Department of Electrical Engineering & Computer Science
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Education

Ph.D. in Electrical Engineering/Communication Theory (2005)
BYU, Provo, Utah, USA

M.S. in Electrical Engineering/Communication Theory (1998)
BYU, Provo, Utah, USA

B.S. in Electrical Engineering/Signals and Systems (1997—*Magna Cum Laude*)
BYU, Provo, Utah, USA

A.S. in General Engineering (1995—*High Honors*)
Ricks College, Rexburg, Idaho, USA

Moses Lake Senior High School (1991)
Moses Lake, Washington, USA

Academic Appointments

Department Chair 2019–Present
Department of Electrical Engineering & Computer Science University of Kansas

University Distinguished Professor 2024–Present
Department of Electrical Engineering & Computer Science University of Kansas

Charles E. & Mary Jane Spahr Professor 2019–2024
Department of Electrical Engineering & Computer Science University of Kansas

Professor 2014–2019
Department of Electrical Engineering & Computer Science University of Kansas

Associate Director 2014–2019
Institute for Information Sciences (I2S) University of Kansas

Director 2012–Present
Communications & Signal Processing Lab I2S—University of Kansas

Associate Professor 2010–2014
Department of Electrical Engineering & Computer Science University of Kansas

Assistant Professor 2005–2010
Department of Electrical Engineering & Computer Science University of Kansas

Industry Experience

Electrical Engineer 1998–2004
Motorola Inc., DSP Group, Secure Design Center Schaumburg, Illinois, USA

Internships
AirTouch Cellular, Salt Lake City, Utah, USA (1996): System design and optimization.
Grant County Public Utility District, Ephrata, Washington, USA (1995): Civil/Mechanical/Electrical design.

Honors and Awards

- Outstanding Service Award, IEEE ComSoc Communication Theory Technical Committee, 2023, "for sustained contributions to the communication theory community"
- Best Graduate Student Paper Award (received by my advisee Jason Baxter), *2019 Int'l. Telemetering Conf.*
- Miller Scholar, 2010, 2013, 2017, 2018, KU School of Engineering
- Best Paper Award (with M. Rice and C. Josephson), *2017 International Telemetering Conference*
- Best Graduate Student Paper Award (received by my advisee Sumant Pathak), *2017 Int'l. Telemetering Conf.*
- Miller Professional Development Award (for distinguished service), 2016, KU School of Engineering
- Richard K. & Wilma S. Moore Dissertation Award (received by my advisee, Cenk Şahin), 2016, KU EECS
- Best Paper Award (with M. Rice), *2015 International Telemetering Conference*
- Richard K. & Wilma S. Moore Dissertation Award (received by my advisee, E. Hosseini), 2014, KU EECS
- Best Graduate Student Paper Award (received by my advisee Ehsan Hosseini), *2013 Int'l. Telemetering Conf.*
- Richard K. & Wilma S. Moore Thesis Award (received by my advisee, Cenk Şahin), 2013, KU EECS
- Miller Professional Development Award (for distinguished research), 2011, KU School of Engineering
- Best Graduate Student Paper Award (received by my advisee Gino Rea), *2009 Int'l. Telemetering Conf.*
- Best Paper Award (with J. Rohrer and J. P. G. Sterbenz), *2008 International Telemetering Conference*
- 2nd Place Graduate Student Paper Award (received by my advisee Prashanth Chandran), *2007 Int'l. Telemetering Conf.*
- Best Paper Award (with T. Nelson and M. Rice), *2005 International Telemetering Conference*
- Best Graduate Student Paper Award, *2003, 2004 International Telemetering Conference*
- BYU Electrical Engineering Department Research Fellowship, 1997–1998

Memberships in Professional Societies

- Senior Member, Institute of Electrical and Electronics Engineers (IEEE), 2006
- Member, IEEE Communications Society; IEEE Aerospace & Electronic Systems Society
- Member, American Society for Engineering Education (ASEE)

Professional Activities

Editorial Positions:

- Area Editor (one of 8), Commun. Theory & Systems I, *IEEE Transactions on Communications*, 2011–2018
- Editor (one of 80+), Modulation Theory, *IEEE Transactions on Communications*, 2007–2011

External Officer Positions:

- Member (elected position), Executive Committee, National Spectrum Consortium (NSC), 2022–23
- Inaugural Member, NSC *Women in Spectrum Scholarship* Committee, 2022–23
- Chair, IEEE ComSoc CTTC Commun. Theory Workshop (CTW) Steering Committee, 2023–Present
- Chair, IEEE ComSoc CTTC Nomination and Election Committee, 2022
- President, Central States ECE Department Heads Association (CSECEDHA), 2021/2022
- Member, IEEE AESS Glue Technologies for Space Systems Technical Panel, 2020–Present
- Member, IEEE ComSoc CTTC Nomination and Election Committee, 2020
- Member, IEEE ComSoc CTTC Awards Committee, 2019–2020
- Vice President, Central States ECE Department Heads Association (CSECEDHA), 2020/2021
- Secretary/Treasurer, Central States ECE Department Heads Association (CSECEDHA), 2019/2020
- Chair (elected position), IEEE ComSoc Communication Theory Technical Committee, 2017–2018

