

Robert Henry Morelos-Zaragoza, Ph.D.

Professor, Department of Electrical Engineering
San Jose State University
1 Washington Square, San Jose, CA 95192-0084
Tel: 1 (408) 924-3879
Email: robert.morelos-zaragoza@sjsu.edu

Areas of expertise and research interest

Advanced error-correcting coding and digital signal processing techniques with applications in wireless communications and storage systems. Radio-frequency identification (RFID) systems. Cognitive radio.

Education

- PhD.EE (1992) University of Hawaii. Thesis: *Multilevel Error Correcting Codes*. ^[1]_[SEP]Advisor: Shu Lin
- MSEE (1987) National University of Mexico (UNAM). Thesis: *Design of a Viterbi Decoder*. Advisor: Francisco Garcia-Ugalde ^[1]_[SEP]
- BSEE^[1]_[SEP](1985) National University of Mexico (UNAM). Thesis: *Analysis and Simulation of Cyclic Error Correcting Codes* ^[1]_[SEP]Advisor: Dr. Francisco Garcia-Ugalde

Academic and Professional Experience

- Professor (August 2012-present) Electrical Engineering, San Jose State University
- Associate Professor (August 2002-August 2012) Electrical Engineering, San Jose State University
- Research Associate, Courtesy Appointment (2005 - 2006) University of California at Santa Cruz
- Researcher (August 1999-June 2002) ^[1]_[SEP]Advanced Telecommunication Laboratory, Sony CSL, Tokyo, Japan
- Staff Member (1997-1999) LSI LOGIC Corporation, Milpitas, CA, U.S.A.
- Research Associate (1995-1997) Institute of Industrial Science, University of Tokyo, Tokyo, Japan
- Research Fellow (1994-1995) Nara Institute of Science and Technology, Nara, Japan
- Endowed Chair, Intelligent Information Processing Systems (1993-1994) Osaka University, Japan
- Assistant Professor (1992-1993) Instituto Tecnológico y de Estudios Superiores de Monterrey, Mexico

Consulting experience

- Iberium Communications (2007-2010). Project: *Analysis and implementation in C++ and Matlab of LDPC and Golay decoders for Chinese terrestrial broadcasting digital TV receivers*
- SanDisk (2006). Project: *Implementation in C of algorithms that correct a large number of errors in flash memories*
- Intel Corporation (2004). Project: *Analysis of error correction algorithms for high-performance memory servers*

Courses taught

EE 98	Introduction to Circuit Analysis (Fall 2014)
EE 112	Linear Systems (Spring 2010)
EE 160	Principles of Communication Systems (Spring 2003-2006, 2010-2011. Fall 2003-2015)
EE 161	Digital Communication Systems (undergraduate) (Spring 2007-2015)
EE 210	Linear Systems Theory (Fall 2009-2011, Spring 2010)
EE 250	Probability and Random Processes (Fall 2002-2003, 2007, 2010-2013)
EE 251	Digital Communication Systems (graduate) (Spring 2003-2004, 2006, 2011-2015. Fall 2003, 2005, 2006-2009)
EE 252	Advanced Communication Systems (Spring 2003-2009. Fall 2012-2015)
EE 253	Digital Signal Processing (Spring 2018)
EE 259	Selected topics in Signal Processing: Software-Defined Radio (Fall 2013, 2015)
EE 259	Free Space Optical Communications (Lockheed Martin Cohort Summer 2013)
EE 260	RFID Systems (Spring 2012-2015)
EE 265	Hands-on wireless communications using software radios (Fall 2014-2016)
EE 296M	Error Correcting Codes (experimental) (Fall 2005, 2007)
EE 296W	Radio Frequency Identification (RFID) Systems (experimental) (Fall 2007, 2008)

Professional service

- Co-Chair, 2017 IEEE International Conference on Smart City Innovations (IEEE SCI 2017), San Francisco, CA, August 4-8, 2017.
- Co-Chair, 2016 International Symposium on Information Theory and Its Applications (ISITA2016), Monterey, CA, Nov. 6-9, 2016.
- Associate Technical Editor, IEEE Communications Magazine, 2012-2017
- ABET (program assessment) coordinator, EE Department, SJSU, 2006-2017
- Technical program committee (TPC) member of numerous peer-reviewed conferences:
 - ISWTA 2017, ICCEREC 2017, GLOBECOM 2016, ICCEREC 2016
 - SMART 2015, APWiMob 2015, PIAMSE'2015, ICOCOE'2015, ICCEREC 2015, ITU Kaleidoscope 2015 and GLOBECOM 2015
 - NTMS 2014, ISITA 2014, ICCST 2014, ISCAIE 2014, APWiMob 2014, ICOCOE 2014, ISMET 2014, I4CT'2014, ELECTROMASA'2014 and ICT-14
 - SMART 2013, WCES 2013, ISIEA2013, ISWTA2013, ICWiSe2013 and CSA 2013
 - NTMS 2012, WCES 2012, WC 2012, SMART 2012, ISWTA 2012, ISIEA 2012, PECON 2012, MACOM 2012, SoftCOM 2012 and APACE 2012
 - RWS 2011, MobiCONA 2011, NTMS 2011, WCES 2011, ICCST 2011, ICISA2011 and ICC 2011
 - RWS 2010, ISITA 2010 and ICCST 2010, RWS 2009 and ICC 2009
 - RWS 2008, ICC 2008, ITST 2008, WINSYS 2008 and ISITA 2008
 - ISWPC 2007 and WCECS 2007, GLOBECOM 2006 and ISITA 2006
 - WNET 2005, WirelessComm 2005, ISWCS 2005 and ICC 2005
 - WPMC 2002, ISITA 2004 and WNET 2004
- Reviewer, IEEE Trans. on Wireless Communications, 2002-2003 and 2005-2015

