

Conference Papers

International Conference Proceedings and Presentations

- [1] T. S. Rappaport, "Discone Design Using Simple N-Connector Feed," *Proc. 1987 Antenna Applications Symposium*, Allerton Park, IL, September 23, 1987, 12 pp.
- [2] T. S. Rappaport and C. McGillem, "UHF Fading in Factories," *1988 URSI/National Radio Science Meeting*, Boulder, CO, January 5, 1988, p. 31 (abstract only).
- [3] C. McGillem and T. S. Rappaport, "Infra-red Location System for Navigation of Autonomous Vehicles," *IEEE International Conference on Robotics and Automation Proceedings*, Philadelphia, PA, April 24, 1988, pp. 1236-1238.
- [4] T. S. Rappaport, "Delay Spread and Time Delay Jitter for the UHF Factory Multipath Radio Channel," *IEEE Vehicular Technology Conference Record*, Philadelphia, PA, June 15, 1988, pp. 186-189.
- [5] C. D. McGillem, J. D. Callison, T. S. Rappaport, "Autonomous Roving Vehicle Navigation, Control and Communication," *9th Intl. Conference on Automation in Warehousing/6th Intl. Conference. on Automated Guided Vehicle Systems*, October 25, 1988, Brussels, Belgium, pp. 179-188.
- [6] T. S. Rappaport and C. McGillem, "UHF Multipath and Propagation Measurements in Manufacturing Environments," in *IEEE GLOBECOM Communications Conference Proceedings*, Hollywood, FL, November 28, 1988, pp. 825-831.
- [7] S. Seidel, K. Takimazawa, T. S. Rappaport, "Application of Second Order Statistics in an Indoor Radio Channel Model," *IEEE Vehicular Technology Conference*, San Francisco, CA, May 2, 1989, pp. 888-892.
- [8] C. Bostian, W. Stutzman, T. Pratt, J. McKeeman, T. S. Rappaport, "Communications and Propagation Experiments for the Olympus and ACTS Satellites," *IEEE International Conference on Communications*, Boston, MA, June 16, 1989, pp. 1578-1581.
- [9] J. N. Daigle, R. Johnson, T. S. Rappaport, "Communications Research Issues in CIM," (invited paper) *1989 Society for Integrated Manufacturing Conference*, Atlanta, GA, November 9-12, 1989, pp. 615-620.
- [10] T. S. Rappaport, "Wireless Information Links for the Factory of the Future," (invited paper), *1989 Society for Integrated Manufacturing Conference*, Atlanta, GA, November 9-12, 1989, pp. 643-650.
- [11] T. S. Rappaport, S. Seidel, R. Singh, "900 MHz Multipath Propagation Measurements for U.S. Digital Cellular Radiotelephone," *1989 IEEE GLOBECOM Proceedings*, Dallas, TX, November 29, 1989, pp. 84-89.
- [12] T. S. Rappaport, S. Seidel, "Multipath Propagation Models for In-Building Communications," *IEEE 5th Intl. Conference on Mobile Radio and Personal Communications*, University of Warwick, England, December 11-14, 1989, pp. 111-117.
- [13] D. A. Hawbaker, T. S. Rappaport, "Indoor Wideband Radio Propagation Measurement System at 1.33 GHz and 4.0 GHz," *1990 IEEE Vehicular Technology Conference*, Orlando, FL, May 6, 1990, pp. 626-630.
- [14] L. Ailes, M. Keitz, R. Anabi, M. Deisenroth, T. S. Rappaport, "Development of an Autonomous Guided Vehicle for Indoor Propagation Measurements," *1990 IEEE Vehicular Technology Conference*, Orlando, FL, May 6, 1990, pp. 119-123.

- [15] S. Seidel, T. S. Rappaport, "Simulation of UHF Indoor Radio Channels for Open Plan Building Environments," *IEEE Vehicular Technology Conference*, Orlando, FL, May 9, 1990, pp. 597-602.
- [16] T. S. Rappaport, L. B. Milstein, "Effects of Path Loss and Fringe User Distribution on CDMA Cellular Frequency Reuse Efficiency," *1990 IEEE GLOBECOM Proceedings*, San Diego, CA, December 2, 1990, pp. 500-506.
