

DISSERTATIONS/THESES DIRECTED

Hanfei Shen, "Detection of abnormal electrocardiography signals," Ph.D. dissertation, in progress, to defend in 2024.

Samer El-Zakhem, "Error correcting codes for automotive emergency communications," Ph.D. dissertation, November 2020.

John Lu, "Investigation of emergency call performance over VoLTE," Ph.D. dissertation, March 2020.

Yunrui Li, "Channel fading statistics for real-time data transmission in emergency call systems and unmanned aerial systems," Ph.D. dissertation, December 2018.

Majeed Nader, "Chip design for EU eCall in-vehicle system," Ph.D. dissertation, December 2018.

Jacob Brandenburg, "Signal detection in free-space optical systems," Ph.D. dissertation, September 2010.

Samer Zakhem, "Performance of multiband receiver with one RF frontend and one ADC," M.S. thesis, August 2009.

Kevin Speteri, "A novel demodulation method for nonlinear OFDM communications systems," December 2003, M.S. thesis.

M. Sharawi, "Codes and modulation for spread spectrum systems," March 2002, M.S. thesis.

PUBLICATIONS

A. Scholarly Books Published

Q. Liu, *Applied Probability and Statistics in Engineering*. Pearson Education, 2004.

B. Chapters Published

1. Authored

Q. Liu, "Frequency control," Chapter 7, *The ICO SBS System Functional Analysis*. London, UK: NEC Consortium, 1997.

Q. Liu, "Time synchronization," Chapter 8, *The ICO SBS System Functional Analysis*. London, UK: NEC Consortium, 1997.

2. Co-Authored

M. Schaefer and Q. Liu, "Optical communications through the atmosphere," Chapter 67, *The Handbook of Computer Networks*, John Wiley & Sons, 2007.

C. Journal Articles Published

1. Y. Li, J. Q. Liu and J. C. Brandenburg, "Channel fading measurement and statistics of the eCall minimum set of data transmission," *IET Communications*, vol. 14, no. 1, pp. 127-134, Jan. 2020.
2. M. Nader and J. Liu, "Chip design for in-vehicle system transmitter," *Journal of Computer and Communication*, vol. 6, no. 5, pp. 66-82, May 2018.
3. M. Nader and J. Liu, "Hardware development of the in-vehicle system modules for the EU emergency call," *American Journal of Electrical and Electronic Engineering*, vol. 6, no. 1, pp. 1-10, Jan. 2018.
4. J. Q. Liu and W. Chu, "Design of multiple level sequences," *IEEE Transactions on Aerospace & Electronic Systems*, vol. 47, pp. 26-36, Jan. 2011.
5. J. C. Brandenburg and J. Q. Liu, "Optical signal detection in the turbulent atmosphere using p-i-n photodiodes," *IEEE J. Selected Areas in Communications*, vol. 27, pp. 1564-1571, Dec. 2009.
6. J. C. Brandenburg and J. Q. Liu, "Signal detection for optical communications through the turbulent atmosphere," *IEEE Transactions on Communications*, vol. 57, pp. 3425-3432, Nov. 2009.
7. X. Zeng, J. Q. Liu, L. Hu, and D. P. Taylor, "On the linear span of a binary sequence family with optimal correlation property," *IEICE Transactions on Fundamentals*, vol. E91-A, no. 2, pp. 664-672, Feb. 2008.
8. X. Zeng, J. Q. Liu, and L. Hu, "Generalized Kasami sequences - The large set," *IEEE Transactions on Information Theory*, vol. 53, pp. 2587-2598, Jul. 2007.
9. J. Li, J. Q. Liu, and D. P. Taylor, "Optical communication using subcarrier PSK intensity modulation through turbulent atmospheric channel," *IEEE Transactions on Communications*, vol. 55, pp. 1598-1606, Jul. 2007.
10. J. Li and Q. Liu, "PSK communications systems using fully saturated power amplifiers," *IEEE Transactions on Aerospace & Electronic Systems*, vol. 42, no. 2, pp. 464-477, Apr. 2006.
11. J. Li, Q. Liu, and D. P. Taylor, "Performance of UWB PSK communications systems using fully saturated power amplifiers," *IEEE J. Selected Areas Communications*, vol. 24, pp. 913-919, Apr. 2006.
12. X. Zeng, L. Hu, and Q. Liu, "A novel method for constructing almost perfect polyphase sequences," *Lecture Notes in Computer Science*, vol. 3969, pp. 346-353, Springer, 2006.
13. R. Qiu, C. Zhou, and Q. Liu, "Physics-based pulse distortion for ultra-wideband signals," *IEEE Transactions on Vehicular Technology*, vol. 54, pp. 1546-1555,

Sep. 2005.

