

Publications

Books

F. Emdad, S. A. Zekavat, “High Dimensional Data Analysis: Overview, Analysis and Applications,” VDM Verlag, 2008;

C. R. Nassar, S. A. Zekavat, et al, *Multicarrier Technologies for Wireless Communications*, Kluwer Academic Press, 2001;

Book Chapters

S. A. Zekavat, and Z. Wang, Chapter: *Node Localization in Ad-hoc Networks*, in the Book: *Handbook of Research on Mobility and Computing: Evolving Technologies and Ubiquitous Impacts*, Editors: Maria Manuela Cruz-Cunha, Polytechnic Institute of Cavado and Ave, and Fernando Moreira, University of Portugal, Portugal, will be published, 2010, **Invited**.

X. Li and S. A. Zekavat, Chapter: *Evaluating Channel Availability Based on Traffic Pattern Prediction in Cognitive Radio Systems*, in the Book: *Cognitive Radio Systems*, Editor: W. Wang, IN-TECH, July 2009, **Invited**.

S. A. Zekavat, H. Tong, Chapter: *Single Node Multi-Antenna Positioning Systems for Airport Security*, of the book: *Protecting Airline Passengers in the Age of Terrorism*. Editors: Paul Seidenstat (Temple University), and, Francis X. Splane (Pennsylvania State University); Praeger Publishers, Expected 2009, **Invited**.

S. A. Zekavat, and C. R. Nassar, Contribution in the Chapter: *Channel Modeling / Characteristics* of the book: *Adaptive Antennas Array Techniques*, Editor: Chandran, Springer Verlag, Jan 2004, **Invited**.

Patents

Seyed A. (Reza) Zekavat, Wireless Local Positioning System (WLPS), US Patent 7,489,935;

Journal Articles

1. X. Li and S. A. Zekavat, “Spectrum Sharing across Multiple Service Providers via Cognitive Radio Nodes,” *IET Communications*, in press.
2. P. T. Keong, and, S. A. Zekavat, “Achieving Directionality and Transmit Diversity via Integrating Beam Pattern Scanning (BPS) Antenna Arrays and OFDM,” *Journal of Wireless Sensor Networks*, in press.

3. W. Wang and S. A. Zekavat, "A Novel Semi-distributed Localization via Multi-node TOA-DOA Fusion," *IEEE Transactions on Vehicular Technology*, vol. 58, no. 7, pp. 3426 – 3435, Sept. 2009.
4. W. Xu, S. A. Zekavat, and H. Tong, "A Novel Spatially Correlated Multi-User MIMO Channel Modeling: Impact of Surface Roughness," *IEEE Transactions on Antennas and Propagations*, vol. 57, no. 8, August 2009.
5. P. T. Keong, and, S. A. Zekavat, "Beam Pattern Scanning (BPS) versus Space-Time Block Coding (STBC) and Space-Time Trellis Coding," *International Journal of Communications, Network and System Sciences, IJCNS*, vol.2, no. 8, November 2009, **Invited paper**.
6. X. Li, and, S. A. Zekavat, "Cognitive Radio Based Spectrum Sharing: Evaluating Channel Availability via Traffic Pattern Prediction," *Journal of Communications and Networks (JCN): Special Issue on Cognitive Radio: A Path in the Evolution of Public Wireless Networks*, vol. 11, no. 2, April 2009.
7. W. Wang and S. A. Zekavat, "Comparison of Semi-Distributed Multi-Node TOA-DOA Fusion Localization and GPS-Aided TOA (DOA) Fusion Localization for MANETs," *EURASIP Journal on Advances in Signal Processing*, vol. 2008, Article ID 439523, 16 pages, 2008. doi:10.1155/2008/439523, 2008.
8. H. Tong, J. Pourrostam, and S. A. Zekavat, "Optimum Beam-forming for a Novel Wireless Local Positioning System: A Stationarity Analysis and Solution," *EURASIP Journal on Advances in Signal Processing*, vol. 2007, Article ID 98243, 12 pages, 2007.
9. H. Tong and S. A. Zekavat, "A Novel Wireless Local Positioning System via Asynchronous DS-CDMA and Beam-forming: Implementation and Perturbation Analysis," *IEEE Transactions on Vehicular Technology*, vol. 56, no. 3, pp. 1307 – 1320, May 2007.
10. S. A. Zekavat, and P. T. Keong, "A Merger of Beam Pattern Scanning (BPS) Antenna Arrays and OFDM Systems: Achieving Directionality and Transmit Diversity" *IEEE Transactions on Wireless Communications*, vol. 5, no. 9, pp. 2334 – 2337, Sept. 2006.
11. S. A. Zekavat, and X. Li, "Ultimate Dynamic Spectrum Allocation via User Central Wireless Systems," *Journal of Communications*, vol. 01, no. 01, pp. 60 – 67, April 2006.
12. H. Tong and S. A. Zekavat, "Spatially Correlated MIMO Channel: Generation via Virtual Channel Representation," *IEEE Comm. Letters*, vol. 10, no. 5, pp. 332 – 334, May 2006.