- [17] S. Y. Seidel, T. S. Rappaport, "900 MHz Path Loss Measurements and Prediction Techniques for In-Building Communication System Design," *41st IEEE Vehicular Technology Conference Proceedings*, St. Louis, MO, May 19, 1991, pp. 613-618.
- [18] J. C. Liberti, T. S. Rappaport, J. G. Proakis, "Evaluation of Several Adaptive Algorithms for Canceling Acoustic Noise in Mobile Radio Environments," *41st IEEE Vehicular Technology Conference Proceedings*, St. Louis, MO, May 19, 1991, pp. 126-132.
- [19] W. Huang, T. S. Rappaport, "A Comparative Study of Two Adaptive Equalizers for Mobile Radio," *41st IEEE Vehicular Technology Conference Proceedings*, St. Louis, MO, May 19, 1991, pp. 765-769.
- [20] V. Fung, T. S. Rappaport, "Bit-Error Simulation of $\pi/4$ DQPSK in Flat and Frequency-Selective Fading Mobile Radio Channels with Real Time Applications," *IEEE International Communications Conference Proceedings*, Denver, CO, June 23, 1991, pp. 19.3.1-19.3.5.
- [21] K. Blackard, T. S. Rappaport, C. W. Bostian, "Radio Frequency Noise Measurements and Models for Indoor Wireless Communications at 918 MHz, 2.44 GHz, and 4.0 GHz," *IEEE International Communications Conference Proceedings*, Denver, CO, June 23, 1991, pp. 1.6.1-1.6.5.
- [22] T. S. Rappaport, D. A. Hawbaker, "Effects of Circular and Linear Polarized Antennas on Wideband Propagation Parameters in Indoor Radio Channels," *IEEE GLOBECOM Conference*, Phoenix, AZ, December 3, 1991, pp. 1287-1291.
- [23] L. B. Milstein, T. S. Rappaport, R. Barghouti, "The Effect of Diversity on Cellular CDMA," *Proceedings of 26th Annual Conference on Information Sciences and Systems*, Princeton University, Princeton, NJ, March 18, 1992, 3 pp.
- [24] T. S. Rappaport, J. C. Liberti, K. L. Blackard, B. Tuch, "The Effects of Antenna Gains and Polarization on Multipath Delay Spread and Path loss at 918 MHz on Cross-Campus Radio Links," *IEEE Vehicular Technology Conference*, Denver, CO, May 1992, pp. 550-553.
- [25] W. Huang, T. S. Rappaport, M. J. Feuerstein "Performance of Decision Feedback Equalizers in Urban and Indoor Mobile Channels," *IEEE Vehicular Technology Conference*, Denver, CO, May 1992, pp. 368-371.
- [26] K. Schaubach, N. J. Davis, T. S. Rappaport, "A Ray Tracing Method for Predicting Path Loss and Delay Spread in Microcellular Environments," *IEEE Vehicular Technology Conference*, Denver, CO, May 1992, pp. 932-935.
- [27] S. Y. Seidel, T. S. Rappaport, M. J. Feuerstein, K. L. Blackard, L. Grindstaff, "The Impact of Surrounding Buildings on Propagation for Wireless In-Building Personal Communications System Design," *IEEE Vehicular Technology Conference*, Denver, CO, May 1992, pp. 814-818.
- [28] K. L. Blackard, M. J. Feuerstein, T. S. Rappaport, S. Y. Seidel, H. H. Xia, "Path Loss and Delay Spread Models as Functions of Antenna Height for Microcellular System Design," *IEEE Vehicular Technology Conference*, Denver, CO, May 1992, pp. 333-337.

- [29] L. B. Milstein, T. S. Rappaport, R. Barghouti, "Analysis of the Mobile-to-Base Link in Cellular CDMA," *IEEE Vehicular Technology Conference*, Denver, CO, May 1992, pp. 486-489.
- [30] T. A. Russell, T. S. Rappaport, C. W. Bostian, "Use of a Building Database in Prediction of Three-Dimensional Diffraction," *IEEE Vehicular Technology Conference*, Denver, CO, May 1992, pp. 943-946.