14. Q. Liu, C. Qiao, G. Mitchell, and S. Stanton, "Optical wireless communication networks for first and last mile broadband access," *OSA J. Optical Networking*, vol. 4, pp. 807-828, Dec. 2005.
15. Q. Lu and Q. Liu, "Performance of phase modulated systems using fully saturated power amplifiers," *Lecture Notes in Computer Science*, vol. 2957, pp. 177-185, Springer, 2004.
16. Q. Liu and J. Li, "User registration in broadband slotted Aloha networks," *IEEE Transactions on Communications*, vol. 51, pp. 1185-1194, Jul. 2003.
17. Q. Liu, "Frequency synchronization in global satellite communications systems," *IEEE Transactions on Communications*, vol. 51, pp. 359-365, Mar. 2003.
18. Q. Liu, E.-H. Yang, and Z. Zhang, "Throughput analysis of CDMA systems using multiuser receivers," *IEEE Transactions on Communications*, vol. 49, pp. 1192-1202, Jul. 2001.
19. Q. Liu, R. A. Scholtz, and Z. Zhang, "Complexity of Verdu optimum multiuser detection algorithm in multichannel CDMA systems," *IEEE Transactions on Communications*, vol. 47, pp. 1913-1920, Dec. 1999.

D. Papers Published in Conference Proceedings

1. M. Nader, Y. Li, and J. Liu, "Preamble detection for the in-vehicle system receiver," in *Proc. IEEE International Conference on Electro/Information Technology (EIT)*, May 3-5, 2018, Rochester, Michigan, USA.
2. Y. Li, M. Nader, and J. Liu, "In-vehicle system design for the European union emergency call," in *Proc. IEEE International Conference on Electro/Information Technology (EIT)*, May 3-5, 2018, Rochester, Michigan, USA.
3. M. Nader, Y. Li and J. Liu, "Chip design for Turbo encoder module for in-vehicle system," in *Proc. IEEE Annual Computing and Communication Workshop and Conference (CCWC)*, Jan. 8-10, 2018, Las Vegas, NV, USA.
4. S. Zakhem and J. Liu, "Performance of eCall modem with turbo codes in AWGN and AMR," in *Proc. IEEE Vehicular Technology Conference*, Sept. 24-27, 2017, Toronto, ON, Canada.
5. Y. Li and J. Liu, "Fading statistics of voice channel for the European Union emergency call," in *Proc. IEEE Vehicular Technology Conference*, September 18-21, 2016, Montreal, Canada.
6. M. Nader and J. Liu, "Developing modulator and demodulator for the EU eCall In-Vehicle System in FPGAs," *Proc. IEEE International Conference on*

Computing, Networking and Communications (ICNC'16), Feb. 15-18, 2016, Las Vegas, NV, USA.

7. M. Nader and J. Liu, "Design and implementation of CRC module of eCall in-vehicle system on FPGA," Proc. SAE Commercial Vehicle Engineering Congress, Oct 6-8, 2015, Chicago, IL, USA.
8. M. Nader and J. Liu, "FPGA design and implementation of demodulator/decoder module for the EU eCall in-vehicle System," International Conference on Embedded Systems and Applications (ESA'15), July 27-30, 2015, Las Vegas, NV.
9. J. C. Brandenburg and J. Q. Liu, "Uncoded bit error rate of eCall modem through AMR codec and AWGN channel," 2013 IEEE Global Communications Conf., December 9-13, 2013, Atlanta, GA, USA.
10. J. Brandenburg and J. Liu, "Uncoded bit error rate of eCall modem through AMR codec and AWGN channel," IEEE 78th Vehicular Technology Conference, Sept. 2-5, 2013, Las Vegas, NE, USA.
11. S. Zakhem and J. Q. Liu, "An approach for evaluating the performance of a multiband receiver with one sigma-delta ADC and one AGC," Proc. IEEE Military Communications Conf., Oct. 18-21, 2009, Boston, MA.
12. S. Zakhem, J. Q. Liu, and A. Macdonald, "Demodulation performance of multiband UWB communication system with one RF and ADC module receiver," Proc. IEEE Military Communications Conf., Nov. 17-19, 2008, San Diego, CA.
13. J. C. Brandenburg and J. Q. Liu, "Signal detection in optical communications through the atmospheric turbulent channel," Proc. IEEE Global Communications Conf., Nov. 30-Dec. 4, 2008, New Orleans, LA.
14. Macdonald and J. Q. Liu, "The implications of 0.7 GHz to 3 GHz terrestrial band characterization on vehicular SDR design," SDR Technical Conf., Oct. 26-30, 2008, Washington D.C.
15. J. C. Brandenburg, J. Q. Liu, and M. P. Polis, "Effect of atmospheric turbulence on packet detection in optical communications," Proc. IEEE Military Communications Conf., Oct. 29-31, 2007, Orlando, FL.
16. J. Q. Liu, J. Li, and G. S. Mitchell, "Packet detection in on-board switching broadband satellite IP networks," Proc. IEEE Military Communications Conf., Oct. 23-25, 2006, Washington D.C., pp. 1-8.
17. X. Zeng, Q. Liu, and L. Hu, "A new family of codes and generalized Kasami sequences," Proc. of IEEE International Symposium on Information Theory, Jul. 9-14, 2006, Seattle, WA., pp. 907-9011.
18. X. Zeng, Q. Liu, L. Hu, and Y. Zhu, "A novel family of binary sequences with optimal correlations and large linear span," Proc. of IEEE International

