A. Jensen, "Ocean surface and landslide probing with a scanning radar altimeter," *Proceedings of the 2000 IEEE International Geoscience and Remote Sensing Symposium*, vol. 1, pp. 120-122, Honolulu, HI, July 24-28, 2000.

191. J. W. Wallace and M. A. Jensen, "An FD/FDTD method for optical waveguide modeling," *2000 IEEE AP-S International Symposium Digest*, vol. 3, pp. 1380-1383, Salt Lake City, UT, July 16-21, 2000.

192. D. A. Zaugg, D. V. Arnold, and M. A. Jensen, "A scanning radar altimeter for geographic terrain monitoring and mean sea level data collection," *2000 URSI/USNC National Radio Science Meeting Digest*, pg. 114, Salt Lake City, UT, July 16-21, 2000.

193. J. D. Pack, J. W. Wallace, and M. A. Jensen, "Determining snow accumulation and ablation rates on the Greenland ice sheet using SSM/I radiometer and ERS scatterometer data," *2000 URSI/USNC National Radio Science Meeting Digest*, pg. 122, Salt Lake City, UT, July 16-21, 2000.

194. J. W. Wallace, and M. A. Jensen, "A system for measuring the indoor and outdoor MIMO wireless channel response," *2000 URSI/USNC National Radio Science Meeting Digest*, pg. 249, Salt Lake City, UT, July 16-21, 2000.

195. M. A. Jensen and D. V. Arnold, "Relevant system-level design experiences in undergraduate microwave engineering laboratories," *Proceedings of the 2000 Progress in Electromagnetics Research Symposium*, pg. 432, Cambridge, MA, July 5-14, 2000.

196. R. H. Selfridge, M. A. Jensen, C. A. Fox, G. C. Harston, and R. E. Wilson, "Integrated optics based on an optical fiber embedded in a silicon wafer," *Proceedings of the IEEE Lasers and Electro-Optics Society 1999 Annual Meeting*, vol. 2, pp. 499-500, San Francisco, CA, Nov. 8-11, 1999.

197. T. W. Karlinsey, M. A. Jensen, and D. V. Arnold, "A broadband constant beamwidth reflector antenna for ocean surface remote sensing applications," *1999 IEEE AP-S International Symposium Digest*, vol. 4, pp. 2246-2249, Orlando, FL, July 11-16, 1999.

198. M. A. Jensen, D. V. Arnold, and D. E. Crockett, "Microwave engineering design laboratories: C-band rail SAR and Doppler radar systems," *1999 IEEE AP-S International Symposium Digest*, vol. 1, pp. 82-85, Orlando, FL, July 11-16, 1999.

199. M. A. Jensen, Q. H. Spencer, A. L. Swindlehurst, and B. D. Jeffs, "Measurement and modeling of temporal and spatial indoor multipath characteristics," *1999 IEEE AP-S International Symposium Digest*, vol. 1, pp. 388-391, Orlando, FL, July 11-16, 1999.

200. B. R. Hunter, J. Wallace, and M. A. Jensen, "Joint spatial and temporal characteristics of the indoor wireless channel at 2.4 GHz," *1999 URSI/USNC National Radio Science Meeting Digest*, pg. 210, Orlando, FL, July 11-16, 1999.

201. J. Wallace and M. A. Jensen, "A hybrid FDTD/radiative transfer method for modeling remote sensing observations of snow," *1999 URSI/USNC National Radio Science Meeting Digest*, pg. 230, Orlando, FL, July 11-16, 1999.

202. M. A. Jensen, "Finite-aperture wire grid polarizers: FDTD and mode-matching analysis," *1999 URSI/USNC National Radio Science Meeting Digest*, pg. 278, Orlando, FL, July 11-16, 1999.

203. D. E. Crockett, D. V. Arnold, and M. A. Jensen, "A Ku-band altimeter for improved estimation of electromagnetic bias in radar altimetry," *1999 IEEE International Geoscience and Remote Sensing Symposium (IGARSS) Digest*, Hamburg, Germany, June 28-2 July, 1999.