- [31] J. C. Liberti, T. S. Rappaport, "Statistics of Shadowing in Indoor Radio Channels at 900 and 1900 MHz," *IEEE MILCOM '92*, San Diego, CA, October 8-11, 1992, pp. 1066-1070.
- [32] T. T. Tran, T. S. Rappaport, "Site Specific Propagation Prediction Models for PCS Design and Installation," *IEEE MILCOM '92*, San Diego, CA, October 8-11, 1992, pp. 1062-1065.
- [33] C. M. P. Ho, T. S. Rappaport, "Effects of Antenna Polarization and Beam Pattern on Multipath Delay Spread and Path Loss in Indoor Obstructed Wireless Channels," (invited) *1st International Conference on Universal Personal Communications*, October 1992, pp. 0092-0095.
- [34] S. Y. Seidel, T. S. Rappaport, "A Ray Tracing Technique to Predict Path Loss and Delay Spread Inside Buildings," *IEEE GLOBECOM*, Orlando, FL, December 7, 1992, pp. 649-653.
- [35] Thoma, T. S. Rappaport, "Simulation of Bit Error Performance and Outage Probability of $\pi/4$ DQPSK in Frequency-Selective Indoor Radio Channels Using a Measurement-Based Channel Model," *IEEE GLOBECOM '92*, Orlando, FL, December 7, 1992, pp. 1825-1829.
- [36] S. L. McCulley, T. S. Rappaport, "Distributed Real-time Signal Processing for Cellular and Paging Traffic Analysis, Fraud Detection, and Intelligent Wireless Network Control," *IEEE Vehicular Technology Conference*, Secaucus, NJ, May 18, 1993, pp. 891-896.
- [37] S. Y. Seidel, K. R. Schaubach, Thomas T. Tran, and T. S. Rappaport, "Research in Site-Specific Propagation Modeling for PCS System Design," *IEEE Vehicular Technology Conference*, Secaucus, NJ, May 18, 1993, pp. 261-264.
- [38] O. Landron, M. J. Feuerstein, T. S. Rappaport, "In Situ Microwave Reflection Coefficient Measurements for Smooth and Rough Exterior Wall Surfaces," *IEEE Vehicular Technology Conference*, Secaucus, NJ, May 18, 1993, pp. 77-80.
- [39] S. L. McCulley, T. S. Rappaport, "DSP Techniques for Cellular Paging and PCS Intercept," *1993 Tactical Technologies and Wide Area Surveillance International Symposium*, Chicago, IL, November 2-5, 1993, pp. 185-189.
- [40] J. C. Liberti, T. S. Rappaport, "Reverse Channel Performance Improvements in CDMA Cellular Communications Systems Employing Adaptive Antennas," *IEEE GLOBECOM '93*, Houston, TX, November 29, 1993, pp. 42-47.
- [41] Peter Ho, T. S. Rappaport, "Wireless Channel Prediction in a Modern Office Building Using an Image-Based Ray Tracing Method," *IEEE GLOBECOM '93*, Houston, TX, November 29, 1993, pp. 1247-1251.
- [42] T. S. Rappaport, "Future Trends of Mobile and Personal Communications," *1995 SBMO/IEEE MTT-S International Microwave and Optoelectronics Conference Proceedings*, Rio de Janeiro, Brazil, July 24-27, 1995, vol. 1, pp. 387-395.
- [43] B. D. Woerner, J. H. Reed, and T. S. Rappaport, "Improved Spectral Efficiency for CDMA Systems," *Wireless Technology '95 Conference*, Stamford, CT, September 11-15, 1995, 5 pp.

- [44] P. M. Koushik, T. S. Rappaport, M. Ahmed, and N. Zhang, "SISP-A Software Tool for Propagation Prediction," *AGARD 4th Sensor and Propagation Panel Symposium*, Athens, Greece, September 18-21, 1995, pp. 53-1 – 53-14.
- [45] T. M. Willis, B. J. Guarino, J. D. Moore, R. Luebbers, J. Schuster, H. L. Bertoni, G. Liang, N. Wo, T. S. Rappaport, P. M. Koushik, "UHF and Microwave Propagation Prediction in an Urban Environment," *AGARD 4th Sensor and Propagation Panel Symposium*, Athens, Greece, September 18-21, 1995, pp. 8-1 – 8-12.