- Reviewer, IEEE Trans. on Communications, 2000-2015
- Reviewer, IEEE Communications Magazine, 2012-2014
- Reviewer, IEEE Trans. on Vehicular Technology, 2004-2010
- Reviewer, IEICE Trans. on Communications, 2000-2010 and IEEE Comm. Letters, 2002-2008
- Reviewer, European Transactions on Telecommunications, 2007
- Reviewer, IEEE Trans. on Info. Theory, 1998-2003, 2004 and 2006
- Reviewer, EURASIP J. Wireless Communications and Networking, 2003-2004
- NSF panelist, May 2003

Honors and awards

- International Advisory Committee Co-chair of ISITA 2020
- Fulbright U.S. Scholar in Mongolia, February – June 2017
- DARPA Spectrum Challenge finalist (Team SJSU Spartans), March 2013
- Visiting Fellow, Japanese Society for the Promotion of Science, Osaka University, January 2009
- Best paper award, IEEE WPMC 2001 conference, 2001
- Research Fellow, Japanese Society for the Promotion of Science, Nara Institute of Science and Technology, 1995
- Member, Eta Kappa Nu, 1992
- Chairman, IEEE University of Hawaii Student Branch, 1991
- E.E. Black Fellowship, University of Hawaii, 1989
- Gabino Barreda Medal to Academic Merit, National Autonomous University of Mexico, 1988
- Dean's List (Honorific mention), Faculty of Engineering, National Autonomous University of Mexico, 1985

Publications

BOOK

The Art of Error Correcting Coding, second edition, John Wiley & Sons, 2006. Translated to Chinese and Russian.

JOURNAL PAPERS

1. Multi-Value Sequence Generated over Sub Extension Field and Its Properties, (coauthors: M.A. Ali, Y. Koder, Yuta, T. Kusaka, S. Uehara and Y. Nogami), *Journal of Information Security*, vol. 10, no. 3, pp. 130-154, July 2019.
2. Multi-valued Sequences Generated by Power Residue Symbols over Odd Characteristic Fields, (coauthors: B. Nasima, Y. Nogami and S. Uehara), *IEICE Transactions on Fundamentals and Electronics, Communications and Computer Science*, Vol.E100-A, No.4, pp. 922-929, Apr. 2017.
3. On the Error Performance of Coding and Equalization in Low-Complexity Ultra-Wideband Communication Systems, *Journal of Communication Software and Systems*, vol. 2, no. 3, pp. 245-251, Nov. 2006.

4. A Multi-Value Sequence Generated by Power Residue Symbol and Trace Function over Odd Characteristic Field, (coauthors: Y. Nogami, S. Uehara, K. Tsuchiya, N. Begum and H. Ino), *IEICE Trans. on Fundamentals of Electronics, Communications and Computer Sciences*, vol. E99.A, no. 12, pp. 2226-2237, December 2016.
5. Method of Non-Data-Aided Carrier Recovery with Modulation Identification, (coauthors: K. Umebayashi and R. Kohno), *IEICE Transactions on Fundamentals and Electronics, Communications and Computer Science*, vol. E87-A, no. 3, pp. 656-665, March 2004.
6. Statistical Mechanics of Broadcast Channels Using Low Density Parity Check Codes, (coauthors: K. Nakamura, D. Saad and Y. Kabashima): cond-mat/0204622, unpublished (2002), *Physical Review E*, March 2003.
7. A Software Radio Receiver with Direct Downconversion and Its Digital Signal Processing, (coauthors: S. Haruyama, M.Abe, N. Sasho, L. Michael and R. Kohno), *IEICE Trans. Communications*, Special Issue on Software Defined Radio Technology and Its Applications, vol. E85-B, no. 12, pp. 2741-2749, December 2002.
8. A Software-Defined Radio Platform with Direct Conversion: SOPRANO, (coauthors: S. Haruyama and Y. Sanada), in *Kluwer International Journal on Wireless Personal Communications*, vol. 23, no.1, pp. 67-76, October 2002.
9. A Two-Stage Decoder for Pragmatic Trellis-Coded M-PSK Modulation Using a Symbol Transformation, (coauthor: A. Mogre), *IEEE Trans. Comm.*, vol. 49, no. 9, pp. 1501-1505, September 2001.
10. Tradeoffs Between Error Performance and Decoding Complexity in Multilevel 8-PSK Codes and Multistage Decoding with UEP Capabilities, (coauthors: M. Isaka, M.P.C. Fossorier, S. Lin and H. Imai), *IEICE Transactions on Fundamentals and Electronics, Communications and Computer Science*, Vol.E83-A, No.8, pp.1704-1712, August 2000.
11. Multilevel Coded Modulation for Unequal Error Protection and Multistage Decoding - Part II: Asymmetric Constellations, (coauthors: M. Isaka, M.P.C. Fossorier, S. Lin and H. Imai), *IEEE Trans. Comm.*, vol. 48, no. 5, pp. 774 -786, May 2000.
12. Multilevel Coded Modulation for Unequal Error Protection and Multistage Decoding - Part I: Symmetric Constellations, (coauthors: M.P.C. Fossorier, S. Lin and H. Imai), *IEEE Trans. Comm.*, vol. 48, no. 2, pp. 204-213, February 2000.
13. Constructions of Generalized Concatenated Codes And Their Trellis-Based Decoding Complexity, (coauthors: T. Fujiwara, T. Kasami, and S. Lin), *IEEE Transactions on Information Theory*, vol. 45, no. 2, pp. 725-731, March 1999.
14. Coded Modulation for Satellite Broadcasting Based on Unconventional Partitioning, (coauthors: M. Isaka, M.P.C. Fossorier, S. Lin and H. Imai), *IEICE Transactions on Fundamentals and Electronics, Communications and Computer Science*, vol. E81-A, no.10, pp.2055-2063, October 1998.
15. Binary Multilevel Convolutional Codes with Unequal Error Protection Capabilities, (coauthor: H. Imai), *IEEE Trans. Comm.*, vol. 46, no. 7, pp. 850-853, July 1998.
16. On Block-Coded Modulation Using Unequal Error Protection Codes over Rayleigh-Fading Channels, (coauthors: H. Imai, T. Kasami and S. Lin), *IEEE Trans. Comm.*, vol. 46, no. 1, pp. 1-4, January 1998.
17. Error Performance of Multilevel Block Coded 8-PSK Modulations Using Unequal Error Protection Codes for the Rayleigh Fading Channel, (coauthors: N. Uetsuki, T. Takata, T.