- Vice Chair, IEEE ComSoc Communication Theory Technical Committee, 2015–2016
- Secretary, IEEE ComSoc Communication Theory Technical Committee, 2011–2014
- Vice Chair, Kansas City Chapter, IEEE Communications Society, 2009–2010

Conference Organizing Committee Chair/Co-Chair:

- General Chair, *2024 International Telemetering Conference (ITC'24)*
- General Co-Chair (one of two), *2018 IEEE Communication Theory Workshop*
- Technical Program Chair, *2016 International Telemetering Conference (ITC'16)*
- Co-Chair (one of three co-chairs, 326 papers submitted), PHY/Comm. Theory Symp., *2025 IEEE WCNC*
- Co-Chair (one of three co-chairs, 155 papers submitted), Commun. Theory Symp., *2012 IEEE Globecom*
- Co-Chair (one of six equal co-chairs, 892 papers submitted), Wireless Commun. Symp., *2009 IEEE ICC*

Conference Organizing Committee Member:

- Technical Program Committee, Waveforms/Sig. Proc. Track, *2010, 2012, 2014, 2016, 2021 IEEE MILCOM*
- Technical Program Committee, *Latin-American Conference on Communications (LATINCOM), 2019, 2020*
- Technical Program Committee, Communication Theory Symposium, *2006, 2008, 2011–2018 IEEE ICC*
- Technical Program Committee, Commun. Theory Symp., *2010, 2011, 2013–2014, 2017–18 IEEE Globecom*
- Technical Program Committee, Signal Processing for Communications, *2013 IEEE/CIC ICCC*
- Technical Program Committee, Wireless Communications Symposium, *2008, 2009, 2013 IEEE Globecom*
- Publicity Co-Chair, *2010 IEEE Communication Theory Workshop*
- Session Organizer, Physical Layer Comm, *2010 International Waveform Diversity and Design Conference*
- Session Organizer, Communications Technologies and Techniques Track, *2009 IEEE MILCOM*
- Technical Program Committee, various tracks, *2007–2009 IEEE VTC Fall*

Journal Reviewer:

- *IEEE Transactions on Communications*
- *IEEE Journal on Selected Areas in Communications (JSAC)*
- *IEEE Transactions on Wireless Communications*
- *IEEE Transactions on Aerospace and Electronic Systems*
- *IEEE Transactions on Vehicular Technology*
- *IEEE Signal Processing Letters*
- *IEEE Communications Letters*
- *IEEE Wireless Communications Letters*
- *IEEE Transactions on Circuits and Systems I*
- *EURASIP Journal on Wireless Communications and Networking*
- *EURASIP Journal on Advances in Signal Processing*

Conference Reviewer:

- *2004–2018 IEEE Global Communications Conference (GLOBECOM)*
- *2006–2019 IEEE International Conference on Communications (ICC)*
- *2014, 2021 IEEE Military Communications Conference (MILCOM)*
- *2007, 2009, 2013 IEEE Wireless Networking Communications Conference (WCNC)*
- *2010 IEEE Personal, Indoor, and Mobile Radio Conference (PIRMC)*
- *2010 ASEE Midwest Section Conference*
- *2008 IEEE International Conference on Circuits and Systems for Communications (ICCSC)*

- *2008 IEEE Canadian Conference on Electrical and Computer Engineering (CCECE)*
- *2006, 2009 IEEE Vehicular Technology Conference (Spring)*
- *2005 IEEE Vehicular Technology Conference (Fall)*
- *2005 IEEE International Workshop on Signal Processing Advances in Wireless Communications*

Conference Session Chair:

- *2014 IEEE Military Communications Conference (MILCOM)*
- *2005, 2008, 2010, 2011 IEEE Global Communications Conference (GLOBECOM)*
- *2006, 2012 IEEE International Conference on Communications (ICC)*
- *2004 IEEE Wireless Communications and Networking Conference (WCNC)*

Other Activities:

- Advisor, Zeta Chapter of Theta Tau Fraternity, KU, 2008–2024
- President, IEEE Student Chapter, BYU, 1996–1997

Courses Taught

Semester	Course #	Course Title
Fall 2024	EECS 101	New Student Seminar
Spring 2024	EECS 862	Principles of Digital Communication Systems
Spring 2019	EECS 862	Principles of Digital Communication Systems
Fall 2018	EECS 769	Information Theory
Fall 2017	EECS 869	Error Control Coding
Spring 2017	EECS 862	Principles of Digital Communication Systems
Fall 2016	EECS 360	Signal and System Analysis
Spring 2016	EECS 862	Principles of Digital Communication Systems
Fall 2015	EECS 869	Error Control Coding
Spring 2015	EECS 862	Principles of Digital Communication Systems
Fall 2014	EECS 360	Signal and System Analysis
Spring 2014	EECS 862	Principles of Digital Communication Systems
Fall 2013	EECS 869	Error Control Coding
Spring 2013	EECS 664	Introduction to Digital Communication Systems
Spring 2013	EECS 862	Principles of Digital Communication Systems
Fall 2012	EECS 360	Signal and System Analysis
Spring 2012	EECS 360	Signal and System Analysis
Spring 2012	EECS 862	Principles of Digital Communication Systems
Spring 2011	EECS 360	Signal and System Analysis
Spring 2011	EECS 969	Information Theory
Fall 2010	EECS 360	Signal and System Analysis
Spring 2010	EECS 360	Signal and System Analysis
Fall 2009	EECS 869	Error Control Coding
Spring 2009	EECS 862	Principles of Digital Communication Systems
Spring 2009	EECS 360	Signal and System Analysis
Fall 2008	EECS 700	Implementation of Digital Commun. Syst.
Spring 2008	EECS 461	Probability and Statistics
Spring 2008	EECS 360	Signal and System Analysis
Fall 2007	EECS 360	Signal and System Analysis
Spring 2007	EECS 862	Principles of Digital Communication Systems
Spring 2007	EECS 461	Probability and Statistics
Fall 2006	EECS 360	Signal and System Analysis
Spring 2006	EECS 690	Implementation of Digital Commun. Syst.
Fall 2005	EECS 962	Advanced Modulation and Coding
		Total Number of Courses: 34