204. J. S. Colburn, M. A. Jensen, and Y. Rahmat-Samii, "Indoor ISM Band Multipath Fading: Frequency and Antenna Diversity," *1998 IEEE-APS Conference on Antennas and Propagation for Wireless Communications Digest*, pp. 9-12, Waltham, MA, Nov. 1-4, 1998.

205. D. E. Crockett, D. V. Arnold, and M. A. Jensen, "The design and construction of a C-band rail-SAR and an S-band Doppler radar," *1998 International Telemetering Conference Digest*, pp. 251-257, San Diego, CA, Oct. 26-29, 1998.

206. D. E. Crockett, D. V. Arnold, and M. A. Jensen, "The design and construction of the RF circuitry for a C-band rail SAR and a S-band Doppler radar," *1998 International Geoscience and Remote Sensing Symposium (IGARSS) Digest*, vol. 2, pp. 666-668, Seattle, WA July 6-10, 1998.

207. D. G. Thompson, D. V. Arnold, D. G. Long, G. F. Miner, M. A. Jensen, T. W. Karlinsey, A. E. Robertson, and J. S. Bates, "YINSAR: a compact, low-cost interferometric synthetic aperture radar," *1998 International Geoscience and Remote Sensing Symposium (IGARSS) Digest*, vol. 4, pp. 1920-1922, Seattle, WA July 6-10, 1998.

208. M. A. Jensen, "Application of FDTD and RGFM to EM interaction with biological tissue: a comparison," *1998 IEEE AP-S International Symposium Digest*, vol. 4, pp. 1972-1975, Atlanta, GA, June 21-26, 1998.

209. M. A. Jensen and R. H. Selfridge, "A Green's function approach for modeling semiconductor lasers and optical waveguides," *1998 USNC/URSI National Radio Science Meeting Digest*, pg. 153, Atlanta, GA, June 21-26, 1998.

210. M. A. Jensen, "A fast technique for determining electromagnetic and acoustic wave behavior in inhomogeneous media," *Proceedings of the 14th Annual Review of Progress in Applied Computational Electromagnetics*, vol. 1, pp. 428-433, Monterey, CA, Mar. 16-20 1998.

211. M. A. Jensen, "Comparison of RGFM and FDTD for electromagnetic-tissue interaction problems," *Proceedings of the 14th Annual Review of Progress in Applied Computational Electromagnetics*, vol. 1, pp. 470-475, Monterey, CA, Mar. 16-20 1998.

212. D. G. Thompson, D. V. Arnold, D. G. Long, G. F. Miner, M. A. Jensen, T. W. Karlinsey, A. E. Robertson, J. S. Bates, "YSAR and YINSAR: compact, low-cost synthetic aperture radars," *Proceedings of the 1998 European Conference on Synthetic Aperture Radar*, pp. 27-30, Friedrichshafen, Germany, May 25-27, 1998.

213. M. A. Jensen, "A recursive scheme for efficient modeling of inhomogeneous, penetrable objects," *Proceedings of the 1997 International Conference of Electromagnetics in Advanced Applications*, pp. 355-358, Torino, Italy, Sep. 15-18, 1997. ***Invited***

214. M. A. Jensen, "Alternative antenna polarization schemes for satellite-handset links including operator tissue," *1997 IEEE AP-S International Symposium Digest*, vol. 2, pp. 1336-1339, Montreal, Canada, July 13-18, 1997.

215. B. M. Green and M. A. Jensen, "Diversity performance of personal communications handset antennas near operator tissue," *1997 IEEE AP-S International Symposium Digest*, vol. 2, pp. 1182-1185, Montreal, Canada, July 13-18, 1997.

216. J. D. Freeze and M. A. Jensen, "The recursive Green's function method for surface integral equation analysis of inhomogeneous media," *1997 IEEE AP-S International Symposium Digest*, vol. 4, pp. 2342-2345, Montreal, Canada, July 13-18, 1997.

