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ELECTRICAL AND COMPUTER ENGINEERING DEPARTMENT
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EDUCATION

1991 – 1996, **Stanford University**, Stanford, CA

Ph.D. in Electrical Engineering

Trellis Code Design for Correlated Fading and Achievable Rates for Tomlinson-Harashima Precoding.

1984 – 1989, **Massachusetts Institute of Technology**, Cambridge, MA

S. M. and S. B. in Electrical Engineering

Thesis: *Adaptive Equalization for Modem Constellation Identification.*

EMPLOYMENT

1996 – present, **University of California, Los Angeles**, Los Angeles, CA

- **Associate Dean** of Academic and Student Affairs for the Henry Samueli School of Engineering and Applied Science since July 2007
- **Acting Director** HSSEAS MS Online Program, July 2007 – July 2008 (inaugural year of operation admitting students and offering classes)
- **Professor** of Electrical and Computer Engineering since July 2006
- **Associate Professor** of Electrical Engineering 2002-2006
- **Assistant Professor** of Electrical Engineering 1996-2001

1991 – 1996, **Stanford University**, Stanford, CA, Research Assistant and Teaching Assistant.

1986 – 1994, **AT&T Bell Laboratories**, Holmdel, NJ

- Member of Technical Staff summer 1994
- Member of Technical Staff 1989-1991
- Intern 1986-1989, two summer internships and a culminating 6-month internship.

AWARDS

- Fellow of the Institute of Electrical and Electronics Engineers (IEEE)
- Qualcomm Faculty Award
- Selected for the National Academy of Engineering Frontiers of Engineering Program
- TRW Excellence in Teaching Award (UCLA School of Engineering)
- Okawa Foundation Award for Excellence in Telecommunications Research
- National Science Foundation CAREER Award
- AT&T Foundation Ph.D. Fellow.
- Tau Beta Pi MIT chapter president 1987-1988, Eta Kappa Nu, Sigma Xi, National Merit Scholar.

ACADEMIC SERVICE

- **Associate Dean, Leading Office of Academic and Student Affairs**, including admissions and counseling for all engineering majors, July 2007 to present
- **Chair, Samueli COVID-19 Task Force** 2020-2021
- **Member, UCLA COVID-19 Academic Continuity Task Force** 2020-2021
- **Member, HSSEAS SEASnet review committee**, November 2018 to 2020
- **Chair, Summer Sessions Faculty Advisory Committee**, Sept. 2018 to present.
- **Member, Advisory Committee on Immigration Policy**, 2017 to 2021
- **HSSEAS Strategic Planning Committee for Education**, Jan. 2017-June 2018
- **Member, Center for the Integration of Research, Teaching, and Learning at UCLA, Steering Committee**, January 2017-present
- **Member, Classroom Advisory Committee**, November 2016 to present
- **Chair, UCLA Special Programs Task Force**, Feb. 2013- Sept. 2014
- **Member, UCLA Enrollment Planning Committee** October 2011-present
- **Member, UCLA Undergraduate Non-Resident Implementation Task Force** August 2010 – July 2011
- **Member of UCLA Undergraduate Council** July 2006- July 2008.
- **Member of the Committee on Undergraduate Admissions and Relations with Schools** July 2006- July 2008
- **Electrical Engineering Department Vice Chair for Undergraduate Affairs** July 2005 – July 2007. Successfully managed the 2006 ABET Accreditation visit for EE.
- **Member of the School of Engineering Faculty Executive Committee** 2003-2006.

- **Chair of the Electrical Engineering Department Courses and Curriculum Committee** 2003-2005.
- **Chair of the Communications Major Field** in the Electrical Engineering Department at the University of California, Los Angeles, 1999-2004.
- **Chair of the Cubicle Allocation Committee** for the Electrical Engineering Department at UCLA, managing the allocation of 150 student cubicles among approximately 20 professors who share this space, 1998-2005.
- **Chair of 2002 Annual Research Review** (annual departmental research symposium). Also Vice Chair of 2001 Annual Research Review.
- **Member of 2001 UCLA EE Annual Report Committee.**
- **Elected Member of the Legislative Assembly** of the UCLA Academic Senate, 1997-2001.
- **Chair for quarterly Seminar Series** in Signals and Systems. Established this seminar series in spring 1997. Recruit a professor each quarter to organize speakers for the series. Personally organized speakers for four of these quarters.
- **Local Exhibits Chair**, 1997 UCLA EE Research Symposium