University Committee Assignments

Service to the Kansas Board of Regents:

- Chair, Computer Science Working Group, 2024 (designed pathway for statewide CS associate's degree)

Service to the KU EECS Department:

- Chair, EECS Untenured Faculty Committee, 2018–2019 (supervised annual review of 13 junior faculty)
- Chair, EECS Untenured Faculty Committee, 2017–2018 (supervised annual review of 10 junior faculty)
- Chair, EECS Faculty Search Committee, 2017–2018
- Chair, EECS Untenured Faculty Committee, 2016–2017 (supervised annual review of 7 junior faculty)
- Chair, EECS Faculty Search Committee, 2016–2017
- Chair, EECS Untenured Faculty Committee, 2015–2016 (supervised annual review of 8 junior faculty)
- Chair, EECS Untenured Faculty Committee, 2014–2015 (supervised annual review of 7 junior faculty)
- Member, EECS Faculty Search Committee, 2014–2015
- Chair, EECS Untenured Faculty Committee, 2013–2014 (supervised annual review of 4 junior faculty)
- Member, EECS Faculty Search Committee, 2013–2014
- Chair, EECS Untenured Faculty Committee, 2012–2013 (supervised annual review of 7 junior faculty)
- Chair, EECS Faculty Search Committee, 2012–2013
- Chair, EECS Faculty Search Committee, 2010–2011
- Member, EECS Student Awards Committee, 2011–2012
- Chair, EECS Student Awards Committee, 2010–2011
- Member, EECS Equipment Committee, 2008–2014
- Member, EECS Department Ph.D. Qualifying Exam Committee, 2008–Present
- Member, EECS Library Committee, 2005–2008

Service to the KU School of Engineering:

- Member, Five-Year-Review Committee for Mechanical Engineering Department Chair, 2025
- Member, Mechanical Engineering Department Chair Search Committee, 2019–2020
- Member, Chemical & Petroleum Engineering Department Chair Search Committee, 2019–2020
- Member, Five-Year-Review Committee for Engineering Dean, 2018
- Member, Sharp Professorship Selection Committee, 2013–2014
- Member, SoE Faculty Rights, Privileges and Responsibilities (FRPR) Committee, 2011–2014

Publications

Journal Papers

In Review:

[J32] E. Perrins, "Protograph-Based LDPC Codes for Continuous Phase Modulation," in review for *IEEE Transactions on Communications*, (revision submitted January 2025).

Published:

[J31] C. Şahin, P. McCormick, J. G. Metcalf, J. Jakabosky, S. D. Blunt, E. Perrins, and J. Owen, "CPM-based Tunable Phase-Attached Radar-Communications (PARC)," *IEEE Transactions on Radar Systems*, vol. 3, pp. 520–538, 2025.

[J30] C. Josephson, S. Giddens, E. Perrins, W. Harrison, and M. Rice, "Estimators for Space–Time Block-Coded ARTM CPM in Aeronautical Mobile Telemetry," *IEEE Transactions on Aerospace and Electronic Systems*, vol. 58, no. 4, pp. 3353–3369, August 2022.

[J29] C. Josephson, E. Perrins, and M. Rice, "Space–Time Block-Coded ARTM CPM for Aeronautical Mobile Telemetry," *IEEE Transactions on Aerospace and Electronic Systems*, vol. 58, no. 1, pp. 342–358, February 2022.

[J28] G. Xiong, T. Kim, D. J. Love, and E. Perrins, "Optimality Conditions of Performance-Guaranteed Power Minimization in MIMO Networks: A Distributed Algorithm and Its Feasibility," *IEEE Transactions on Signal Processing*, vol. 69, pp. 119–135, 2021.

[J27] E. Hosseini and E. Perrins, "Burst-Mode Synchronization for SOQPSK," *IEEE Transactions on Aerospace and Electronic Systems*, vol. 55, no. 6, pp. 2707–2718, December 2019.

[J26] Q. Duan, T. Kim, L. Dai, and E. Perrins, "Coherence Statistics of Structured Random Ensembles and Support Detection Bounds for OMP," *IEEE Signal Processing Letters*, vol. 26, no. 11, pp. 1638–1642, November 2019.

[J25] F. Mahmood, E. Perrins, and L. Liu, "Energy-Efficient Wireless Communications: From Energy Modeling to Performance Evaluation," *IEEE Transactions on Vehicular Technology*, vol. 68, no. 8, pp. 7643–7654, August 2019.