- [46] N. Bhat, A. L. Abbott, T. S. Rappaport, "Interactive Computation of Coverage Regions for Indoor Wireless Communication," *First International Symposium on Photonics Technologies and Systems for Voice, Video, and Data Communications*, Philadelphia, PA, October 23-26, 1995, 12 pp.
- [47] J. C. Liberti and T. S. Rappaport, "Accurate Techniques to Evaluate CDMA Bit Error Rates in Multipath Channels with Imperfect Power Control," *IEEE GLOBECOM Information Theory Miniconference*, Singapore, November 1995, pp. 33-37.
- [48] W. G. Newhall, K. Saldanha, T. S. Rappaport, "Propagation Time Delay Spread Measurements at 915 MHz in a Large Train Yard," *IEEE Vehicular Technology Conference*, Atlanta, GA, April 29-May 1, 1996, pp. 864-868.
- [49] J. C. Liberti, T. S. Rappaport, "Analysis of CDMA Cellular Radio Systems Employing Adaptive Antennas in Multipath Environments," *IEEE Vehicular Technology Conference*, April 29-May 1, 1996, vol. 2, pp. 1076-1080.
- [50] J. C. Liberti, T. S. Rappaport, "A Geometrically Based Model for Line-of-Sight Multipath Radio Channels," *IEEE Vehicular Technology Conference*, Atlanta, GA, April 29-May 1, 1996, vol. 2, pp. 844-848.
- [51] T. S. Rappaport, W. H. Tranter, J. H. Reed, B. D. Woerner, D. M. Krizman, "Curriculum Innovation for Simulation and Design of Wireless Communications Systems," *American Society for Engineering Education Annual Conference & Exposition*, Washington, DC, June 23-26, 1996, 11 pp.
- [52] R. Skidmore, T. S. Rappaport, A. L. Abbott, "Interactive Coverage Region and System Design Simulation for Wireless Communication Systems in Multifloored Environments: SMT Plus," *IEEE International Conference on Universal Personal Communications*, Cambridge, MA, September 29-October 2, 1996, pp. 646-650.
- [53] R. Muhamed, T. S. Rappaport, "Performance Comparison of Subspace-Based Algorithms and the Integrated Property-Restoral with Subspace-Based Algorithms for DOA Estimation," *IEEE International Conference on Universal Personal Communications*, Cambridge, MA, September 29-October 2, 1996, vol. 2, pp. 1004-1008.
- [54] G. D. Bump, T. S. Rappaport, "Cellular Digital Packet Data (CDPD) Equipment: Some Practical Design Issues," *IEEE International Conference on Universal Personal Communications*, Cambridge, MA, September 29-October 2, 1996, vol. 2, pp. 801-805.
- [55] W. H. Tranter, T. S. Rappaport, B. D. Woerner, J. H. Reed, D. M. Krizman, "The Role of Simulation in the Teaching of Communications," *IEEE Frontiers in Education Conference*, Salt Lake City, Utah, November 6-9, 1996, Paper 7a1.1 (electronic proceedings).
- [56] R. A. Brickhouse, T. S. Rappaport, "Urban In-Building Cellular Frequency Reuse," *IEEE Global Telecommunications Conference*, London, UK, November 18-22, 1996, vol 2, pp. 1192-1196.

- [57] P. Petrus, J. H. Reed, T. S. Rappaport, "Geometrically Based Statistical Channel Model for Macrocellular Mobile Environments," *IEEE Global Telecommunications Conference*, London, UK, November 18-22, 1996, vol. 2, pp. 1197-1201.
- [58] K. Blankenship, D. M. Krizman, T. S. Rappaport, "Measurements and Simulation of Radio Frequency Impulsive Noise in Hospitals and Clinics," *IEEE Vehicular Technology Conference*, Phoenix, AZ, May 5-7, 1997, pp. 1942-1946.
- [59] D. M. Krizman, B. J. Ellison, T. S. Rappaport, "Modeling and Simulation of Narrowband Phase from the Wideband Channel Impulse Response," *IEEE Vehicular Technology Conference*, Phoenix, AZ, May 5-7, 1997, pp. 67-71.