GRADUATED PH.D. STUDENTS

1. Christina Fragouli, Ph.D. Sept. 2000, Dissertation: *Turbo Code Design for High Spectral Efficiency*, 2000-2001 UCLA EE Dept. Best Ph.D. Student 2001. **Professor at UCLA.**
2. Christos Kominakis, Ph.D. Dec. 2000, Dissertation: *Joint Channel Estimation and Decoding for Wireless Channels*, Senior Director of Technology, Qualcomm.
3. Xueting Liu, Ph.D. Dec. 2000, Dissertation: *Trellis Code Design for Periodic Erasures and Adaptive Coded, Modulation Schemes for Time-Varying Channels*, Apple Inc., CA
4. Wei Shi, Ph.D. Dec. 2000, Dissertation: *New Results in Wireless Communications*, Qualcomm
5. Tom Sun, Ph.D. Dec. 2002, Dissertation: *Error Protection Techniques for Source and Channel Coding*, Qualcomm, San Diego, CA
6. Chris Jones, Ph.D. Dec. 2003, Dissertation: *Constructions, applications, and implementations of low-density parity-check codes*, Co-founder Chilicon Power, Los Angeles, CA
7. Adina Matache, Ph. D. June 2004, Dissertation: *Coding Techniques for High Data Rates in Wireless Multiple-Input Multiple-Output Communications*, Aerospace Corp.
8. Cenk Kose, Ph.D. Dec. 2004, Dissertation: *Universal trellis codes and concatenated trellis-coded modulations for the compound linear vector Gaussian channel*
9. Aditya Ramamoorthy, June 2005, *Generalized ACE Codes and Theoretic Results in Network Coding*, **Associate Professor at Iowa State University**
10. Jun Shi, Ph.D. Sept. 2005, Dissertation: *Universal Channel Codes and Trellis State-Diagram Reduction*, Senior Principle Scientist at the Broadcom Corporation
11. Wen-Yen Weng, Ph.D. March 2007, Dissertation: *Universal Serially Concatenated Trellis Coded Modulations and Rate-Compatible High-Rate LDPC Codes*

12. Esteban Valles (Primary Advisor John Villaseñor), Ph.D. March 2007, Dissertation: *Timing Recovery Using Soft Information Feedback and Efficiency of Array Codes*, Aerospace Corporation.
13. Andres Vila Casado, Ph.D. December 2007, Dissertation: *Improving LDPC Decoders: Informed Dynamic Message-Passing Scheduling and Multiple-Rate Code Design*
14. Herwin Chan (Primary Advisor Ingrid Verbauwhede), Ph.D. December 2007, Dissertation: *Accelerating Applications Through Cross-Layer Co-Design*
15. Miguel Griot, Ph.D. Sept. 2008, Dissertation: *Nonlinear Codes for Multiple Access to Binary Channels and Higher-Order Modulations over the AWGN Channel*, Qualcomm Corporation.
16. Bike Xie, Ph.D. June 2010, Dissertation: *Encoding for Degraded Broadcast Channels and Resource Allocation for content Distribution in Peer-To-Peer Networks*, Senior Staff Engineer-Manager at Marvell Corp
17. Thomas Courtade, Ph.D. June 2012, Dissertation: *Two Problems in Multiterminal Information Theory*, **Assistant Professor at UC Berkeley.**
18. Jiadong Wang, Ph.D. June 2012, Dissertation: *Absorbing Set Analysis of LDPC Codes and Read-Channel Quantization in Flash Memory*, Senior Engineer at Qualcomm.
19. Tsung-Yi Chen, Ph. D. September 2013, Dissertation: *Achieving Low-Latency Communication with Feedback: from Information Theory to Practical System Design*, SpiderCloud Wireless.
20. Adam Williamson, Ph. D June 2014, Dissertation: *Reliability-output Decoding and Low-latency Variable-Length Coding Schemes for Communication with Feedback*, Northrop Grumman Corp.
21. Kasra Vakilinia, Ph. D June 2014, Dissertation: *Coding Schemes to Approach Capacity in Short Blocklength with Feedback and LDPC Coding for Flash Memory*, Huawei Technologies.
22. Haobo Wang, Ph. D Decembner, 2018, Dissertation: *Optimizing Flash-Based Storage Systems*, SK Hynix.
23. Sudarsan V.S. Ranganathan, Ph. D December, 2018, Dissertation:, *Advances in Protograph-Based LDPC Codes and a Rate Allocation Problem*, Post Doctoral Scholar and Lecturer at the Massachusetts Institute of Technology.