- Kasami and S. Lin), *IEICE Transactions on Fundamentals and Electronics, Communications and Computer Science*, vol. E80-A, no. 6, pp. 1143-1149, June 1997.
18. Coded Modulation for Satellite Video Broadcasting, (coauthors: O.Y. Takeshita and H. Imai), *IEICE Transactions on Fundamentals and Electronics, Communications and Computer Science*, vol. E79-A, no. 9, pp. 1355-1360, September 1996.
 19. On Primitive BCH Codes With Unequal Error Protection Capabilities, (coauthor: S. Lin), *IEEE Transactions on Information Theory*, Vol. 41, No. 3, pp. 788-790, May 1995.
 20. QPSK Block Modulation Codes for Unequal Error Protection, (coauthor: S. Lin), *IEEE Transactions on Information Theory*, Vol. 41, No. 2, pp. 576-581, March 1995.
 21. On Trellis Structure of LUEP Block Codes and A Class of UEP QPSK Block Modulation Codes, *IEICE Transactions on Fundamentals and Electronics, Communications and Computer Science*, Vol. 77-A, No. 8, pp. 1261-1266, August 1994.
 22. On a Class of Optimal Nonbinary Linear Unequal-Error-Protection Codes for Two Sets of Messages, (coauthor: S. Lin), *IEEE Transactions on Information Theory*, Vol. 40, No. 1, pp. 196-200, January 1994.
 23. A Note on Repeated-Root Cyclic Codes, *IEEE Transactions on Information Theory*, Vol. 37, No. 6, p. 1736, November 1991.

CONFERENCE PAPERS

1. Experimental Validation and Dynamic Simulation of Rotor Faults in Induction Motors, (coauthors: A. Purvee and E. Tsend-Ayush), submitted to *2019 IEEE Energy Conversion Congress and Expo*, Baltimore, Sep. 29-Oct. 3, 2019.
2. Evaluating the Maximum Order Complexity of a Uniformly Distributed Sequence Over Odd Characteristic, (coauthors: Y. Kodera, T. Kusaka, T. Miyazaki, Y. Nogami and S. Uehara), *Proc. 2018 IEEE International Conference on Consumer Electronics-Taiwan (ICCE-TW)*, pp. 1-2, May 19-21, 2018.
3. Reliability Improvements to Healthcare Patient RFID Tracking with Multiple Tags, (coauthors: F. Antar, M. Jain, H. Dugyala and D. Nelluri), *Proc. 2017 IEEE SmartWorld*, pp. 1-5. San Francisco, CA, Aug. 2017.
4. Linear complexity of pseudo random binary sequence generated by trace function and Legendre symbol over proper sub extension field, (coauthors: A. M. Arshad, T. Miyazaki, S. Heguri, Y. Nogami, S. Uehara), *Proc. 2017 Eighth International Workshop on Signal Design and Its Applications in Communications (IWSDA 2017)*, pp. 84-88, Sapporo, Japan.
5. Multi-value Sequence Generated by Trace Function and Power Residue Symbol Over Proper Sub Extension Field, (coauthors: A. Ali, T. Miyazaki, Y. Nogami and S. Uehara), *Proc. 2017 IEEE International Conference on Consumer Electronics-Taiwan (ICCE-TW-2017)*, pp. 249-250, Taiwan.
6. A new approach for generating well balanced Pseudo-random signed binary sequence over odd characteristic field, (coauthors: A.M. Arshad, Y. Nogami, C. Ogawa, H. Ino, S. Uehara and K. Tshuchiya), *Proc. 2016 International Symposium on Information Theory and Its Applications (ISITA 2016)*, pp. 777 - 780, Monterey, CA, Oct. 30-Nov. 2-29, 2016.
7. An Application of the Power Residue Symbol for Generating Multi-value Sequences over Odd Characteristic Fields (co-authors: H. Ino, Y. Nogami and S. Uehara), *Proc. 30th International Technical Conference on Circuits/Systems, Computers and Communications (ITC-CSCC 2015)*, Seoul, Korea, June 29-July 2, 2015.