- [60] G. D. Durgin, N. Patwari, T. S. Rappaport, "An Advanced 3D Ray Launching Method for Wireless Propagation Prediction," *IEEE Vehicular Technology Conference*, Phoenix, AZ, May 5-7, 1997, pp. 785-789.
- [61] Z. Rong, P. Petrus, T. S. Rappaport, J. H. Reed, "Simulation of Multitarget Adaptive Array Algorithms for Wireless CDMA Systems," *IEEE Vehicular Technology Conference*, Phoenix, AZ, May 5-7, 1997, pp. 1-5.
- [62] K. J. Krizman, T. E. Biedka, T. S. Rappaport, "Wireless Position Location: Fundamentals, Implementation Strategies, and Sources of Error," *IEEE Vehicular Technology Conference*, Phoenix, AZ, May 5-7, 1997, pp. 919-923.
- [63] J. H. Reed, T. S. Rappaport, "Spatial Domain Channel Models," *Fourth Annual Workshop on Smart Antennas in Wireless Mobile Communications*, Stanford University, CA, July 1997, 31 pp.
- [64] M. D. Powell, T. R. Cassidy, T. S. Rappaport, C. G. Jensen, "An Application of Multimedia Networking in a Traditional Shop Floor Environment," *Proceedings of 1997 International Institute of Production Engineering (CIRP) Conference on Multimedia Technologies for Collaborative Design and Manufacturing*, University of Southern California, CA, October 9-10, 1997, pp. 105-109.
- [65] W. G. Newhall, T. S. Rappaport, "An Antenna Pattern Measurement Technique Using Wideband Channel Profiles to Resolve Multipath Signal Components," *Antenna Measurement Techniques Association 19th Annual Meeting & Symposium*, Boston, MA, November 17 - 21, 1997. *Paper received one of three student paper awards.*
- [66] G. D. Durgin, T. S. Rappaport, H. Xu, "Radio Path Loss and Penetration Loss Measurements in and around Homes and Trees at 5.85 GHz," *1998 AP-S International Symposium*, Atlanta, GA, June 21-26, 1998, pp. 618-634.
- [67] J. H. Schaffner, H. Izadpanah, D. Gregoire, H. P. Hsu, H. Xu, R. J. Boyle, T. S. Rappaport, "Millimeter Wave Wireless Technology and Testbed Development for Wideband Infrastructure Access," Session WCC-98TA7, *3rd International Wireless Communications Conference*, San Diego, CA, November 1-3, 1998, pp. 175-178.
- [68] G. D. Durgin, T. S. Rappaport, H. Xu, "Partition-Based Path Loss Analysis for In-Home and Residential Areas at 5.85 GHz," *IEEE Global Communications Conference*, Sydney, Australia, November 8-12, 1998, pp. 679-684.
- [69] P. Shan, T. S. Rappaport, "Parallel Interference Cancellation (PIC) Improvements for CDMA Multiuser Receivers using Partial Cancellation of MAI Estimates," *IEEE Global Communications Conference*, Sydney, Australia, November 8-12, 1998, pp. 2615-2620.

- [70] C. Kontogeorgakis, T. S. Rappaport, "Two-Branch Diversity Simulation of the Effects of Non-Zero Signal Correlation on the Average Fade Duration," *49th Annual International IEEE Vehicular Technology Conference*, Houston, TX, May 16-19, 1999, pp. 1774-1778.
- [71] N. Patwari, G. D. Durgin, T. S. Rappaport, R. J. Boyle, "Peer-to-Peer Low Antenna Outdoor Radio Wave Propagation at 1.8 GHz," *49th Annual International IEEE Vehicular Technology Conference*, Houston, TX, May 16-19, 1999, pp. 371-375.
- [72] G. D. Durgin, T. S. Rappaport, "Effects of Multipath Angular Spread on the Spatial Cross-Correlation of Received Voltage Envelopes," *49th Annual International IEEE Vehicular Technology Conference*, Houston, TX, May 16-19, 1999, pp. 996-1000.
- [73] G. D. Durgin, T. S. Rappaport, D. A. de Wolf, "More Complete Probability Density Functions for Fading in Mobile Communications," *49th Annual International IEEE Vehicular Technology Conference*, Houston, TX, May 16-19, 1999, pp. 985-989.