217. M. LeFevre, M. A. Jensen, and M. D. Rice, "Indoor measurement of handset dual-antenna diversity performance," *1997 IEEE Vehicular Technology Conference Digest*, vol. 3, pp. 1763-1767, Phoenix, AZ, May 4-7, 1997.

218. Q. Spencer, M. Rice, B. Jeffs, and M. Jensen, "Indoor wideband time/angle of arrival multipath propagation results," *1997 IEEE Vehicular Technology Conference Digest*, vol. 3, pp. 1410-1414, Phoenix, AZ, May 4-7, 1997.

219. Q. Spencer, M. Rice, B. Jeffs, and M. Jensen, "Statistical model for angle of arrival in indoor multipath propagation," *1997 IEEE Vehicular Technology Conference Digest*, vol. 3, pp. 1415-1419, Phoenix, AZ, May 4-7, 1997.

220. Q. H. Spencer, B. D. Jeffs, M. A. Jensen, and A. L. Swindlehurst, "Experiments in modeling the space-time indoor wireless communication channel," *Proceedings of the 1997 IEEE 1st IEEE Workshop on Signal Processing Advances in Wireless Communications (SPAWC 1997)*, pp. 297-300, Paris, April 16-18, 1997.

221. B. M. Green, M. A. Jensen, and Y. Rahmat-Samii, "Dual-mode antenna for satellite/terrestrial communications," *1996 IEEE AP-S International Symposium Digest*, vol. 1, pp. 66-69, Baltimore, MD, July 21-26, 1996.

222. M. A. Jensen and Y. Rahmat-Samii, "Finite-difference and finite-volume time-domain techniques: Comparison and hybridization," *1996 IEEE AP-S International Symposium Digest*, vol. 1, pp. 108-111, Baltimore, MD, July 21-26, 1996.

223. J. S. Colburn, Y. Rahmat-Samii, M. A. Jensen, and G. J. Pottie, "Diversity performance of dual antenna personal communication handsets," *1996 IEEE AP-S International Symposium Digest*, vol. 1, pp. 730-733, Baltimore, MD, July 21-26, 1996.

224. M. A. Jensen and J. D. Freeze, "A recursive Green's function method for efficient solution of the volume integral equation," *1996 USNC/URSI Radio Science Meeting Digest*, pg. 28, Baltimore, MD, July 21-26, 1996.

225. M. A. Jensen and Y. Rahmat-Samii, "Performance of circularly polarized patch antennas for personal satellite communications including biological effects," *1995 IEEE AP-S International Symposium Digest*, vol. 2, pp. 1112-1115, Newport Beach, CA, June 18-23, 1995.

226. M. A. Jensen, A. Fijany, and Y. Rahmat-Samii, "Time and space parallel solution of Maxwell's equations on massively parallel MIMD architectures," *1995 URSI Radio Science Meeting Digest*, pg. 227, Newport Beach, CA, June 18--23, 1995.

227. M. A. Jensen and Y. Rahmat-Samii, "Finite-difference and finite-volume time-domain techniques in electromagnetics: A comparative study," *1995 URSI Intl. Symposium on Electromagnetic Theory*, St. Petersburg, Russia, 23-26 May, 1995.

228. M. A. Jensen and Y. Rahmat-Samii, "A novel scheme for massively parallel solution of Maxwell's equations using FDTD," *Proceedings of the 11th Annual Review of Progress in Applied Computational Electromagnetics*, vol. 1, pp. 592-599, Monterey, CA, 20-25 Mar. 1995. ***Invited***

229. Y. Rahmat-Samii and M. A. Jensen, "FDTD investigation of the antenna-tissue interaction for cellular and satellite systems," *Proceedings of the 11th Annual Review of Progress in Applied Computational Electromagnetics*, vol. 2, pp. 732-739, Monterey, CA, 20-25 Mar. 1995. ***Invited***

230. Y. Rahmat-Samii, K. Virga, R. Hodges, and M. Jensen, "Planar inverted F antenna (PIFA): Characterization and performance visualization," *Proceedings of the 1995 USNC/URSI National Radio Science Meeting*, Boulder CO, Jan. 1995.