[J24] C. Şahin, L. Liu, E. Perrins, and L. Ma, "Delay-Sensitive Communications over IR-HARQ: Modulation, Coding Latency, and Reliability," *IEEE Journal on Selected Areas of Communications*, special issue on Ultra-Reliable Low-Latency Communications in Wireless Networks, vol. 37, no. 4, pp. 749–764, April 2019.

[J23] L. Shang and E. Perrins, "Optimal Memory Order of Memory Based LT Encoders for Finite Block-Length Codes over Binary Erasure Channels," *IEEE Transactions on Communications*, vol. 67, no. 2, pp. 875–889, February 2019.

[J22] W. Zhang, T. Kim, D. J. Love, and E. Perrins, "Leveraging the Restricted Isometry Property: Improved Low-Rank Subspace Decomposition for Hybrid Millimeter-Wave Systems," *IEEE Transactions on Communications*, vol. 66, no. 11, pp. 5814–5827, November 2018.

[J21] C. Şahin, L. Liu, and E. Perrins, "Coding Across Finite Transport Blocks in Modern Wireless Communication Systems," *IEEE Transactions on Communications*, vol. 62, no. 12, pp. 4184–4197, December 2014.

[J20] S. D. Blunt, M. Cook, J. Jakabosky, J. de Graaf, and E. Perrins, "Polyphase-Coded FM (PCFM) Radar Waveforms, Part I: Implementation," *IEEE Transactions on Aerospace and Electronic Systems*, vol. 50, no. 3, pp. 2218–2229, July 2014.

[J19] M. A. Tunç, E. Perrins, and L. Lampe, "Optimal LPTV-Aware Bit Loading in Broadband PLC," *IEEE Transactions on Communications*, vol. 61, no. 12, pp. 5152–5162, December 2013.

[J18] E. Hosseini and E. Perrins, "Timing, Carrier, and Frame Synchronization of Burst-Mode CPM," *IEEE Transactions on Communications*, vol. 61, no. 12, pp. 5125–5138, December 2013.

[J17] E. Perrins, "A Timing False Lock Detector for M-ary Partial-Response CPM," *IEEE Wireless Communications Letters*, vol. 2, no. 6, pp. 671–674, December 2013.

[J16] E. Perrins, "FEC Systems for Aeronautical Telemetry," *IEEE Transactions on Aerospace and Electronic Systems*, vol. 49, no. 4, pp. 2340–2352, October 2013.

[J15] E. Hosseini and E. Perrins, "The Cramér–Rao Bound for Training Sequence Design for Burst-Mode CPM," *IEEE Transactions on Communications*, vol. 61, no. 6, pp. 2396–2407, June 2013.

[J14] S. D. Blunt, J. G. Metcalf, C. R. Biggs, and E. Perrins, "Performance Characteristics and Metrics for Intra-Pulse Radar-Embedded Communications," *IEEE Journal on Selected Areas of Communications*, special issue on Advances in Military Networking and Communications, vol. 29, no. 10, pp. 2057–2066, December 2011.

[J13] J. Rohrer, A. Jabbar, E. Çetinkaya, E. Perrins, and J. P. G. Sterbenz, "Highly-Dynamic Cross-Layered Aeronautical Network Architecture," *IEEE Transactions on Aerospace and Electronic Systems*, vol. 47, no. 4, pp. 2742–2765, October 2011.

[J12] M. P. Wylie-Green, E. Perrins, and T. Svensson, "Introduction to CPM-SC-FDMA: A Novel Multiple-Access Power-Efficient Transmission Scheme," *IEEE Transactions on Communications*, vol. 59, no. 7, pp. 1904–1915, July 2011.

[J11] E. Perrins and B. Kumaraswamy, "Decision Feedback Detectors for SOQPSK," *IEEE Transactions on Communications*, vol. 57, no. 8, pp. 2359–2368, August 2009.

[J10] P. Chandran and E. Perrins, "Symbol Timing Recovery for CPM with Correlated Data Symbols," *IEEE Transactions on Communications*, vol. 57, no. 5, pp. 1265–1270, May 2009.

[J9] P. Chandran and E. Perrins, "Decision-Directed Symbol Timing Recovery for SOQPSK," *IEEE Transactions on Aerospace and Electronic Systems*, vol. 45, no. 2, pp. 781–789, April 2009.

[J8] E. Perrins and M. Rice, "PAM Representation of Ternary CPM," *IEEE Transactions on Communications*, vol. 56, no. 12, pp. 2020–2024, December 2008.

[J7] T. Nelson, E. Perrins, and M. Rice, "Near Optimal Common Detection Techniques for Shaped Offset QPSK and Feher's QPSK," *IEEE Transactions on Communications*, vol. 56, no. 5, pp. 724–735, May 2008.

[J6] E. Perrins, R. Schober, M. Rice, and M. K. Simon, "Multiple-Bit Differential Detection of Shaped-Offset QPSK," *IEEE Transactions on Communications*, vol. 55, no. 12, pp. 2328–2340, December 2007.

[J5] E. Perrins and M. Rice, "Reduced-Complexity Approach to Iterative Detection of Coded SOQPSK," *IEEE Transactions on Communications*, vol. 55, no. 7, pp. 1354–1362, July 2007.