8. Precoding by Priority: A UEP Scheme for RaptorQ Codes (coauthor: K. Elliadka), *Proc. 2014 International Symposium on Information Theory and Its Applications (ISITA 2014)*, pp. 269 - 273, Melbourne, Australia, October 26-29, 2014.
9. Using Software Defined Radios to teach Wireless Communication Courses, Tutorial Presentation, *The 2014 Wireless Innovation Forum (SDR WinnComm 2014)*, Schaumburg, Illinois, March 11-13, 2014.
10. Implementing Alamouti's 2x1 Transmit Diversity on Software Defined Radio (coauthor: A. Ansari), *The International Conference on Engineering of Reconfigurable Systems and Algorithms (ERSA 2013)*, Las Vegas, NV, July 22, 2013.
11. Unequal Error Protection with CRC-16 Bits in EPC Class-1 Generation-2 UHF RFID Systems, *Proc. 2012 International Symposium on Information Theory and its Applications (ISITA 2012)*, pp. 36-40, Honolulu, Hawaii, October 28-31, 2012.
12. On Error Performance Improvements of Passive UHF RFID Systems via Syndrome Decoding, *Proc. 2011 IEEE International Conference on Internet of Things (iThings 2011)*, pp. 127-130, Dalian, China, October 19-22, 2011.
13. Communication System Aspects of Radio-Frequency Identification Systems, invited presentation at the *First Annual International Congress of U-World 2011*, Dalian, China, October 23-25, 2011.
14. Two-Level Channel Coding for Cooperative Wireless Networks Based on WiMAX LDPC codes, (coauthor: N. D'souza), *Proc. IEEE PIMRC 2011, Workshop on Wireless Distributed Networks*, pp. 2349-2353, Toronto, Canada, Sep. 11, 2011.
15. On Iterative Decoding of Two-Level Superposition Codes for Cooperative Broadcasting Based on QPSK and 4-PAM Constellations, *Proc. IEEE 2010 Military Communications Conference (MILCOM 2010)*, pp. 2369-2374, San Jose, CA, Oct. 31-Nov. 3, 2010.
16. On Two-Level Superposition Coding for Cooperative Broadcasting in Wireless Networks, *Proc. 15th Asia-Pacific Conference on Communications (APCC 2009)*, pp. 342-345, Shanghai, China, October 8-10, 2009.
17. A Trade-off Analysis of Energy Detectors and Partitioned Search for Primary Detection, (coauthors: B. Sirceci and V. Sawant), presented in the 2nd IEEE International Conference on Cognitive Networks and Communications (COGCOM 2009), *Proc. IEEE ICCCN 2009*, pp. 1-4, San Francisco, CA, Aug. 2-6, 2009.
18. A Plotkin-Alamouti Superposition Coding Scheme for Cooperative Broadcasting in Wireless Networks, *arXiv:0901.2270v1*, Jan. 15, 2009.
19. An Adaptive Adjacent Channel Interference Cancellation Technique, (coauthor: Shobha Kuruba), *Proc. 9th Wireless World Congress*, pp. 1-4, San Jose, CA, May 14-15, 2008 and Shanghai China, August 2009.
20. Automatic Transmit Power Control of a Digital Fixed Wireless Link with Co-Channel Interference, (coauthors: K.-W. Suh, and J.-H. Lee), *Proc. of IEEE ChinaCom2007-WCN*, pp. 1178-1184, Shanghai, China, Aug. 22-24, 2007.
21. On Coding Techniques for Dense Multipath Channels, *Proc. of 2007 Hawaii and SITA Joint Conference on Information Theory (HSIC)*, pp. 63-66, Honolulu, Hawaii, May 29-31, 2007.
22. On an OFDM-UWB System with Two-Tap Adaptive Linear LMS Equalization, (coauthors: B. Mau and L. Wong), *Proc. of GSPx 05 Conference*, Santa Clara, CA, Oct. 24-27, 2005.

23. A Suboptimal Receiver with Turbo Block Coding for Ultra-Wideband Communications, (coauthors: T. Becker and S. Aquino), *Proc. of IEEE WirelessComm 2005*, pp. 618-623, Communication Theory Symposium, Kaanapali Beach, Maui, Hawaii, June 13-15, 2005.
24. Error Performance of Two-Tap LMS Equalization in an OFDM-UWB System, (coauthors: B. Mau and L. Wong), *Proc. of 2005 Global Mobile Congress (GMC'05)*, Chongqing, China, Oct. 10-12, 2005.
25. Modulation Identification and Carrier Recovery System for Adaptive Modulation in Satellite Communications, (coauthors: K. Umebayashi and R. Kohno), *Proc. of IEEE VTC Spring 2005 conference*, May 30 - June 1, 2005, Stockholm, Sweden.
26. Asymmetric Modulation for Cognitive Radio and Intelligent Environments, (coauthor: E. Krieb), *Proc. of the 2004 SDR Forum Technical Conference (SDR'04)*, Phoenix, Arizona, Nov. 15-18, 2004.
27. Evaluation of a Multimode PLL using Modulation Identification for the ISDB-S Standard, (coauthors: K. Umebayashi and R. Kohno), *Proc. of the 2004 SDR Forum Technical Conference (SDR'04)*, Phoenix, Arizona, Nov. 15-18, 2004.
28. On Channel Capacity, Constellation Labeling and Demapping for BICM with 64-QAM Modulation, (coauthor: T. Tsai), *Proc. of the 2004 International Symposium on Information Theory and its Applications (ISITA 2004)*, Parma, Italy, Oct. 10-13, 2004.
29. On Channel Capacity, Constellation Labeling and Demapping for BICM with 64-QAM Modulation, (coauthor: T. Tsai), *Proc. of the 2004 International Symposium on Information Theory and its Applications (ISITA 2004)*, Parma, Italy, Oct. 10-13, 2004.
30. On Channel Capacity, Constellation Labeling and Demapping for BICM using a 32-ary Constellation, (coauthor: T. Tsai), *7th International Symposium on Wireless Personal Multimedia Communications (WPMC 2004)*, Abano Terme, Italy, Sept. 12-15, 2004.
31. Feedforward Carrier and Symbol Timing Recovery and Phase-Invariant Signaling for Software-Defined Radio, (coauthors: E. Krieb, B. Tay and E. Wen), *Proc. 2003 Software Defined Radio Technical Conference (SDR'03)*, Orlando, Florida, Nov. 17-19, 2003.
32. Method of Non-Data-Aided Carrier Recovery with Modulation Identification and its Application as an Adaptive Modulation Scheme, (coauthors: K. Umebayashi and R. Kohno), *Proc. 2003 Software Defined Radio Technical Conference (SDR'03)*, Orlando, Florida, Nov. 17-19, 2003.
33. Multimode PLL for Adaptive Modulation Scheme in Satellite Communication, (coauthors: K. Umebayashi and R. Kohno), *Proc. of the Sixth International Symposium on Wireless Personal Multimedia Communications (WPMC 2003)*, Yokosuka, Japan, October 19-22, 2003.
34. Further Results on Combined Beamforming and Space-Time Block Coding with Sparse Array Antennas, (coauthor: M. Ghavami), *Proc. 2003 Communications Design Conference*, San Jose, California, Sept. 30-Oct. 2, 2003.
35. Statistical Mechanics of Broadcast Channels Using Low Density Parity Check Codes , (coauthors: K. Nakamura, Y. Kabashima and D. Saad), *Proc. IEEE 2003 International Symposium on Information Theory (ISIT 2003)*, p. 294, Yokohama, Japan, June 29 - July 4, 2003.
36. Combined Beamforming and Space-Time Block Coding with a Sparse Array Antenna, (coauthor: M. Ghavami), *Proc. of the Fifth International Symposium on Wireless Personal*