231. M. A. Jensen and Y. Rahmat-Samii, "A study of the electromagnetic coupling between handset mounted antennas and a human operator," *24th European Microwave Conference, 94*, Cannes, France, Sep. 5-8, 1994.

232. M. A. Jensen, A. Fijany, and Y. Rahmat-Samii, "Time-parallel computational strategy for FDTD solution of Maxwell's equations," *1994 IEEE AP-S International Symposium Digest*, vol. 1, pp. 380-383, Seattle, WA, June 19-24, 1994.

233. M. A. Jensen and Y. Rahmat-Samii, "The electromagnetic interaction between biological tissue and antennas on a transceiver handset," *1994 IEEE AP-S International Symposium Digest*, vol. 1, pp. 367-370, Seattle, WA, June 19-24, 1994.

234. J. S. Colburn, M. A. Jensen, and Y. Rahmat-Samii, "Comparison of MOM and FDTD for radiation and scattering involving dielectric objects," *1994 IEEE AP-S International Symposium Digest*, Seattle, WA, vol. 3, pp. 1802-1805, June 19-24, 1994.

235. Y. Rahmat-Samii, D. W. Duan, and M. A. Jensen, "Modern antenna design concepts for satellite and personal communications," *Proceedings of the 1994 IEEE Aerospace Applications Conference*, Vail, CO, pp. 343-353, Feb. 5-12, 1994.

236. J. S. Colburn, M. A. Jensen and Y. Rahmat-Samii, "Radiation and scattering involving biological tissue: Comparison between MOM and FDTD," *Proceedings of the 1994 USNC/URSI National Radio Science Meeting*, Boulder CO, Jan. 1994.

237. M. A. Jensen and Y. Rahmat-Samii, "Computation of scattering from complex surface/wire structures: a hybrid TDFV and FDTD approach," *Proceedings of the 1993 Progress In Electromagnetics Research Symposium (PIERS)*, Pasadena, CA, pg. 315, July 12-16, 1993.

238. M. A. Jensen and Y. Rahmat-Samii, "FDTD analysis of PIFA diversity antennas on a hand-held transceiver unit," *1993 IEEE AP-S International Symposium Digest*, vol. 2, pp. 814-817, Ann Arbor, MI, June 27-July 2, 1993.

239. M. A. Jensen and Y. Rahmat-Samii, "Characteristics of superquadric loop antennas for mobile communications applications," *1993 IEEE AP-S International Symposium Digest*, vol. 1, pp. 148-151, Ann Arbor, MI, June 27-July 2, 1993.

240. M. A. Jensen and Y. Rahmat-Samii, "A hybrid TDFV/FDTD technique for radiation and scattering from surface/wire structures," *1993 URSI Radio Science Meeting Program and Abstracts*, pg. 66, Ann Arbor, MI, June 27-July 2, 1993.

241. M. A. Jensen and Y. Rahmat-Samii, "Isolated and coupled superquadric loop antennas for mobile communications applications," *Proceedings of the 3rd International Mobile Satellite Conference*, pp. 581-586, Pasadena, CA, June 16-18, 1993.

242. J. Min, A. Rofougaran, V. Lin, M. Jensen, H. Samueli, A. Abidi, G. Pottie, and Y. Rahmat-Samii, "A low-power handheld frequency-hopped spread spectrum transceiver hardware architecture," *Proceedings of Virginia Tech's 3rd Symposium on Wireless Personal Communications*, pp. 10-1-10-8, Blacksburg, VA, June 9-11, 1993.

243. M. A. Jensen and Y. Rahmat-Samii, "Superquadric loop antennas," *Proceedings of the IEE Eighth International Conference on Antennas and Propagation*, pp. 1.103-1.106, Edinburgh, UK, Mar. 30-Apr. 2, 1993.

244. M. A. Jensen and Y. Rahmat-Samii, "Analysis of isolated and coupled superquadric loop antennas," *Proceedings of the 1993 USNC/URSI National Radio Science Meeting*, pg. 9, Boulder CO, Jan. 5-8, 1993.