[J4] E. Perrins and M. Rice, "Reduced Complexity Detectors for Multi-h CPM in Aeronautical Telemetry," *IEEE Transactions on Aerospace and Electronic Systems*, vol. 43, no. 1, pp. 286–300, January 2007.

[J3] E. Perrins and M. Rice, "PAM Decomposition of M-ary Multi-h CPM," *IEEE Transactions on Communications*, vol. 53, no. 12, pp. 2065–2075, December 2005.

[J2] E. Perrins and M. Rice, "A New Performance Bound for PAM-based CPM Detectors," *IEEE Transactions on Communications*, vol. 53, no. 10, pp. 1688–1696, October 2005.

[J1] M. Rice and E. Perrins, "A Simple Figure of Merit for Evaluating Interleaver Depth for the Land-Mobile Satellite Channel," *IEEE Transactions on Communications*, vol. 49, no. 8, pp. 1343–1353, August 2001.

Books and Book Chapters

[B3] E. Perrins, S. D. Blunt, P. M. McCormick and B. Ravenscroft, "Chapter 6: Spectrally Efficient Communications & Radar," in *Radar & Communication Spectrum Sharing*, pp. 177–210, eds. S. D. Blunt and E. Perrins, The Institution of Engineering and Technology (IET), 2018.

[B2] S. D. Blunt and E. Perrins, "Chapter 1: The Case for Spectrum Access," in *Radar & Communication Spectrum Sharing*, pp. 3–26, eds. S. D. Blunt and E. Perrins, The Institution of Engineering and Technology (IET), 2018.

[B1] S. D. Blunt and E. Perrins (Editors), *Radar & Communication Spectrum Sharing*, The Institution of Engineering and Technology (IET), 2018.

Peer-Reviewed Conference Papers

Published:

[C65] E. Perrins, "Spectrum-Efficient LDPC Codes for CPM," in *Proceedings of the 2024 IEEE Military Communications Conference (MILCOM'24)*, Washington, DC, November 2024.

[C64] R. Simeon, T. Kim, and E. Perrins, "Machine Learning With Gaussian Process Regression For Time-Varying Channel Estimation," in *Proceedings of the 2022 IEEE International Conference on Communication (ICC'22)*, Seoul, South Korea, May 2022.

[C63] L. Shang, M. Hashemi, T. Kim, and E. Perrins, "Delay-Efficient and Reliable Data Relaying in Ultra Dense Networks using Rateless Codes," in *Proceedings of the 2020 IEEE Global Communications Conference (GLOBECOM'20)*, Taipei, Taiwan, December 2020.

[C62] S. Mosleh, Y. Ma, J. Coder, E. Perrins, and L. Liu, "Enhancing LAA Co-existence Using MIMO Under Imperfect Sensing," in *Proceedings of the 2019 IEEE Globecom Workshop on Advancements in Spectrum Sharing*, Waikoloa, HI, December 2019.

[C61] C. Josephson, E. Perrins, and M. Rice, "Space-Time Coded ARTM CPM for Aeronautical Telemetry," in *Proceedings of the 2019 IEEE Military Communications Conference (MILCOM'19)*, Norfolk, VA, November 2019.

[C60] B. Ravenscroft, P. McCormick, S. D. Blunt, E. Perrins, C. Şahin, and J. G. Metcalf, "Experimental Assessment of Tandem-Hopped Radar and Communications (THoRaCs)," in *Proceedings of the 2019 International Radar Conference*, Toulon, France, September 2019.

[C59] S. Mosleh, H. Almosa, E. Perrins, and L. Liu, "Downlink Resource Allocation in Cell-Free Massive MIMO Systems," in *Proceedings of the 2019 IEEE International Conference on Computing, Networking, and Communication (ICNC'19)*, Honolulu, HI, February 2019.

[C58] L. Shang and E. Perrins, "Memory Based LT Encoders over BIAWGN Channels," in *Proceedings of the 2018 IEEE Global Communications Conference (GLOBECOM'18)*, Abu Dhabi, UAE, December 2018.

[C57] F. Mahmood, E. Perrins, and L. Liu, "Energy Consumption vs. Bit Rate Analysis Toward Massive MIMO System," in *Proceedings of the 2018 IEEE International Smart Cities Conference, 5G-Security and Privacy Workshop*, Kansas City, MO, September 2018.

[C56] F. Arabian, W. Harrison, C. Josephson, E. Perrins, and M. Rice, "On Peak-to-Average Power Ratio Optimization for Coded APSK," in *Proceedings of the 2018 International Symposium on Wireless Communication Systems (ISWCS'18)*, Lisbon, Portugal, August 2018.

[C55] H. Almosa, S. Mosleh, E. Perrins, and L. Liu, "Downlink Channel Estimation with Limited Feedback for FDD Multi-User Massive MIMO with Spatial Channel Correlation," in *Proceedings of the 2018 IEEE International Conference on Communication (ICC'18)*, Kansas City, MO, May 2018.

[C54] B. Ravenscroft, P. McCormick, S. D. Blunt, E. Perrins, and J. G. Metcalf, "A Power-Efficient Formulation of Tandem-Hopped Radar & Communications," in *Proceedings of the 2018 IEEE Radar Conference*, Oklahoma City, OK, April 2018.