RESEARCH FUNDING SOURCES 1996 - PRESENT

- Mercury Systems
- Qualcomm
- Zeta Corporation
- Physical Optics Corporation
- SA Photonics
- Micron Semiconductor
- National Science Foundation
- Western Digital Corporation
- INPHI Corporation
- Rockwell Collins
- The Broadcom Foundation

- Boeing
- Texas Instruments
- Conexant
- ST Microelectronics
- Northrop Grumman
- Skyworks
- Xetron Corporation
- Pacific Bell
- Honeywell

COURSES TAUGHT 1996 - PRESENT

- EE131A Probability
- EE132A Communications Systems
- EE231A Information Theory
- EE231E Channel Coding
- EE232A Stochastic Processes

PROFESSIONAL ACTIVITIES

- **Associate Editor**, IEEE Transactions on Information Theory, March 2020-present
- **Presenter** of half-day tutorial on Incremental Redundancy at Globecom 2019, December 2019.
- **Panel member** for National Science Foundation Proposal Review Panels.
- **Invited Speaker** half-day tutorial on Incremental Redundancy at the 2018 European School of Information Theory, Bertinoro, Italy, May 2018
- **Invited Speaker** at IEEE UCSD ITA Workshop, annually 2006-present
- **Reviewer** for various IEEE conferences and journals. Regularly reviewing submissions to Trans. on Information Theory, Trans. on Communications, Journal on Selected Areas of Communications, Communications Letters, Globecom, and International Conference on Communications, 1994-present.
- **Technical Program Committee Member**, numerous times for *Globecom*, *ICC*, and *ISIT*.
- **Organizer and lecturer** for UCLA Extension course on Error Control Coding (2000-2006). Received an award for being among the top 10% of UCLA extension lecturers.
- **Associate Editor**, *IEEE Transactions on Communications* 1999-2005.

- **Technical Program Chair**, *Communication Theory Symposium at Globecom 2002*.
- **Organizer and Session Chair** for Special Session on Concatenated codes and iterative decoding at the *2001 Asilomar Conf. on Signals, Systems, and Computers*.
- **Session Organizer and Chair** for Communication Theory Symposium at the 2001 International Conference on Communications.
- **Organizer and Session Chair** for Special Session on Communication over Time Varying Channels at the *1999 Asilomar Conf. on Signals, Systems, and Computers*.
- **Invited speaker** 1998 and 2000 *IEEE Communication Theory Workshops*.
- **Invited speaker** Office of Naval Research, Naval Research Labs 1998 Turbo Codes Workshop.
- **Invited speaker** 1998 DARPA GloMo workshop on emerging technologies for hand-held wireless devices in military communication.
- **Instructor** for 1997 UCLA Extension course on wireless multimedia communications.
- **Invited speaker** at various universities and companies including Stanford, UC-Berkeley, UC-San Diego, Ohio State University, University of Arizona, Johns Hopkins University, Cornell, Telia Research, Lulea, Sweden, Lucent, Boeing, Xetron, Texas Instruments, Conexant, and Microsoft Research.

JOURNAL PUBLICATIONS (see all publications at <http://www.seas.ucla.edu/csl>)