245. J. D. Freeze, M. A. Jensen, and R. H. Selfridge, "High-efficiency diffraction gratings in D-type fibers," *Optical Fiber Comm. Conference Digest*, pg. 46, San Diego, CA, Feb. 1991.

246. G. T. Pugmire, J. D. Freeze, M. A. Jensen, and R. H. Selfridge, "Controlled etching to produce D-fiber diffraction grating devices," *CLEO Proc.*, vol. 7, pg. 476, Anaheim, CA, May 1990.

247. G. T. Pugmire, M. A. Jensen, and R. H. Selfridge, "Controllable cladding removal for in-fiber integrated optics applications," *SPIE Proc.*, vol. 1338, pp. 2-10, San Diego, CA, Jul. 1990.

Internal Reports

248. M. A. Jensen and G. P Nordin, "Finite-aperture wire grid polarizers," Technical Report No. 99-08, Brigham Young University Microwave Earth Remote Sensing Laboratory, 1999.

249. J. S. Colburn, M. A. Jensen, Y. Rahmat-Samii, and G. J. Pottie, "Indoor ISM Band Propagation/Diversity Measurements," UCLA Report no. ENG-95-133, UCLA School of Engineering and Applied Science, 1995.

250. M. A. Jensen and Y. Rahmat-Samii, "Geometrical theory of diffraction analysis of a dipole source over a rectangular ground plane," UCLA Report no. ENG-92-20, UCLA School of Engineering and Applied Science, 1992.

Funded Contracts and Grants

Army Research Office
PI: Michael A. Jensen, 9/1/2012 – 8/30/2015, $319,000
"Propagation Analysis and Performance Assessment for Multi-Antenna Communications in Combat Environments"

Army Research Office - STIR
PI: Michael A. Jensen, 8/30/2012 – 8/2/2013, $50,000
"Data-Dependent Fingerprints for Wireless Device Authentication"

DOD Science and Technology/Test and Evaluation Program
PI: Michael Rice, 4/09-3/11, $491,577
Co-I: M. A. Jensen + collaborator from Univ. Texas Dallas
"Multipath Modeling and Mitigation using Multiple Antennas"

Army Research Office - MURI
PI: Prasant Mohapatra (UCD), 6/07-5/12, $455,000 (BYU Portion)
Co-I: M. A. Jensen (BYU) + collaborators from UCD, UCSC, UCI, UCR
"ARSENAL: A cross layer architecture for secure resilient tactical mobile ad hoc networks"

SRJ Technologies
PI: Michael A. Jensen, 12/04-11/05, $32,958
"Mobile MIMO Measurement Campaign"

National Science Foundation
PI: A. Lee Swindlehurst, 9/04-8/09, $1,124,191
Co-I's: M. A. Jensen, B. D. Jeffs, M. D. Rice, R. L. Beard, B. Nelson, T. Moon, J. Gunther
"Distributed Communications and Control for Multiple Miniature Unmanned Air Vehicles"

Utah State Center of Excellence
PI: Michael A. Jensen, 7/04-6/09, $642,238
Co-I's: A. L. Swindlehurst, M. D. Rice
"Center of Excellence in Advanced Communications Technology."

Central Test and Evaluation Investment Program
PI: Michael D. Rice, 11/04-10/07, $893,452
Co-I: M. A. Jensen
"Prototype Design for Space-Time Coding Experiments in Aeronautical Telemetry"

Army Research Office - MURI
PI: James Zeidler (UCSD), 5/04-4/09, $589,896 (BYU Portion)
Co-I's: M. A. Jensen (BYU) + collaborators from UCSD, UCSC, UCI, UCR
"Space-Time Processing for Tactical Mobile Ad-Hoc Networks".

National Science Foundation
PI: A. Lee Swindlehurst, 9/03-8/06, $354,042
Co-I's: B. D. Jeffs, M. A. Jensen, and M. D. Rice
"ITR: Multi-user, Multi-antenna Networks: Achieving High Capacity in a Mutual Interference Environment."