[C53] F. Mahmood, E. Perrins, and L. Liu, "Modeling and Analysis of Power Amplifier Dissipation Energy in Wireless Handset Transceivers," in *Proceedings of the 2018 IEEE International Conference on Computing, Networking, and Communication (ICNC'18)*, Maui, HI, March 2018.

[C52] M. Rice and E. Perrins, "A Comparison of Frequency-Domain Equalization Techniques in Aeronautical Telemetry," in *Proceedings of the 2017 IEEE Latin-American Conference on Communications (LATINCOM'17)*, Guatemala City, Guatemala, November 2017.

[C51] F. Mahmood, E. Perrins, and L. Liu, "Modeling and Analysis of Energy Consumption for MIMO Systems," in *Proceedings of the 2017 IEEE Wireless Communication and Networking Conference (WCNC'17)*, San Francisco, CA, March 2017.

[C50] L. Shang and E. Perrins, "Second-Order Memory Based LT Encoder Design," in *Proceedings of the 2016 IEEE Globecom Workshop on Ultra-Reliable and Low-Latency Commun. in Wireless Networks (URLLC)*, Washington, DC, December 2016.

[C49] C. Şahin, L. Liu, and E. Perrins, "On the Queueing Performance of HARQ Systems with Coding over Finite Transport Blocks," in *Proceedings of the 2015 IEEE Globecom Workshop on Ultra-Low Latency and Ultra-High Reliability in Wireless Communications (ULTRA2)*, San Diego, CA, December 2015.

[C48] F. Mahmood, E. Perrins, and L. Liu, "Modeling and Analysis of Energy Consumption for RF Transceivers in Wireless Cellular Systems," in *Proceedings of the 2015 IEEE Global Communications Conference (GLOBECOM'15)*, San Diego, CA, December 2015.

[C47] C. Şahin and E. Perrins, "On the Symmetric Information Rate of CPM in the Finite Blocklength Regime," in *Proceedings of the 2015 IEEE Military Communications Conference (MILCOM'15)*, Tampa, FL, October 2015, pp. 815–819.

[C46] C. Şahin, L. Liu, and E. Perrins, "On the Finite Blocklength Performance of HARQ in Modern Wireless Systems," in *Proceedings of the 2014 IEEE Global Communications Conference (GLOBECOM'14)*, Austin, TX, December 2014, pp. 3513–3519.

[C45] M. Rice and E. Perrins, "On Frequency Offset Estimation Using the iNET Preamble in Frequency Selective Fading Channels," in *Proceedings of the 2014 IEEE Military Communications Conference (MILCOM'14)*, Baltimore, MD, October 2014, pp. 706–711.

[C44] M. Rice, A. McMurdie, and E. Perrins, "A Low-Complexity Preamble Detector for iNET-Formatted SOQPSK," in *Proceedings of the 2014 IEEE Military Communications Conference (MILCOM'14)*, Baltimore, MD, October 2014, pp. 718–723.

[C43] C. Şahin, L. Liu, and E. Perrins, "Early Decoding for Transmission over Finite Transport Blocks," in *Proceedings of the 2014 IEEE International Symposium on Information Theory (ISIT'14)*, Honolulu, HI, June/July, 2014, pp. 1558–1562.

[C42] E. Hosseini and E. Perrins, "Maximum Likelihood Synchronization of Burst-Mode CPM," in *Proceedings of the 2013 IEEE Global Communications Conference (GLOBECOM'13)*, Atlanta, GA, December 2013, pp. 1802–1807.

[C41] C. Şahin, L. Liu, and E. Perrins, "Channel Coding Over Finite Transport Blocks in Modern Wireless Systems," in *Proceedings of the 2013 IEEE Global Communications Conference (GLOBECOM'13)*, Atlanta, GA, December 2013, pp. 3667–3672.

[C40] E. Hosseini and E. Perrins, "On Burst-Mode Synchronization of SOQPSK," in *Proceedings of the 2013 IEEE Military Communications Conference (MILCOM'13)*, San Diego, CA, November 2013, pp. 429–435.

[C39] M. A. Tunç and E. Perrins, "Pilot Based Channel Estimation and Transform Domain Analysis in Broadband PLC for Smart Grid," in *Proceedings of the 2013 IEEE International Conference on Smart Grid Communications*, Vancouver, Canada, October 2013, pp. 283–288.

[C38] C. Şahin, L. Liu, and E. Perrins, "On Coding Over Finite 'Packets' in Wireless Communication Systems," in *Proceedings of the 2013 IEEE International Conference on Communications (ICC'13)*, Budapest, Hungary, June 2013, pp. 5257–5262.

[C37] E. Hosseini and E. Perrins, "Training Sequence Design for Data-Aided Synchronization of Burst-Mode CPM," in *Proceedings of the 2012 IEEE Global Communications Conference (GLOBECOM'12)*, Anaheim, CA, December 2012, pp. 2234–2239.

[C36] E. Hosseini and E. Perrins, "The Cramér–Rao Bound for Data-Aided Synchronization of SOQPSK," in *Proceedings of the 2012 IEEE Military Communications Conference (MILCOM'12)*, Orlando, FL, October/November 2012.