1. H. Yang, E. Liang, M. Pan and R. D. Wesel, "CRC-Aided List Decoding of Convolutional Codes in the Short Blocklength Regime," in *IEEE Transactions on Information Theory*, DOI: 10.1109/TIT.2022.3150717.
2. L. Wang, C. Terrill, M. Stark, Z. Li, S. Chen, C. Hulse, C. Kuo, R. Wesel, G. Bauch, R. Pitchumani, "Reconstruction-Computation-Quantization (RCQ): A Paradigm for Low Bit Width LDPC Decoding," *IEEE Transactions on Communications*, 2022 Early Access Article, DOI: 10.1109/TCOMM.2022.3149913.
3. N. Farsad, W. Chuang, A. Goldsmith, C. Komninakis, M. Médard, C. Rose, L. Vandenberghe, E. E. Wesel, R. D. Wesel, "Capacities and Optimal Input Distributions for Particle-Intensity Channels," *IEEE Transactions on Molecular, Biological and Multi-Scale Communications*. December 2020, vol. 6, no. 3, pp. 220-232, DOI: [10.1109/TMBMC.2020.3035371](https://doi.org/10.1109/TMBMC.2020.3035371).
4. T. Wiegart, F. D. Ros, M. P. Yankov, F. R. Steiner, S. Gaiarin, R. D. Wesel, "Probabilistically Shaped 4-PAM for Short-Reach IM/DD Links with a Peak Power Constraint", *Journal of Lightwave Technology*, October 2020 (Early Access) . DOI: [10.1109/JLT.2020.3029371](https://doi.org/10.1109/JLT.2020.3029371).
5. M. Stark, L. Wang, G. Bauch, R. D. Wesel, "Decoding Rate-Compatible 5G-LDPC Codes with Coarse Quantization Using the Information Bottleneck Method", *IEEE Open Journal of the Communications Society*, May 2020, vol. 1, pp. 646-660, DOI: [10.1109/OJCOMS.2020.2994048](https://doi.org/10.1109/OJCOMS.2020.2994048).

6. H. Wang, S. V. S. Ranganathan, R. D. Wesel, "Variable-Length Coding with Shared Incremental Redundancy: Design Methods and Examples," *IEEE Transactions on Communications*, June 2019, vol. 67, no. 9, pp. 5981-5995. **DOI:** [10.1109/TCOMM.2019.2919626](https://doi.org/10.1109/TCOMM.2019.2919626).
7. S. V. S. Ranganathan, D. Divsalar, R. D. Wesel, "Quasi-Cyclic Protograph-Based Raptor-Like LDPC Codes for Short Block-Lengths", *IEEE Transactions on Information Theory*, June 2019, vol. 65, no. 6, pp. 3758-3777, **DOI:** [10.1109/TIT.2019.2895322](https://doi.org/10.1109/TIT.2019.2895322).
8. A. Heidarzadeh, J. Chamberland, R. D. Wesel, and P Parag, "A Systematic Approach to Incremental Redundancy with Application to Erasure Channels", *IEEE Transactions on Communications*, April 2019, vol. 67, no. 4, pp. 2620-2631, **DOI:** [10.1109/TCOMM.2018.2889254](https://doi.org/10.1109/TCOMM.2018.2889254).
9. S. V. S. Ranganathan, "Allocating Redundancy Between Erasure Coding and Channel Coding when Fading Channel Diversity Grows with Codeword Length," *IEEE Transactions on Communications*, May 2017, vol. 65, no. 8, pp. 3226 - 3237. **DOI:** [10.1109/TCOMM.2017.2706728](https://doi.org/10.1109/TCOMM.2017.2706728).