- [74] P. Cardieri, T. S. Rappaport, "Combined Effects of Narrowbeam Antennas and Fractional Loading Factor in Cellular Communication Systems," *49th Annual International IEEE Vehicular Technology Conference*, Houston, TX, May 16-19, 1999, pp. 1074-1078.
- [75] H. Xu, T. S. Rappaport, R. J. Boyle, J. H. Schaffner, "38 GHz Wideband Point-to-Multipoint Radio Wave Propagation Study for a Campus Environment," *49th Annual International IEEE Vehicular Technology Conference*, Houston, TX, May 16-19, 1999, pp. 1575-1579.
- [76] G. D. Durgin, T. S. Rappaport, "Three Parameters for Relating Small-Scale Temporal Fading Statistics to Multipath Angle-of-Arrival," *10th International Symposium on Personal, Indoor and Mobile Radio Communications*, Osaka, Japan, September 12-15, 1999, pp. 1077-1081.
- [77] G. D. Durgin, T. S. Rappaport, "Level-Crossing Rates and Average Fade Duration for Wireless Channels with Spatially Complicated Multipath Channels," *IEEE Global Communications Conference 1999*, Rio de Janeiro, Brazil, December 5-9, 1999, pp. 427-431.
- [78] H. Xu, T. S. Rappaport, D. A. de Wolf, "Experimental and Theoretical Study of Short-Term Signal Variation during Rain for Millimeter-Wave Point-to-Multipoint Applications," *AP2000 Millennium Conference on Antennas & Propagation*, April 9-14, 2000, pp. 1534-1538.
- [79] P. Cardieri, T. S. Rappaport, "Statistics of the Sum of Log-normal Variables," *Spring 2000 IEEE Vehicular Technology Conference*, Tokyo, Japan, May 15-18, 2000, pp. 1823-1827.
- [80] H. Xu, T. S. Rappaport, V. Kukshya, "Spatial and Temporal Characteristics of 60 GHz Indoor Channels," *Fall 2000 IEEE Vehicular Technology Conference*, Boston, MA, September 25 – 28, 2000, pp. 620-630.
- [81] A. Verstak, M. Vass, N. Ramakrishnan, C. A. Shaffer, L. T. Watson, K. K. Bae, J. Jiang, W. H. Tranter, and T. S. Rappaport, "Lightweight Data Management for Compositional Modeling in Problem Solving Environments," *Proceedings of High Performance Computing Symposium, as part of the Advanced Simulations Technologies Conference*, Seattle, WA, April 2001, pp. 148-153.
- [82] G. D. Durgin, V. Kukshya, T. S. Rappaport, "Joint Angle and Delay Spread Statistics for 1920 MHz Peer-to-Peer Wireless Channels," *2001 IEEE AP-S/URSI Symposium*, Boston, MA, July 8-13, 2001, vol. 2, pp. 182-185.
- [83] P. Cardieri, T. S. Rappaport, "Channel Allocation In SDMA Cellular Systems," *Fall 2001 IEEE Vehicular Technology Conference*, Atlantic City, NJ, October 7-11, 2001, vol. 1, pp. 399-403.

- [84] J. He, A. Verstack, L. Watson, T. S. Rappaport, C. Anderson, N. Ramakrishnan, C. Shaffer, W. Tranter, K. Bae, J. Jiang, "Global Optimization of Transmitter Placement in Wireless Communication Systems," *Proceedings of High Performance Computing Symposium, as part of the Advanced Simulations Technologies Conference*, San Diego, CA, April 14-18, 2002 pp. 328-333.
- [85] A. Verstack, J. He, L. T. Watson, N. Ramakrishnan, C. A. Shaffer. "S⁴W: Globally Optimized Design of Wireless Communication Systems." *Proceedings of 2002 Parallel and Distributed Processing Symposium*, Ft. Lauderdale, FL, April 15 - 19, 2002, pp. 173-180.
- [86] K. Bae, J. Jiang, W. Tranter, C. R. Anderson, T. S. Rappaport, J. He, A. Verstack, L. Watson, N. Ramakrishnan, C. Shaffer, "WCDMA STTD Performance Analysis with Transmitter Location Optimization in Indoor Systems Using Ray-tracing Technique," *Proceedings of the IEEE Radio and Wireless Conference (RAWCON 2002)*, Boston, MA, August 11-14, 2002, pp. 123 - 128.