[C35] M. A. Tunç, E. Perrins, and L. Lampe, "Reduced Complexity LPTV-Aware Bit Loading for Channel Adaptation in Broadband PLC," in *Proceedings of the 2012 IEEE International Symposium on Power Line Communications and its Applications*, Beijing, China, March 2012, pp. 206–211.

[C34] C. Şahin and E. Perrins, "The Capacity of SOQPSK-TG," in *Proceedings of the 2011 IEEE Military Communications Conference (MILCOM'11)*, Baltimore, MD, November 2011, pp. 555–560.

[C33] E. Hosseini and E. Perrins, "FPGA Implementation of a Coherent SOQPSK-TG Demodulator," in *Proceedings of the 2011 IEEE Military Communications Conference (MILCOM'11)*, Baltimore, MD, November 2011, pp. 471–476.

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Current Graduate Students

Ph.D. in progress

- Qua Nguyen (Expected 2025)
- Rich Simeon (Expected 2026)

Postdoctoral Fellows

- Dr. Luyao Shang, 2019–2020.
- Dr. Cenk Şahin, 2015–2016.
- Dr. Ehsan Hosseini, 2013–2014.

Graduate Students Supervised [These documents are available at http://www.ittc.ku.edu/research/thesis/]

Ph.D. Dissertations

[PhD7] Luyao Shang, "Memory Based LT Encoders for Delay Sensitive Communications," Ph.D. Dissertation, *Department of Electrical Engineering and Computer Science, University of Kansas*, December 2019—*With Honors* (defended December 17, 2019). Currently an engineer at Qualcomm, San Diego, California.

[PhD6] Hayder Almosa, "Downlink Achievable Rate Analysis for FDD Massive MIMO Systems," Ph.D. Dissertation, *Department of Electrical Engineering and Computer Science, University of Kansas*, May 2019 (defended May 13, 2019). Currently a professor in the Department of Electrical Engineering, University of Kufa, Iraq.

[PhD5] Farhad Mahmood, "Modeling and Analysis of Energy Efficiency in Wireless Handset Transceiver Systems," Ph.D. Dissertation, *Department of Electrical Engineering and Computer Science, University of Kansas*, May 2019 (defended April 16, 2019). Currently a professor in the Department of Electrical Engineering, University of Mosul, Iraq.

[PhD4] Somayeh (Susanna) Mosleh, "Multi-user MIMO Networks: Resource Allocation and Interference Mitigation," Ph.D. Dissertation, *Department of Electrical Engineering and Computer Science, University of Kansas*, December 2018 (defended December 19, 2018). Currently a post-doctoral researcher in the Shared Spectrum Metrology Group, Communications Technology Laboratory (CTL), National Institute of Standards and Technology (NIST), Boulder, Colorado, USA.

[PhD3] Cenk Şahin, "On Fundamental Performance Limits of Delay-Sensitive Wireless Communications," Ph.D. Dissertation, *Department of Electrical Engineering and Computer Science, University of Kansas*, December 2015—*With Honors* (defended November 20, 2015). *Recipient of the 2016 Richard K. & Wilma S. Moore Dissertation Award, Department of Electrical Engineering and Computer Science, University of Kansas*. Currently at AFRL in Dayton, Ohio.

[PhD2] Muharrem Ali Tunç, "LPTV-aware Bit Loading and Channel Estimation in Broadband PLC for Smart Grid," Ph.D. Dissertation, *Department of Electrical Engineering and Computer Science, University of Kansas*, May 2014 (defended April 21, 2014). Currently an engineer at Schlumberger, Houston, Texas.

[PhD1] Ehsan Hosseini, "Synchronization Techniques for Burst-Mode Continuous Phase Modulation," Ph.D. Dissertation, *Department of Electrical Engineering and Computer Science, University of Kansas*, December 2013—*With Honors* (defended August 29, 2013). *Recipient of the 2014 Richard K. & Wilma S. Moore Dissertation Award, Department of Electrical Engineering and Computer Science, University of Kansas*. Currently an engineer at Qualcomm, San Diego, California.

M.S. Theses

[MS14] Bernaldo Luc, "FPGA Implementation of an FFT-Based Carrier Frequency Estimation Algorithm," Master's Thesis, *Department of Electrical Engineering and Computer Science, University of Kansas*, December 2022 (defended December 9, 2022).

[MS13] Christian Daniel, "Dynamic Metasurface Grouping for IRS Optimization in Massive MIMO Communications," Master's Thesis, *Department of Electrical Engineering and Computer Science, University of Kansas*, May 2022 (defended January 6, 2022). Currently a Ph.D. student at the University of Kansas.

[MS12] Jason Baxter, "An FPGA Implementation of Carrier Phase and Symbol Timing Synchronization for 16-APSK," Master's Thesis, *Department of Electrical Engineering and Computer Science, University of Kansas*, August 2020 (defended August 19, 2020). Currently an engineer at L-3 Communications, Dallas, Texas.

[MS11] Sumant Pathak, "A Performance and Channel Spacing Analysis for Coded-APSK," Master's Thesis, *Department of Electrical Engineering and Computer Science, University of Kansas*, August 2018 (defended July 5, 2018). Currently a Ph.D. student at KU.