10. H. Wang, N. Wong, T.-Y. Chen, R. D. Wesel, "Using Dynamic Allocation of Write Voltage to Extend Flash Memory Lifetime", *IEEE Transactions on Communications*, November 2016, vol. 64, no. 11, pp. 4474-4486, **DOI:** [10.1109/TCOMM.2016.2607707](https://doi.org/10.1109/TCOMM.2016.2607707).
11. K. Vakulinia, S. V. S. Ranganathan, D. Divsalar, and R. D. Wesel, "Optimizing Transmission Lengths for Limited Feedback with Non-Binary LDPC Examples" *IEEE Transactions on Communications*, June 2016, vol. 64, no. 6, pp. 2245-2257, **DOI:** [10.1109/TCOMM.2016.2538770](https://doi.org/10.1109/TCOMM.2016.2538770).
12. C.-Y. Lou, B. Daneshrad, and R. D. Wesel, "Convolutional-Code-Specific CRC Code Design", *IEEE Transactions on Communications*, October 2015, vol. 63, no. 10, pp. 3459 – 3469, **DOI:** [10.1109/TCOMM.2015.2459058](https://doi.org/10.1109/TCOMM.2015.2459058).
13. A. R. Williamson, T.-Y. Chen and R. D. Wesel, "Variable-length Convolutional Coding for Short Blocklengths with Decision Feedback", *IEEE Transactions on Communications*, July 2015, vol. 63, no. 7, pp. 2389 – 2403, **DOI:** [10.1109/TCOMM.2015.2429583](https://doi.org/10.1109/TCOMM.2015.2429583).
14. T.-Y. Chen, K. Vakulinia, D. Divsalar, and R. D. Wesel, "Protograph-Based Raptor-Like LDPC Codes", *IEEE Transactions on Communications*, Vol. 63, No. 5, pp 1522-1530, May 2015, **DOI:** [10.1109/TCOMM.2015.2404842](https://doi.org/10.1109/TCOMM.2015.2404842).
15. A. R. Williamson, M. Marshall, and R. D. Wesel, "Reliability-output Decoding of Tail-biting Convolutional Codes," *IEEE Transactions on Communications*, Vol. 62, No. 6, pp 1768-1778, June 2014, **DOI:** [10.1109/TCOMM.2014.2319264](https://doi.org/10.1109/TCOMM.2014.2319264).
16. J. Wang, K. Vakulinia, T.-Y. Chen, T. Courtade, G. Dong, T. Zhang, H. Shankar, and R. D. Wesel, "Enhanced Precision Through Multiple Reads for LDPC Decoding in Flash Memories" *IEEE Journal on Selected Areas in Communications*, Vol. 32, No. 5, pp 880-891, May 2014, **DOI:** [10.1109/JSAC.2014.140508](https://doi.org/10.1109/JSAC.2014.140508).
17. T.A. Courtade and R. D. Wesel, "Coded Cooperative Data Exchange in Multihop Networks," *IEEE Transactions on Information Theory*, Vol. 60, No. 2, pp. 1136-1158, February 2014, **DOI:** [10.1109/TIT.2013.2290993](https://doi.org/10.1109/TIT.2013.2290993).
18. J. Wang, L. Dolecek and R. Wesel, "The Cycle Consistency Matrix Approach to LDPC Absorbing Sets in Separable Circulant-Based Codes," *IEEE Transactions on Information Theory*, Vol. 59, No. 4, pp 2293 - 2314, April 2013, **DOI:** [10.1109/TIT.2012.2235122](https://doi.org/10.1109/TIT.2012.2235122).