- Multimedia Communications (WPMC 2002)*, pp. 432-434, Honolulu, Hawaii, Oct. 27-30, 2002.
37. On the Phase-Lock Detector of a Multimode PLL for Modulation Identification, (coauthors: K. Umebayashi and R. Kohno), *Proc. 2002 International Symposium on Information Theory and its Applications (ISITA 2002)*, pp. 595-598, Xian, China, October 7-11, 2002.
 38. Look-up Table Based Fast Erasure Correction and Conditional Access Techniques for Streaming Media, (coauthor: M.J. Mihaljevi'c), Sony ATL Technical Report, March 2002. Patent filed.
 39. On Iterative Cochannel Interference Suppression for the Downlink of a Binary Block Coded Multiuser System, (coauthor: R. Kohno), *Proc. ICFS 2002*, pp. S7-22-27, Waseda University, Tokyo, Japan, March 27-28, 2002.
 40. A Method of Non-Data-Aided Carrier Recovery with Modulation Identification, (coauthors: K. Umebayashi and R. Kohno), *Proc. 2001 Symposium on Information Theory and Its Applications (SITA 2001)*, pp. 723-726, Kobe, Hyogo, Japan, Dec. 4-7, 2001. NOTE: This paper is in Japanese.
 41. An RF Circuit Architecture for Software Defined Radio Receivers, (coauthors: M. Abe, N. Sasho and S. Haruyama), *Proc. 2001 Microwave Workshops and Exhibition (MWE'01)*, Yokohama, Japan, Dec. 2001.
 42. A Method of Non-Data-Aided Carrier Recovery with Modulation Identification, (coauthors: K. Umebayashi and R. Kohno), *Proc. of the 2001 IEEE Global Communications Conference (GLOBECOM 2001)*, pp. 3375 -3379, San Antonio, Texas, November 25-29, 2001.
 43. Software Radio with Mixer-less Direct Conversion: SOPRANO, (coauthor: S. Haruyama), *Proc. of the IEEE Semiannual Vehicular Technology Conference (VTC-2001/Fall)*, pp. 1558 - 1560, Atlantic City, NJ, USA, October 7-11, 2001.
 44. Combined Beamforming and Space-Time Block Coding for High-Speed Wireless Indoor Communications, (coauthor: M. Ghavami), *Proc. of the Fourth International Symposium on Wireless Personal Multimedia Communications (WPMC'01)*, pp. 1427-1431, Aalborg, Denmark, Sept. 9-12, 2001.
 45. A Software Radio Platform with Direct Conversion: SOPRANO, (coauthors: S. Haruyama and Y. Sanada), *Proc. of the Fourth International Symposium on Wireless Personal Multimedia Communications (WPMC'01)*, pp. 237-240, Aalborg, Denmark, Sept. 9-12, 2001.
 46. On Interference Cancellation and Iterative Techniques, (Invited paper. Coauthor: R. Kohno), *Proc. of the 2001 IEEE Information Theory Workshop (ITW'01)*, pp. 39-41, Cairns, Australia, Sep. 2-7, 2001. Presentation slides (PS format).
 47. Adaptive Carrier Recovery with Modulation Identification, (coauthor: K. Umebayashi), *Proc. 2001 International Symposium on Signals, Systems, and Electronics (ISSSE'01)*, pp. 216-219, Tokyo, Japan, July 24-27, 2001.
 48. A Carrier Recovery Technique Using Modulation Identification, (coauthor: K. Umebayashi), *Proc. 2001 International Conference on Third Generation Wireless and Beyond (3GWireless'01)*, pp. 933-938, San Francisco, CA, May 30-June 2, 2001.
 49. Software Defined-Radio Platform with Mixer-less Direct Conversion: SOPRANO, (coauthor: S. Haruyama), *Proc. 7th IEICE Workshop on Software Radio*, pp. 41-44, Tokyo, Japan, April 26, 2001. Presentation slides (PDF format).