[MS10] Cenk Şahin, "Shaped Offset QPSK Capacity," Master's Thesis, *Department of Electrical Engineering and Computer Science, University of Kansas*, August 2012—*With Honors* (defended May 22, 2012). *Recipient of the 2013 Richard K. & Wilma S. Moore Thesis Award, Department of Electrical Engineering and Computer Science, University of Kansas*. Currently at AFRL in Dayton, Ohio.

[MS9] Raina Rahman, "CPM-SC-IFDMA—A Power Efficient Transmission Scheme for Uplink LTE," Master's Thesis, *Department of Electrical Engineering and Computer Science, University of Kansas*, May 2011—*With Honors* (defended April 7, 2011). Currently an engineer at Hughes Network Systems, MD.

[MS8] Gino Rea, "A Hardware Implementation of SOQPSK-TG Demodulator for FEC Applications," Master's Thesis, *Department of Electrical Engineering and Computer Science, University of Kansas*, May 2011 (defended March 31, 2011). Currently a Digital Design Engineer at Celestial, San Jose, CA.

[MS7] Brett Werling, "A Hardware Implementation of the Soft Output Viterbi Algorithm for Serially Concatenated Convolutional Codes," Master's Thesis, *Department of Electrical Engineering and Computer Science, University of Kansas*, August 2010—*With Honors* (defended July 7, 2010). Currently an engineer at Garmin, Olathe, Kansas.

[MS6] Sayak Bose, "Reduced-Complexity Joint Timing, Phase and Frequency Recovery for PAM Based CPM Receivers," Master's Thesis, *Department of Electrical Engineering and Computer Science, University of Kansas*, December 2009 (defended November 12, 2009). Currently a Research Engineer at Collision Communications, Inc, MA.

[MS5] Kanagaraj Damodaran, "Serially Concatenated Coded Continuous Phase Modulation for Aeronautical Telemetry," Master's Thesis, *Department of Electrical Engineering and Computer Science, University of Kansas*, December 2008—*With Honors* (defended August 14, 2008). Currently an engineer at Qualcomm, San Diego, California.

[MS4] Balachandra Kumaraswamy, "Applications of the PAM Representation of CPM," Master's Thesis, *Department of Electrical Engineering and Computer Science, University of Kansas*, May 2008 (defended February 26, 2008).

[MS3] Prashanth Chandran, "Symbol Timing Recovery for SOQPSK," Master's Thesis, *Department of Electrical Engineering and Computer Science, University of Kansas*, May 2008 (defended January 25, 2008). Currently a Network Engineer with Masimo Corporation, Irvine, California.

[MS2] Afzal Syed, "Comparison of Noncoherent Detectors for SOQPSK and GMSK in Phase Noise Channels," Master's Thesis, *Department of Electrical Engineering and Computer Science, University of Kansas*, December 2007 (defended August 17, 2007). Currently a Software Developer at SAP, CA.

[MS1] Dileep Kumaraswamy, "Simplified Detection Techniques for Serially Concatenated Coded Continuous Phase Modulations," Master's Thesis, *Department of Electrical Engineering and Computer Science, University of Kansas*, August 2007 (defended July 6, 2007).

Other Research Supervision

- Ph.D. Dissertation Defense Committees: Thomas Kramer, Sharmila Raisa, Lumumba (Lu) Harnett, Tong Xu, Kishanram Kaje (defended December 11, 2020), Shadi Pir Hosseinloo (defended December 11, 2019), Mustafa Bahaulddin (defended December 10, 2019), Govind Vedala (defended August 22, 2019), Mohanad Al-Ibadi (defended May 10, 2019), Ghaith Shabsigh (defended December 19, 2016), Mahmood Hameed (defended January 14, 2016), Zaid Hayyeh (defended March 31, 2014), Seungly Oh (KU Math Department, defended July 18, 2012), Yuanyuan Zhang (defended January 25, 2012), Suyang Ju (defended November 18, 2011), Qi Chen (defended April 22, 2009).
- M.S. Thesis Defense Committees: Chanaka Samarathungage, Krishna Karidi, Brandon Ravenscroft, Kelly Rodriguez, Guojun Xiong, (defended August 24, 2020), Yan Li, (defended December 3, 2015), Erik Hornberger, (defended July 15, 2015), Daniel Muchiri (defended December 16, 2014), Yi Zhu (defended August 5, 2014), Justin Metcalf (defended December 9, 2011), Tristan Bull (defended April 22, 2011), Arvind Madhavan (defended May 19, 2010), Zaid Hayyeh (defended May 7, 2010), Matthew Cook (defended April 20, 2010), Casey Biggs (defended July 1, 2009), Supreetha Aroor (defended August 22, 2008), Srikanth Pagadarai (defended August 23, 2007), Padmaja Yatham (defended August 13, 2007), Jordan Guffey (defended April 10, 2007).
- M.S. Project Committee (Chair only): Akshatha Rao (defended June 29, 2015), Raksha Ganesh (defended June 12, 2015).
- Undergraduate Research Supervision: Andrew Dority, externally funded APSK project, 2023–24 academic year; Jason Baxter, externally funded FEC project, 2017–18 academic year; Hou Wenshuai, externally funded FEC project, Summer 2010; Jacob Olson, externally funded codeblock synchronization project, Fall 2008; Matthew Cook, externally funded VHDL project, Summer 2007.