19. B. Xie, T. A. Courtade, and R. D. Wesel, "Optimal Encoding Schemes for Several Classes of Discrete Degraded Broadcast Channels," *IEEE Transactions on Information Theory*, Vol. 59, No. 3, pp. 1360-1378, March 2013, **DOI:** [10.1109/TIT.2012.2237095](https://doi.org/10.1109/TIT.2012.2237095).
20. M. Griot, A. I. Vila Casado, W.-Y. Weng, H. Chan and R. D. Wesel, "Nonlinear Trellis Codes for Binary-Input Binary-Output Multiple Access Channels With Single-User Decoding," *IEEE Transactions on Communications*, Vol. 60, No. 2, Feb. 2012, **DOI:** [10.1109/TCOMM.2012.010512.070116](https://doi.org/10.1109/TCOMM.2012.010512.070116).
21. T. A. Courtade and R. D. Wesel, "Optimal Allocation of Redundancy Between Packet-Level Erasure Coding and Physical-Layer Channel Coding in Fading Channels," *IEEE Transactions on Communications*, Vol. 59, No. 8, pp. 2101-2109, August 2011, **DOI:** [10.1109/TCOMM.2011.062311.090277](https://doi.org/10.1109/TCOMM.2011.062311.090277).
22. A. I. Vila Casado, M. Griot, and R. D. Wesel, "LDPC Decoders with Informed Dynamic Scheduling," *IEEE Transactions on Communications*, Vol. 58, No. 12, pp 3470-3479, December 2010, **DOI:** [10.1109/TCOMM.2010.101910.070303](https://doi.org/10.1109/TCOMM.2010.101910.070303).
23. A. I. Vila Casado, W.-Y. Weng, S. Valle, and R. D. Wesel, "Multiple-Rate Low-Density Parity-Check Codes with Constant Blocklength," *IEEE Transactions on Communications*, Vol. 57, No. 1, pp 75-83, January 2009, **DOI:** [10.1109/TCOMM.2009.0901.060256](https://doi.org/10.1109/TCOMM.2009.0901.060256).
24. H. Chan, A. I. Vila Casado, J. Basak, M. Griot, W.-Y. Weng, R. D. Wesel, B. Jalali, E. Yablonovitch, I. Verbauwhede, "Demonstration of Uncoordinated Multiple Access in Optical Communications," *IEEE Transactions on Circuits and Systems-I: Regular Papers*, Vol. 55, No. 10, pp 3259-3269, November 2008, **DOI:** [10.1109/TCSL.2008.925365](https://doi.org/10.1109/TCSL.2008.925365).
25. W.-Y. Weng, C. Kose, B. Xie and R. D. Wesel, "Universal Serially Concatenated Trellis Coded Modulation for Space-Time Channels," *IEEE Transactions on Communications*, Vol. 56, No. 10, pp 1636-1646, October 2008, **DOI:** [10.1109/TCOMM.2008.060530](https://doi.org/10.1109/TCOMM.2008.060530).
26. B. Xie, M. Griot, A. I. Vila Casado, and R. D. Wesel, "Optimal Transmission Strategy and Explicit Capacity Region for Broadcast Z Channels," *IEEE Transactions on Information Theory*, Vol. 53, No. 9, pp 4296-4304, September 2008, **DOI:** [10.1109/TIT.2008.928298](https://doi.org/10.1109/TIT.2008.928298).
27. J. Shi and R. D. Wesel, "A Study on Universal Codes with Finite Block Lengths," *IEEE Transactions on Information Theory*, Vol. 54, No. 9, pp 3066-3074, September 2007, **DOI:** [10.1109/TIT.2007.903156](https://doi.org/10.1109/TIT.2007.903156).
28. M. Griot, W.-Y. Weng and R. D. Wesel, "A Tighter Bhattacharyya Bound for Decoding Error Probability," *IEEE Communications Letters*, Vol.11, No. 4, pp 346-347, April 2007, **DOI:** [10.1109/LCOM.2007.348296](https://doi.org/10.1109/LCOM.2007.348296).
29. C. R. Jones, T. Tian, J. Villasenor and R. D. Wesel, "The Universal Operation of LDPC Codes Over Scalar Fading Channels," *IEEE Transactions on Communications*, Vol. 55, no. 1, pp 122-132, Jan. 2007, **DOI:** [10.1109/TCOMM.2006.885081](https://doi.org/10.1109/TCOMM.2006.885081).
30. Kose C. and Wesel R. D., "Universal Space-Time Codes from Demultiplexed Trellis Codes," *IEEE Trans. on Communications*. Vol.54. No 7. July 2006, **DOI:** [10.1109/TCOMM.2006.877967](https://doi.org/10.1109/TCOMM.2006.877967).
31. F. Peng, W. Ryan. and R. D. Wesel, "Surrogate-Channel Design of Universal LDPC Codes," *IEEE Comm. Letters*, Jun. 2006, vol. 10, no. 6, pp 480-482, **DOI:** [10.1109/LCOMM.2006.1638622](https://doi.org/10.1109/LCOMM.2006.1638622)