- [87] V. Kukshya, T. S. Rappaport, H. Izadpanah, G. Tangonan, R. A. Guerrero, J. K. Mendoza, B. Lee, "Free-space Optics & High-speed RF for Next Generation Networks," *Proceedings of Fall 2002 IEEE Vehicular Technology Conference*, Vancouver, Canada, September 24 - 29, 2002, vol. 1, pp. 616-620.
- [88] C. R. Anderson, T. S. Rappaport, K. Bae, A. Verstack, N. Ramakrishnan, W. H. Tranter, C. A. Shaffer, L. T. Watson, "In-Building Wideband Multipath Characteristics at 2.5 & 60 GHz," *Proceedings of Fall 2002 IEEE Vehicular Technology Conference*, Vancouver, Canada, September 24 - 29, 2002, pp.97-101.
- [89] Sanjay Shakkottai and Theodore S. Rappaport, "Research Challenges in Wireless Networks: A Technical Overview," invited presentation, *Proceedings of International Symposium of Wireless Personal Multimedia Communications*, Honolulu, HI, October 27 - 30, 2002, vol. 1, pp. 12-18.
- [90] B. Rengarajan, J. K. Chen, S. Shakkottai, T. S. Rappaport, "Connectivity of Sensor Networks with Power Control," *Proceedings of IEEE Asilomar Conference on Signals, Systems, and Computers*, Pacific Grove, CA, November 9-12, 2003, vol. 2, pp.1691-1693.
- [91] T. Kim, J. Kim, J. Andrews, T. S. Rappaport, "Multi-code Multicarrier CDMA: Performance Analysis," *Proceedings of 2004 IEEE International Conference on Communications (ICC)*, Paris, France, June 20-24, 2004, vol.2 pp. 973-977.
- [92] H. Wang and T. S. Rappaport, "A Parametric Formulation of the UTD Diffraction Coefficients for a Dielectric Wedge," *Proceedings of 2004 IEEE Antennas and Propagation Society International Symposium and URSI National Radio Science Meeting*, Monterey, CA, June 20-26, 2004, vol. 1, pp. 962-965.
- [93] C. Na, J. K. Chen, T. S. Rappaport, "Hotspot Traffic Statistics and Throughput Models for Several Applications," *Proceedings of IEEE Global Telecommunications Conference (Globecom) 2004*, Nov. 29 - Dec. 3, 2004, vol. 5, pp. 3257-3263.
- [94] A. Mahimkar, T. S. Rappaport, "SecureDAV: A Secure Data Aggregation and Verification Protocol for Sensor Networks," *Proceedings of IEEE Global Telecommunications Conference (Globecom) 2004*, Nov. 29 - Dec. 3, 2004, vol. 4, pp. 2175-2179.
- [95] J. Chen, T.S. Rappaport, G. de Veciana, "Iterative Water-filling for Load-balancing in Wireless LAN or Microcellular Networks," *IEEE Vehicular Technology Conference (VTC) 2006 Spring*, Melbourne, Australia, May 7 -10, 2006, vol. 1, pp. 117-121.
- [96] J. K. Chen, T. S. Rappaport, G. de Veciana, "Site Specific Knowledge for Improving Frequency Allocations in Wireless LAN and Cellular Networks," *IEEE 66th Vehicular Technology Conference (VTC)*, Baltimore, MD, Oct. 1 -3, 2007, pp. 1431-1435.

- [97] L. Ragan, A. Hassibi, T. S. Rappaport, C. L. Christianson, "Novel On-Chip Antenna Structures and Frequency Selective Surface (FSS) Approaches for Millimeter Wave Devices," *IEEE 66th Vehicular Technology Conference (VTC)*, Baltimore, MD, Oct. 1 -3, 2007, pp. 2051-2055.
- [98] J. K. Chen, G. de Veciana, T. S. Rappaport, "Improved Measurement-Based Frequency Allocation Algorithms for Wireless Networks," *IEEE Global Communications Conference (GLOBECOM)*, Washington, DC, Nov. 26-30, 2007, pp. 4790-4795.