50. Variable-Rate Coding Using Extended Cyclic Codes, (coauthor: F. Swarts), *Proc. 2000 International Symposium on Information Theory and Its Applications (ISITA 2000)*, pp. 774-777, Honolulu, Hawaii, November 5-8, 2000.
51. Universal Platform for Software Defined Radio, (coauthors: R. Kohno, M. Abe, N. Sasho, S. Haruyama, E. Sousa, F. Swarts, P. Van Rooyen, Y. Sanada, L. Michael, H. Amir-Alikhani and V. Brankovish), *Proc. of the 2000 International Symposium on Intelligent Signal Processing and Communication Systems (ISPACS 2000)*, pp. 523-526, Honolulu, Hawaii, Nov. 5-8, 2000.
52. Architectural Issues of Soft-Decision Iterative Decoders for Binary Cyclic Codes, Sony ATL Internal Report, Aug. 9, 2000. Patent Issued.
53. On the Error Performance of 8-VSB TCM Decoders for ATSC Terrestrial Broadcasting of Digital Television, (coauthor: D. Rhee), *Proc. of the 2000 IEEE International Symposium on Information Theory (ISIT'2000)*, p. 218, Sorrento, Italy, June, 2000.
54. Error Performance of Multilevel Codes for Unequal Error Protection over Fading Channels with Coherent Detection and Phase Jitter, (coauthors: M. Isaka and H. Imai), *Proc. of the 2000 IEEE International Symposium on Information Theory (ISIT'2000)*, p. 138, Sorrento, Italy, June, 2000.
55. Joint Phase-Lock Detection and Identification of Digital M-PSK/M-QAM Modulation, *Proc. of the 2000 International Conference on Third Generation Wireless Communications (3GWireless'00)*, pp. 272-279, San Francisco, CA, June 14-16, 2000.
56. A Two-Stage Decoder for Pragmatic Trellis-Coded PSK/QAM Modulation Using a Symbol Transformation, *Proc. of the 1999 Symposium on Information Theory and Its Applications (SITA'99)*, pp. 753-756, Niigata, Japan, Nov. 30-Dec. 3, 1999.
57. Error Performance of 8-VSB TCM Decoders for ATSC Terrestrial Broadcasting of Digital Television, (coauthor: D. Rhee), *Proc. of the 13th AAECC Symposium on Applied Algebra, Algebraic Algorithms and Error-Correcting Codes (AAECC-13)*, p. 29, Honolulu, Hawaii, Nov. 15, 1999.
58. Multilevel Codes and Multistage Decoding for Unequal Error Protection, (coauthors: M. Isaka, H. Imai, M.P.C. Fossorier and S. Lin), *Proc. of IEEE International Conference on Personal Wireless Communications (ICPWC99)*, pp. 249-254, Feb. 17-19, 1999.
59. Phase Jitter Effects on Multilevel Codes with Multistage Decoding, (coauthors: M. Isaka and H. Imai), *Proceedings of the 1998 Symposium on Information Theory and Its Applications (SITA'98)*, Gifu, Japan, Dec. 2-5, 1998.
60. Multilevel Coded 16-QAM Modulation with Multistage Decoding for Unequal Error Protection, (coauthors: M. Isaka, M.P.C. Fossorier, S. Lin and H. Imai), *Proceedings of the 1998 IEEE Global Communications Conference (GLOBECOM'98)*, vol. 6, pp. 3548 -3553, Sydney, Australia, November 8-12, 1998.
61. Tradeoffs between Error Performance and Decoding Complexity in Multilevel Coding and Multistage Decoding with UEP Capabilities, (coauthors: M. Isaka, M.P.C. Fossorier, S. Lin and H. Imai), *Proceedings of The 1998 International Symposium on Information Theory and Its Applications (ISITA'98)*, pp. 537-540, Mexico City, Mexico, October 14-16, 1998.
62. Error Performance Analysis of Multilevel Coded Asymmetric 8-PSK Modulation with Multistage Decoding and Unequal Error Protection, (coauthors: M. Isaka, M.P.C. Fossorier, S. Lin and H. Imai), *Proceedings of the 1998 IEEE International Symposium on Information Theory (ISIT'98)*, p. 210, MIT, Cambridge, August 17-21, 1998.

63. Error Performance Analysis of a Concatenated Coding Scheme with 64/256-QAM Trellis Coded Modulation for the North American Cable Modem Standard, (coauthor: D. Rhee), *Proceedings of the 1998 IEEE International Symposium on Information Theory (ISIT'98)*, p. 61, MIT, Cambridge, August 17-21, 1998.
64. Practical multilevel coding and multistage decoding for satellite broadcasting, in Technical Report of IEICE, SST98-2, SAT98-8, Jun. 1998.
65. Error performance analysis of multilevel coded 16-QAM modulation with multistage decoding and unequal error protection, in *Technical Report of IEICE, RCS98-54*, Jun. 1998.
66. Error Performance Analysis of Multilevel Coded Asymmetric Modulation with Multistage Decoding and Unequal Error Protection, (coauthors: M. Isaka, M.P.C. Fossorier, S. Lin and H. Imai), *IEICE Technical Report, IT97-58*, Jan. 1998, and IEICE IT Meeting, Tokyo, Japan, January 27, 1998.
67. Error Performance of Multi-level Coded 8-PSK Modulation for Unequal Error Protection over a Rayleigh Fading Channel, (coauthors: M.P.C. Fossorier, S. Lin and H. Imai), *Proceedings of the 1997 Symposium on Information Theory and Its Applications (SITA'97)*, pp. 729-732, Matsuyama, Japan, Dec. 2-5, 1997.
68. The Performance of Block Coded Modulation for UEP with Nonuniform Constellations and Unconventional Partitioning, (coauthors: M. Isaka, M.P.C. Fossorier, S. Lin and H. Imai), *Proceedings of the 1997 Symposium on Information Theory and Its Applications (SITA'97)*, pp. 285-288, Matsuyama, Japan, Dec. 2-5, 1997.
69. Coded Modulation for Satellite Broadcasting Based on Unconventional Partitioning, (coauthors: M. Isaka, M.P.C. Fossorier, S. Lin and H. Imai), in proceedings of the Fourth European Conference on Satellite Communications, Rome, Italy, November 18-20, 1997.
70. On Coded Modulation for Unequal Error Protection, (coauthors: M. Isaka and H. Imai), *Proceedings of the 1997 IEICE Autumn Society Conference*, Tokyo, Japan, September 3-6, 1997.
71. Concatenated Multilevel Coded Modulation Schemes for Digital Satellite Broadcasting, (coauthor: H. Imai), *Proceedings of the 1997 IEEE Pacific Rim Conference on Communications, Computers and Signal Processing (PACRIM'97)*, pp. 870-873, Victoria, Canada, August 20-22, 1997.
72. On Coded 8-PSK Modulations for Unequal Error Protection Based on Nonstandard Partitioning, (coauthors: M. Isaka and H. Imai), presented at IEICE IT Meeting, Kagawa, Japan, May 30, 1997, and in Technical Report of IEICE, IT97-10 (1997-5).
73. On Block Coded 16-QAM Modulation for Unequal Error Protection, (coauthor: H. Imai), *Proceedings of the 1997 IEICE Spring General Conference*, Osaka, Japan, March 25, 1997.
74. On the Error Performance of Multilevel Block Coded 8-PSK Modulations for Unequal Error Protection over Rayleigh Fading Channels, (coauthors: M.P.C. Fossorier, S. Lin and H. Imai), *Proceedings of the 1997 Conference on Information Sciences and Systems (1997 CISS)*, Baltimore, MD, March 19-21, 1997.
75. Variable-Rate Coding Schemes with Convolutional Codes and Generalized Concatenation, (coauthor: H. Imai), *Proc. 12th International Symposium on Algebra, Algebraic Algorithms and Error-Correcting Codes (AAECC-12)*, Toulouse, France, June 23-27, 1997.
76. Multilevel Block Coded Modulation with Unequal Error Protection, (coauthors: M.P.C. Fossorier, S. Lin and H. Imai), *Proc. 1997 IEEE International Symposium on Information Theory (ISIT'97)*, p. 441, Ulm, Germany, June 29-July 4, 1997.