32. A. Ramamoorthy, J. Shi and R. D. Wesel, "On the Capacity of Network Coding for Random Networks," *IEEE Transactions on Information Theory*, Aug. 2005, Vol. 51, no. 8, pp 2878-2885, DOI: [10.1109/TIT.2005.851725](https://doi.org/10.1109/TIT.2005.851725).
33. Wesel R. D., "Reduced-State Representations for Trellis Codes Using Constellation Symmetry," *IEEE Transactions on Communications*, Aug. 2004, vol. 52, no. 8 pp 1302-1310, DOI: [10.1109/TCOMM.2004.833023](https://doi.org/10.1109/TCOMM.2004.833023).
34. Tian T., Jones C., Villasenor J. D. and Wesel R. D., "Selective Avoidance of Cycles in Irregular LDPC Code Construction," *IEEE Transactions on Communications*, Aug. 2004, vol. 52(8), pp 1242-1247, DOI: [10.1109/TCOMM.2004.833048](https://doi.org/10.1109/TCOMM.2004.833048).
35. Sun T. W., Wesel R. D., Shane M. R. and Jarett K., "Superposition Turbo-TCM for Multi-Rate Broadcast," *IEEE Transactions on Communications*, Mar. 2004, vol. 52(3), pp 368-371, DOI: [10.1109/TCOMM.2004.823646](https://doi.org/10.1109/TCOMM.2004.823646).
36. Shi J. and Wesel R. D., "Efficient Computation of Trellis Code Generating Functions," *IEEE Transactions on Communications*, Feb. 2004, vol. 52(2), pp 219-227, DOI: [10.1109/TCOMM.2003.822702](https://doi.org/10.1109/TCOMM.2003.822702).
37. Matache A. and Wesel R. D., "Universal Trellis Codes for Diagonally Layered Space-Time Systems," *IEEE Transactions on Signal Processing*, Nov. 2003, vol. 51(11) pp 2773-2783, Special Issue on "MIMO Wireless", DOI: [10.1109/TSP.2003.818159](https://doi.org/10.1109/TSP.2003.818159).
38. Kose C. and Wesel R. D., "Universal Space-Time Trellis Codes," *IEEE Trans. on Info. Theory*, Oct. 2003, vol. 40(10) pp 2717-2727 Special Issue on "Space-Time Transmission, Reception, Coding and Signal Design," DOI: [10.1109/TIT.2003.817459](https://doi.org/10.1109/TIT.2003.817459).
39. Q. Zhang, P. K. Varshney, and R. D. Wesel, "Optimal Bi-level quantization of I.I.D Sensor Observations for Binary Hypothesis Testing," *IEEE Transactions on Information Theory*, July 2002, 48(7) pp. 2105-2110, DOI: [10.1109/TIT.2002.1013153](https://doi.org/10.1109/TIT.2002.1013153).
40. C. Komninakis, C. Fragouli, A. H. Sayed, and R. D. Wesel, "Multi-Input, Multi-output Fading Channel Tracking and Equalization Using Kalman Estimation," *IEEE Transactions on Signal Processing*, May 2002, vol. 50(5), pp. 1065-1076, DOI: [10.1109/78.995063](https://doi.org/10.1109/78.995063).
41. A. Bernard, X. Liu, R. D. Wesel, and A. Alwan, "Multi-rate Transmission of Speech Using Rate-Compatible Trellis Codes and Embedded Source Codes," *IEEE Transactions on Communications*, February 2002, vol. 50(2) pp. 309-320, DOI: [10.1109/26.983326](https://doi.org/10.1109/26.983326).
42. P. Ormeci, D. L. Goeckel, X. Liu, and R. D. Wesel, "Adaptive Bit-Interleaved Coded Modulation for Time-Varying Channels Using Outdated Fading Estimates" *IEEE Transactions on Communications*, Sept. 2001, 49(9), pp. 1572-1581, DOI: [10.1109/26.950344](https://doi.org/10.1109/26.950344).
43. R. D. Wesel, X. Liu, J. M. Cioffi, and C. Komninakis, "Constellation Labeling for Linear Encoders," *IEEE Transactions on Information Theory*, Sept. 2001, 47(6), pp. 2417-2431, DOI: [10.1109/18.945255](https://doi.org/10.1109/18.945255).
44. C. Komninakis and R.D. Wesel, "Joint Iterative Channel Estimation and Decoding in Flat Correlated Rayleigh Fading," *IEEE Journal on Selected Areas in Communications*, Sept. 2001, 19(9), pp. 1706-17, DOI: [10.1109/49.947035](https://doi.org/10.1109/49.947035).
45. C. Fragouli and R. D. Wesel, "Turbo encoder design for symbol interleaved parallel concatenated trellis coded modulation," *IEEE Transactions on Communications*, 49(3), Mar. 2001, pp. 425-435, DOI: [10.1109/26.911450](https://doi.org/10.1109/26.911450).
46. W. Shi, T. W. Sun, and R. D. Wesel, "Quasi-convexity and Optimal Binary Fusion for Distributed Detection with Identical Sensors in Generalized Gaussian Noise," *IEEE Transactions on Information Theory*, Jan. 2001, 47(1), pp. 446-450, DOI: [10.1109/18.904560](https://doi.org/10.1109/18.904560).

47. R. D. Wesel, X. Liu, and W. Shi, "Trellis Codes for Periodic Erasures," *IEEE Transactions on Communications*, June 2000, 48(6), pp. 938-947, DOI: [10.1109/26.848553](https://doi.org/10.1109/26.848553).
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