13. S. A. Zekavat and C. R. Nassar, "High Performance Wireless via the Merger of CI Chip Shaped DS-CDMA and Oscillating-Beam Smart Antenna Arrays", *EURASIP Journal on Applied Signal Processing*, vol. 2004, No. 9, pp. 1376-1383, August 2004.
14. S. A. Zekavat and C. R. Nassar, "Transmit diversity via oscillating beam pattern adaptive antennas: An evaluation using geometric-based stochastic circular-scenario channel modeling," *IEEE Transactions on Wireless Communication*, vol. 4, no. 3, pp. 1134-1141, July 2004.
15. S. A. Zekavat, C. R. Nassar and S. Shattil, "Merging multi-carrier CDMA and oscillating-beam smart antenna arrays: Exploiting directionality, transmit diversity and frequency diversity," *IEEE Transactions on communications*, vol. 52, no. 1, pp. 110 – 119, Jan. 2004.
16. S. A. Zekavat, C. R. Nassar, "Power-azimuth-spectrum modeling for antenna array systems: A geometric-based approach," *IEEE Transactions on Antennas and Propagation*, vol. 51, no. 12, Dec. 2003.
17. S. A. Zekavat and C. R. Nassar, " Achieving high capacity wireless by merging multi-carrier CDMA systems and oscillating-beam smart antenna arrays," *IEEE Transactions on Vehicular Technology*, vol. 52, no. 2, pp. 772-778, July 2003.
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20. S. A. Zekavat, C. R. Nassar and S. Shattil, "Smart antenna spatial sweeping for combined directionality and transmit diversity," *Journal of Comm. and Networks (JCN), Special Issue on Adaptive Antennas for Wireless Communications*, vol. 2, no. 4, pp. 325-330, Dec. 2000.

Conference Proceedings

1. M. Roddewig, S. Nooshabadi, and S. Zekavat, "Design of a Costas Loop Down Converter," proceedings *IEEE Mid West Symposium on Circuits and Systems (MWSCAS'09)*, August 2-5, 2009, Cancún, México.
2. X. Li, and, S. A. Zekavat, "Distributed Channel Assignment in Cognitive Radio Networks," *IWCMC 2009*, Germany, June 22-25, 2009.