77. Binary Convolutional Codes with Two Levels of Error Protection, (coauthor: H. Imai), *Proceedings of the 1996 Symposium on Information Theory and Its Applications (SITA'96)*, pp. 213-216, Hakone, Japan, December 1996.
78. Bandwidth Efficient Multilevel Block Coding Schemes with Two Levels of Protection for 8-PSK Modulation over the AWGN Channel, (coauthors: M.P.C. Fossorier, H. Imai and S. Lin), *Proceedings of the 1996 Symposium on Information Theory and Its Applications (SITA'96)*, pp. 217-220, Hakone, Japan, December 1996.
79. Coded Modulation for Satellite Broadcasting, (coauthors: O.Y. Takeshita, H. Imai, M.P.C. Fossorier and S. Lin), *Communication Theory Mini-Conference Record (GLOBECOM'96)*, pp. 31-35, London, U.K., November 19-21, 1996.
80. Some Results on Three-level BCH Coded 8-PSK Modulations for Unequal Error Protection, (coauthors: M.P.C. Fossorier, S. Lin and H. Imai), *Technical Report of IEICE*, vol. 96, no. 311, pp. 25-30, IEICE, October, 1996.
81. A Variable-Rate Coding Scheme based on Multilevel Convolutional Codes, (coauthor: H. Imai), *Proceedings of the Japan-Canada International Workshop on Multimedia Wireless Communications and Computing (WMWCC'96)*, pp. 15-16, Victoria, B.C., Canada, September 17, 1996.
82. Multilevel Convolutional Codes based on a Generalized Concatenation Approach, (coauthor: H. Imai), *Proceedings of the 1996 International Symposium on Information Theory and Its Applications (ISITA'96)*, pp. 815-818, Victoria, B.C., Canada, September 17-20, 1996.
83. Constructions of Generalized Concatenated Codes And Their Trellis-Based Decoding Complexity, (coauthors: T. Fujiwara, T. Kasami, and S. Lin), *Proceedings of the 1996 International Symposium on Information Theory and Its Applications (ISITA'96)*, pp. 286-289, Victoria, B.C. Canada, September 17-20, 1996.
84. Multilevel Constructions of Convolutional Codes using a Generalized Concatenated Approach, (coauthor: H. Imai), *Technical Report of IEICE*, vol. 95, no. 590, pp. 43-48, IEICE, April 1996.
85. Coded Modulation Techniques for Satellite Broadcasting of Digital High Definition TV, (coauthors: O.Y. Takeshita and H. Imai), presented at the *Mediterranean Workshop on Coding and Information Integrity*, Palma de Mallorca, Spain, February 29, 1996.
86. New Coded Modulations for Satellite Video Broadcasting, (coauthors: H. Imai and O.Y. Takeshita), *Proceedings of the 18th Symposium on Information Theory and Its Applications (SITA '95)*, pp. 195-198, Hanamaki, Japan, October 24-27, 1995.
87. Error Performance Analysis of Multilevel Block Coded 8-PSK Modulations Using Unequal Error Protection Codes for the Rayleigh Fading Channel, (coauthors: N. Uetsuki, T. Takata, T. Kasami and S. Lin), *Proceedings of the 18th Symposium on Information Theory and Its Applications (SITA '95)*, pp. 191-194, Hanamaki, Japan, October 24-27, 1995.
88. Multilevel Block Coded 8-PSK Modulations Using Unequal Error Protection Codes for the Rayleigh Fading Channel, (coauthors: T. Kasami and S. Lin), *Proceedings of the 1995 Sixth IEEE International Symposium on Personal, Indoor and Mobile Radio Communications (PIMRC '95)*, vol. 2, pp. 486-490, Toronto, Canada, September 27-29, 1995.
89. Multilevel Block Coded 8-PSK Modulation Using Unequal Error Protection Codes for Rayleigh Fading Channels, (coauthors: T. Kasami and S. Lin), *Proceedings of the 1995 IEEE International Symposium on Information Theory (ISIT '95)*, p. 154, Whistler, B.C., Canada, September 17-22, 1995.