Edwards Air Force Base
PI: Michael Jensen, 5/03-4/04, $100,000
Co-I: M. D. Rice
"Differential Space-Time Coding for Aeronautical Telemetry"

Department of the Navy
PI: Michael Jensen, 6/02-6/03, $60,000
"Wrap-Around Antenna Evaluation for GPS Applications"

Air Force: Edwards Air Force Base
PI: Michael Rice, 6/02-6/03, $100,000
Co-I: M. A. Jensen
"Space-Time coding for Aeronautical Telemetry"

Air Force Office of Scientific Research
PI: Michael Jensen, 12/00-12/02, $200,000
"Full L-S Band Telemetry System."

National Science Foundation
PI: A. Lee Swindlehurst, 10/00-9/03, $488,761
Co-I's: B. D. Jeffs, M. A. Jensen, and M. D. Rice
"ITR/SII: Analysis of the Capacity Improvement for Wireless Networks with Multiple Transmit and Receive Antennas."

National Science Foundation
PI: A. Lee Swindlehurst, 8/00-4/03, $370,567
Co-I's: B. D. Jeffs, M. A. Jensen, and M. D. Rice
"Development of a Comprehensive Real-Time Instrument for MIMO Wireless Channel Measurement and Space-Time Coding Implementation."

National Science Foundation
PI: Michael A. Jensen, 6/00-5/01, $6,990
"Special Sessions to Encourage Collaboration and Interaction Across Disciplinary Boundaries."

National Science Foundation
PI: Michael A. Jensen, 9/99-9/01, $42,000
"Workshop on RF Micromachining and MEMS Technology for Wireless Communications Systems."

National Science Foundation
PI: A. Lee Swindlehurst, 9/99-9/02, $698,000
Co-I's: M. A. Jensen, B. D. Jeffs, and M. D. Rice
"Modeling and Design for the Lower Layers of 4th Generation Indoor/Outdoor Wireless Networks."

NASA Headquarters
PI: David G. Long, 7/99-7/02, $266,355
Co-I: M. A. Jensen
"Polar Ice Sheet Monitoring from Long-Term Scatterometer and Radiometer Observations."

NASA Headquarters
PI: David V. Arnold, 9/98-9/01, $557,000
Co-I's: W. K. Melville, M. A. Jensen, D. G. Long, and K. F. Warnick.
"Improved Estimation of the Electromagnetic Bias for the JASON-1 Altimeter."

Canadian National Railway
PI: David V. Arnold, 9/98-1/00, $151,000
Co-I's: M. A. Jensen and D. G. Long.
"Investigation of Interferometric Radar Technology applied to Rockfall, Landslide, and Washout Detection in a Railway Operating Environment."

Hewlett Packard
PI: Michael A. Jensen, 7/98.
40 licenses of HP EEsof Advanced Design System (ADS) and High Frequency Structure Simulator (HFSS).
HP Estimated Value: $20,000,000.

Nichols Research Corporation
PI: Michael A. Jensen, 9/98-12/98, $5,000
"Diffractive Optical Element Analysis."

NASA Headquarters
PI: Michael A. Jensen, 1/98-1/99, $130,000
Co-I's: D.G. Long, D.V. Arnold, P.J. Hardin and E.J. Nelson.
"Computing Resources for Enhanced Environmental Assessment and Research Capabilities at BYU."

NASA Headquarters
PI: David G. Long, 3/96-3/99, $460,000
Co-I's: D.V. Arnold, M.A. Jensen, and G.M. Miner.
"An Inexpensive Interferometric Synthetic Aperture Radar for Geophysical Research."

Hughes Research
PI: Michael A. Jensen, 1/96-1/98, $38,000
"FDTD Algorithm Enhancement for Antenna Analysis."

Air Force Office of Scientific Research/Utah Asian Consortium
PI: Michael A. Jensen, 4/96-10/97, $15,000
"Antenna Design and Evaluation for Personal Wireless Communications."