- [99] F. Gutierrez, K. Parrish, T. S. Rappaport, "On-Chip Integrated Antenna Structures in CMOS for 60 GHz WPAN Systems," *IEEE Global Communications Conference (Globecom)*, Honolulu, HI, Nov. 30 – Dec. 4, 2009.
- [100] T. S. Rappaport, F. Gutierrez, T. Al-Attar, "Millimeter-Wave and Terahertz Wireless RFIC and On-Chip Antenna Design: Tools and Layout Techniques," *IEEE First Workshop on Millimeter Wave and Terahertz Communications*, in conjunction with *IEEE Global Communications Conference (Globecom)*, Honolulu, HI, Nov. 30-Dec. 4, 2009.

Regional Conference Proceedings

- [1] T. S. Rappaport and C. McGillem, "UHF Multipath Propagation Measurements in Factory Buildings," *Purdue Electrical Engineering Industrial Institute Conference on Networking*, Purdue University, April 4, 1986, 5 pp.
- [2] T. S. Rappaport, "Research Issues in Indoor Radio LAN Development," (invited), *Materials Handling Focus 1988*, Georgia Institute of Technology, Atlanta, GA, September 14, 1988, 23 pp.
- [3] K. Takamizawa, S. Seidel, T. S. Rappaport, "Indoor Radio Channel Models for Manufacturing Environments," *IEEE Southeastern Conference*, Columbia, SC, April 9, 1989, pp. 750-754.
- [4] T. S. Rappaport, "Radio Channel Models in Manufacturing Environments," *1989 Wireless Information Networks Workshop*, Rutgers University, June 15, 1989, 21 pp.
- [5] T. S. Rappaport, E. Pocock, and the EE 4984 Radio Wave Propagation Class (Spring 1989), "Radio Propagation Models for U.S.-European Six Meter Communications," *ARRL 23rd Annual Central States VHF Conference*, Chicago, IL, July 25, 1989, 28 pp.
- [6] J. Love, M. Joost, T. S. Rappaport, "Wireless LAN's, Flexibility for the Future," *Materials Handling Focus 1989*, *Georgia Institute of Technology*, Atlanta, GA, September 12, 1989, 5 pp.
- [7] T. S. Rappaport, R. L. Campbell, E. Pocock, "F2 Propagation Model for Distances Greater than 4000 Km and Frequencies Above 30 MHz," *1990 IGARSS/URSI Conference*, College Park, MD, May 21, 1990, p. 91 (abstract only).
- [8] D. A. Hawbaker, T. S. Rappaport, "Indoor Propagation Measurements at 1.3 GHz and 4.0 GHz," *1990 IGARSS/URSI Conference*, College Park, MD, May 23, 1990, p. 1601 (abstract only).
- [9] C. S. Rajguru, T. S. Rappaport, M. J. Feuerstein, "Application of GRASS in Mobile and Portable Communications," *7th Annual GRASS GIS Users' Conference*, Denver, CO, March 17-19, 1992.
- [10] T. S. Rappaport, S. Y. Seidel, K. R. Schaubach, "Site-Specific Propagation Prediction for PCS System Design," *Proceedings of 2nd Annual Symposium on Wireless Personal Communications*, Virginia Tech, Blacksburg, VA, June 17-19, 1992, pp. 16-1 to 16-27.

- [11] J. C. Liberti, T. S. Rappaport, "Reverse Channel Performance Improvements in CDMA Cellular Communication Systems Employing Adaptive Antennas," *WINLAB '93*, Rutgers University, September 1993, pp. 42-47.
- [12] Theodore S. Rappaport, William H. Tranter, Jeffrey H. Reed, Brian D. Woerner, Donna M. Krizman, "Curriculum Innovation For Simulation and Design of Wireless Communications Systems," *ASEE Annual Conference*, 1996, 11 pp.
- [13] H. Xu, T. S. Rappaport, V. Kukshya, H. Izadpanah, "Multipath Measurements and Modeling for Fixed Broadband Point-to-Multipoint Radio Wave Propagation Links under Different Weather Conditions," Session #6 of the IEEE 802.16 Working Group on Broadband Wireless Access, Albuquerque, NM, March 9, 2000, http://grouper.ieee.org/groups/802/16/phy/contrib/802161pc-00_12.pdf.