- Conference on Communications, June 11-15, 2006, Istanbul, Turkey, pp. GS13-4.1-GS13.4.6.
19. Q. Liu, and Q. Lu, "Subcarrier PSK intensity modulation for optical wireless communications through atmospheric turbulence channel," Proc. of IEEE ICC, May 16-20, 2005, Seoul, Korea, pp. 1761-1765.
 20. Q. Wang, Q. Liu, and L. Hu, "Reconstruction of Kronecker sequences," Proc. of International Workshop on Coding and Cryptography, March 14-18, 2005, Bergen, Norway, pp. 137-146.
 21. X. Zeng, L. Hu, and Q. Liu, "A novel method for constructing almost perfect polyphase sequences," Proc. of International Workshop on Coding and Cryptography, March 14-18, 2005, Bergen, Norway, pp. 109-116.
 22. Q. Lu, and Q. Liu, "Performance analysis for optical wireless communication systems using subcarrier PSK intensity modulation through turbulent atmospheric channel," Proc. IEEE Global Communications Conf., Dallas, TX, Nov. 29-Dec. 3, 2004, pp. 1872-1875.
 23. Q. Lu, Q. Liu, and J. Li, "Performance of quasi-constant envelope phase modulation through nonlinear radio channels," Proc. IEEE Global Communications Conf., San Francisco, CA, Dec. 1-5, 2003, pp. 3958 - 3962.
 24. L. Liu, J. Tang, X. Xuan, L. Zhang, Q. Liu, Z. Zhang, Q. Huang, and P. Fu, "A novel heterodyne optical wireless communications system," Proc. IEEE Military Communications Conf., Boston, MA, October 13-16, 2003, pp. 304-308.
 25. Q. Liu and J. Li, "Quasi-constant envelope phase shift keying," The 2003 Canadian Workshop on Information Theory, Waterloo, Ontario, May 18-21, 2003, pp. 135-138.
 26. Q. Liu and J. Li, "Multiple access in broadband satellite networks," Proc. of IEEE International Conference on Communications (ICC 2003), Anchorage, Alaska, May 11-15, 2003, pp. 417-421.
 27. Q. Liu and J. Li, "Quasi-constant envelope OQPSK through nonlinear radio and AWGN channel," Proc. IEEE Military Communications Conf., Anaheim, California, October 2002, pp. 715-720.
 28. Q. Liu and J. Li, "Packet delivery through difficult wireless channel," Proc. IEEE Military Communications Conf., Anaheim, California, October 2002, pp. 530-535.
 29. Y. H. Jin and Q. Liu, "Throughput analysis of spread slotted Aloha systems using multiuser receivers," Proc. IEEE Military Communications Conf., Anaheim, California, October 2002, pp. 237-242.

30. Q. Liu, "Doppler measurement and compensation in mobile satellite communications systems," Proc. IEEE Military Communications Conf., Atlantic City, New Jersey, October 1999, pp. 316-320.
31. Q. Liu, "Frequency synchronization in global mobile satellite communications systems," Proc. of IEEE Wireless Communications and Networking Conference, New Orleans, Louisiana, September 1999, pp. 1198-1202.
32. Q. Liu, R. A. Scholtz, and Z. Zhang, "Complexity of Verdu optimum multiuser detection algorithm applied to random-access multichannel CDMA systems," Proc. IEEE Military Communications Conf., McLean, Virginia, September 1996, pp. 913-917.
33. Q. Liu, R. A. Scholtz, and Z. Zhang, "Channel utilization efficiency and throughput of random-access multichannel CDMA systems," Proc. IEEE Military Communications Conf., McLean, Virginia, September 1996, pp. 918-922.
34. Q. Liu, Z. Zhang, and R. A. Scholtz, "Analysis of the throughput of random-access multi-channel CDMA systems with multiuser detection," Proc. of the Fifth IEEE International Conference on Universal Personal Communications, Cambridge, Massachusetts, October 1996, pp. 881-885.
35. Q. Liu, E.-H. Yang, and Z. Zhang, "A fixed-slope universal sequential algorithm for lossy source coding based on gold-washing mechanism," Proc. of the 33rd Annual Allerton Conference on Communication, Control, and Computing, Monticello, Illinois, October 1995, pp. 466-474.
36. Yin, Q. Liu, L. Alvarez, and T. M. Shay, "Single transmission band Faraday anomalous dispersion optical filter," Proceedings of 1993 CLEO, Vol. 11, Baltimore, Maryland, 1993.