3. S. A. Zekavat, O. Abdelkhalik, and D. Fuhrmann, "Wireless Solar Power Transfer via Distributed LEO Satellites" the *National workshop on New Research Directions for Future Cyber-Physical Energy Systems*, Baltimore, MD, June 3, 4, 2009.
4. S. A. Zekavat, K. Hungwe, and T. Rogers, "Development of a New Curriculum for the Interdisciplinary Course "Introduction to Electrical Engineering for Non-majors: Final Conclusions," proceedings *IEEE-GCC*, Kuwait, March 15 – 18, 2009.
5. S. G. Ting, O. Abdelkhalik, and S. A. Zekavat, "Spacecraft Constellation Orbit Estimation via a Novel Wireless Positioning System," proceedings *AAS/AIAA Space Flight Mechanics Meeting*, Savannah, GA, Feb. 8-12, 2009.
6. Z. Wang, W. Xu, and S. A. Zekavat, "A novel LOS and NLOS localization technique," proceedings *IEEE DSP/SPE workshop 2009*, Florida, Jan. 4-7, 2009.
7. W. Xu, and, S. A. Zekavat, "Spatially Correlated Multi-user Channels: LOS vs. NLOS" proceedings *IEEE DSP/SPE workshop 2009*, Florida, Jan. 4-7, 2009, **Invited Paper**.
8. H. Tong, and S. A. Zekavat, "Diversity-Multiplexing Tradeoff with Arbitrary Doppler Spectrum," proceedings *IEEE VTC Fall 2008 Conference*, 21 – 24 Sept. Calgary, Canada, 2008.
9. F. Emdad, M. Kirby, and S. A. Zekavat, "Feature Extraction via Kernelized Signal Fraction Analysis vs Kernelized Principal Component Analysis," proceedings, *World Comp Congress'08, Data Mining Symposium*, vol. 1, pp. 180 – 184, Las Vegas, July 2008.
10. F. Emdad, and S. A. Zekavat, "Investigating the Relationship Between Canonical Correlation Analysis (CCA), and, Signal Fraction Analysis (SFA)" proceedings *World Comp Congress'08, Data Mining Symposium*, vol. 1, pp. 43 – 48, Las Vegas, July 2008.
11. Z. Wang, C. Li, and S. A. Zekavat, "A Novel Smart Antenna Calibration Technique," proceedings *Virginia Tech Annual Wireless Symposium*, June 2 – 4, 2008.
12. S. A. Zekavat, O. Abdelkhalek, and H. Tong, "Aircraft Navigation and Spacecraft Coordination via Wireless Local Positioning Systems," proceedings *2008 Integrated Comm. Navigation and Surveillance (ICNS) Conference*, Bethesda, MD, May 5 – 7, 2008.
13. M. Pourkhaatoun and S. A. Zekavat, "A Novel ICA-based TOA Estimation Technique: Achieving High Resolution, High Reliability, and, Low Cost,"

proceedings *IEEE International Workshop on Signal Processing and its Applications, WOSPA'08*, UAE, March 18-20, 2008.

14. Z. Wang, and S. A. Zekavat “A Novel Semi-distributed Cooperative Localization Technique for MANET: Achieving High Performance,” proceedings *IEEE WCNC Conference, 2008*, March 31 – April 03, Las Vegas, 2008.
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16. H. Tong, and S. A. Zekavat, “On the Suitable Environments of the Kronecker Product Form in MIMO Channel Modeling,” proceedings *IEEE WCNC Conference, 2008*, March 31 – April 03, Las Vegas, 2008
17. H. Tong, and S. A. Zekavat, “Asymptotic Outage Analysis of Large Size Correlated MIMO Systems,” proceedings *IEEE WCNC Conference, 2008*, March 31 – April 03, Las Vegas, 2008.
18. X. Li, and S. A. Zekavat, “Traffic Pattern Prediction and Performance Investigation for Cognitive Radio Systems,” proceedings *IEEE WCNC Conference, 2008*, March 31 – April 03, Las Vegas, 2008.
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20. T. Abdelhakim, and, S. A. Zekavat, “On the Error Floor of MC-CDMA Systems over Rayleigh Fading Channels: Uplink vs. Downlink,” proceedings *IEEE ICSPC 2007*, Dubai, UAE, 26 – 27 Nov. 2007.
21. W. Xu, S. A. Zekavat, and H. Tong, “Novel Approach for Spatially Correlated Multi-User MIMO Channel Modeling: Impact of Surface Roughness and Directional Scattering,” proceedings *Forty-Fourth Annual Allerton Conference on Communication, Control, and Computing*, Sept. 2007.
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32. K. Hungwe, S. A. Zekavat, and G. Archer, "Gender perspectives on the optimization of the interdisciplinary course curriculum introduction to electrical engineering for non-major," proceedings *American Society of Engineering Education Annual Conference, ASEE'06*, Chicago, IL, June, 18-21 2006.
33. H. Tong and S. A. Zekavat, "A simple beam-forming-SIMO merger in spatially correlated channel via virtual channel representation," proceedings *IEEE Globecom 2005*, St. Louis, 28 Nov. – 02 Dec., 2005.
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38. R. Kulkarni and S. A. Zekavat, "Smart versus blind inter-vendor spectrum sharing for MC-CDMA systems, " Proceedings *The University of Texas at Austin, WNCG'04 Symposium*, Austin, TX, Oct. 2004.
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