90. New Methods for Computing the Weight Distribution of a Linear Block Code Based on Its Trellis Structure, (coauthors: T. Fujiwara, T. Kasami and Y. Desaki), *Proceedings of the 1994 International Symposium on Information Theory and Its Applications (ISITA'94)*, Vol. 1, pp. 25-28, Sydney, Australia, Nov. 20-25, 1994.
91. Block QPSK Modulation Codes With Two Levels of Error Protection, (coauthor: S. Lin), *Proceedings of the Fifth IEEE International Symposium on Personal, Indoor and Mobile Radio Communications (PIMRC'94)*, Vol. II, pp. 548-552, The Hague, The Netherlands, September 18-22, 1994.
92. Unequal Error Protection Capabilities of Some Binary Primitive BCH Codes, (coauthor: S. Lin), *Proceedings 1994 IEEE International Symposium on Information Theory (ISIT'94)*, p. 501, Trondheim, Norway, June 27-July 1, 1994.
93. The State Complexity of Trellis Diagrams for a Class of Generalized Concatenated Codes, (coauthors: T. Fujiwara, T. Kasami, and S. Lin), *Proceedings 1994 IEEE International Symposium on Information Theory (ISIT'94)*, p. 471, Trondheim, Norway, June 27-July 1, 1994.
94. Primitive BCH Codes With Unequal Error Protection Capabilities, (coauthor: S. Lin), *Proceedings of the 1993 International Symposium on Communications (ISC'93)*, Vol. 2, pp. 20-5-8, Taiwan, ROC, December 7-10, 1993.
95. The State Complexity of Trellis Diagram for a Class of Generalized Concatenated Codes, (coauthors: T. Fujiwara, T. Kasami and S. Lin), *Proceedings of the 16th Symposium on Information Theory and Its Applications (SITA'93)*, pp. 21-24, Kanazawa, Japan, October 19-22, 1993.
96. On Trellis Structure of LUEP Block Codes and A Class of UEP QPSK Block Modulation Codes, *Proceedings of the 16th Symposium on Information Theory and Its Applications (SITA'93)*, pp. 283-286, Kanazawa, Japan, October 19-22, 1993.
97. QPSK Modulation Codes for Unequal Error Protection, (coauthor: S. Lin), *Proceedings of the 1993 IEEE International Symposium on Information Theory (ISIT'93)*, p. 184, San Antonio, Texas, Jan. 17-22, 1993.
98. Unequal Error Protection QPSK Modulation Codes, (coauthor: S. Lin), *Proceedings of the 1992 International Symposium on Information Theory and Its Applications (ISITA'92)*, pp. 1121-1125, Singapore, November 16-20, 1992.
99. Binary Two-Level Error Correcting Codes and Their Decoding, (coauthor: S. Lin), *The 26th Annual Conference on Information Sciences and Systems (1992 CISS)*, Princeton University, March 18-20, 1992.
100. Some Results on Linear Unequal-Error-Protection Codes, (coauthor: S. Lin), *Proceedings of the 7th International Conference AAECC-7*, New Orleans, LA, October 7-10, 1991, published in *Lectures Notes in Computer Science*, Vol. 539, pp. 259-268, Springer-Verlag, Berlin, Germany, 1991.
101. On a Class of Optimal Nonbinary Linear Unequal-Error-Protection Codes for Two Sets of Messages, (coauthor: S. Lin), *Proceedings of the 1990 International Symposium on Information Theory and Its Applications (ISITA'90)*, Vol. 1, pp. 35-38, Honolulu, Hawaii, November 27-30, 1990.
102. Package for simulation of error correcting codes (coauthor: F.J. Garcia-Ugalde), *Presente, Pasado y Futuro de las Ciencias de la Computacion en Mexico*, 1988, UNAM, pp. 150-154.

103. Design of a Viterbi Decoder with Microprocessor-Based Serial Implementation, (coauthor: F.J. Garcia-Ugalde), *Proceedings of the 4th International Conference AAECC-4*, Karlsruhe, FRG, September 1986, published in *Lecture Notes in Computer Science*, Vol. 307, pp. 58-67, Springer-Verlag, April-May 1988.
104. Incorrect decoding and non detection probabilities for Reed-Solomon codes, (coauthors: F.J. Garcia-Ugalde, I. Magana-Mendoza), *Conferencia de la Academia Nacional de Ingenieria*, September 1985, San Luis Potosi, Mexico, pp. 267-271.

Patents

1. *Universal platform for software defined radio*, (coauthors: R. Kohno, M. Abe, N. Sasho, S. Haruyama, F. Swarts, P. Van Rooyen, Y. Sanada, L. Michael, H. Amir-Alikhani and V. Brankovic), European patent EP1224742, May 18, 2011.
2. *Method and Apparatus for Loss Correction and Limited Reception in Streaming Data, and Data Communication Apparatus*, (coauthor: M. Mihajevic), Japanese patent JP3918578, May 23, 2007.
3. *System for Transmitting Encoded Signals Using Multiple Block Lengths*, (coauthor: F. Swarts), U.S. patent No. 7,003,042, February 21, 2006.
4. *Transmitter, The Method of the Same and Communication System*, (coauthor: M. Ghavami), U.S. patent No. 7,065,149, June 20, 2006.
5. *Integrated Circuit, Method of Circuit Configuration and Program Thereof*, (coauthors: R. Kohno, K. Akai, M. Lachlan and Y. Sanada), U.S. patent No. 6,768,337, July 27, 2004.
6. *Universal Platform for Software Defined Radio*, (coauthors: R. Kohno et al.), U.S. patent No. 6,823,181, November 23, 2004.
7. *Hybrid State Machine for Frame Synchronization*, (coauthors: R. Juluri and C. Xiao), U.S. patent No. 6,741,613, May 25, 2004.
8. *Modulation format identification device and method of same*, U.S. patent No. 6,804,309, October 12, 2004.
9. *Decoder for Iterative Decoding of Binary Cyclic Codes*, U.S. patent No. 6,751,770, June 15, 2004.
10. *Method and apparatus for multi-level coding of digital signals*, (coauthors: S. Lin and M.P.C. Fossorier), U.S. Patent No. 6,643,332, Nov. 2003.
11. *Reed-Solomon decoder*, U.S. Patent No. 6,487,692, Nov. 26, 2002.
12. *System for improving the performance at low signal-to-noise ratios of receivers with Viterbi decoders*, (coauthor: A. Mogre), U.S. Patent No. 6,141,391, Oct. 31, 2000.
13. *Decoding trellis coded modulated data with a conventional Viterbi decoder*, (coauthors: A. Mogre, C. Qiang and R. Juluri), U.S. Patent No. 6,138,265, Oct. 24, 2000.
14. *Encoding and decoding rate-1/n convolutional codes and their punctured versions*, (coauthor: A. Mogre), U.S. Patent No. 6,134,696, Oct. 17, 2000.
15. *Method for choosing coding schemes, mappings, and puncturing rates for modulations/encoding systems*, (coauthor: A. Mogre), U.S. Patent No. 6,101,626, Aug. 8, 2000.
16. *Method and apparatus for fast decoding of a Reed-Solomon code*, U.S. Patent No. 6,081,920, June 27, 2000.