
KRISHNA R. NARAYANAN

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Home Address :

College Station,
TX 77845, USA

Education **Ph.D. in Electrical Engineering**, Dec 1998
Georgia Institute of Technology, Atlanta, GA

M.S. in Electrical Engineering, Aug 1994
Iowa State University, Ames, IA

B.S. in Electrical Engineering, May 1992
Coimbatore Institute of Technology, India
Ranked First out of 47 Students

Experience *September 2003 to Present* - **Associate Professor**, Department of Electrical and Computer Engineering, Texas A&M University, College Station, TX 77843

Held visiting positions at the University of Illinois at Urbana Champaign, IL, Institut Eurecom in Sophia Antipolis, France and the Indian Institute of Science, Bangalore India during one year sabbatical in the academic year 2004.

December 1998 to August 2003 - **Assistant Professor**, Department of Electrical and Computer Engineering, Texas A&M University, College Station, TX 77843

June '95 to September '95 - **Summer Intern**, AT&T Bell Laboratories, Crawford Hill Laboratory, NJ 07733

Teaching

- Courses developed
 - Advanced topics in channel coding - a graduate course on LDPC codes, concatenated codes, iterative decoding and bandwidth efficient coding
 - Wireless Communications - upgraded the graduate level wireless communications course with emphasis on recent developments including MIMO techniques
- Courses taught - Channel coding for communications, Information theory, Wireless communications, Digital Communications, Signals and Systems

**Main
Research
areas**

- Coding theory
- Information theory
- Receiver signal processing
- Applications to wireless communications and magnetic recording

**Student
Supervision**

- Graduated Students - 7 Ph.D., 7 M.S students
- Current Students - 3 Ph.D., 2 M.S student

**Editorial
Positions**

- Area Editor, Coding Theory and Applications, IEEE Transactions on communications, 2007 - present
- Editor, IEEE Transactions on communications, 2005 - present
- Editor, IEEE Transactions on Wireless Communications, 2001 - 2005
- Associate editor for IEEE communications letters, 2000 - 2003

**Externally
Sponsored
Research**

1. PI - J.F. Chamberland, Co-PI's - Henry Pfister and K.R. Narayanan, "Queue Aware Coding: Fundamental Limits on Delay Constrained Communications", National Science Foundation, \$ 300,000, Sept 1, 2008 - Aug 31, 2011.
2. PI - X. Zhang, Co-PI's - K.R. Narayanan, H. Pfister, "GOALI : Advanced Coding and Signal Processing for Magnetic Recording: From Theory to Implementation", National Science Foundation, \$175,000 (dollar amount awarded to Texas A&M University), May 1 2008 - April 31 2011.
3. PI - M.S. Alouini, Co-PI's - K.R. Narayanan, H. Pfister, and K. Qaraqe, "Universal Signaling Schemes for Multimedia Transmission over Wireless Networks", Qatar National Research Foundation, \$575,100, January 2008-December 2010
4. PI - K.R. Narayanan, "Joint Source-Channel Coding for Wireless Networks", National Science Foundation, \$300,000, September 2007 - August 2010
5. PI - K.R. Narayanan, Co-PI H. Pfister, "Soft Decision Decoding of Reed Solomon Codes for High Density Recording Channels", International Storage Industry Consortium, \$32,000, January 2007 - December 2007
6. PI - K.R. Narayanan, "Understanding and Mitigating Error Floors in Iterative Decoding with Applications to Magnetic Recording", International Storage Industry Consortium, \$30,000, Jan 2006 - December 2006
7. PI - K.R. Narayanan, "Universal Source and Channel Codes for Non-Ergodic Channels", National Science Foundation, \$189,586, Sept. 2005 - Aug 2008
8. PI - K.R. Narayanan, "Low Complexity Iterative Decoding for Digital Magnetic Recording", Seagate Research Inc, Pittsburgh, \$75,106, 01/04-12/05.
9. PI - K.R. Narayanan, "Coding for Long Haul Optical Networks", Azea Networks, United Kingdom, \$45,000, Jan 01, 2004 to Dec 31, 2004
10. PI - K.R. Narayanan, CAREER award "Design and Analysis of Iteratively Decodable Codes for Wireless Communications and Digital Magnetic Recording", National Science Foundation, \$300,000, Feb 01, 2001 - Jan 31, 2007
11. PI - K. R. Narayanan, "Low Density Parity Check Codes and Turbo-Like Codes for Wireless Communications", National Science Foundation, \$179,925, 09/01/2000 - 08/31/2003

12. PI - K.R. Narayanan, "Advanced Coding Techniques and Low Complexity Decoding for Wireless Data Networks", Advanced Technology Program, Texas Higher Education coordinating Board, \$72,600, 01/01/00-12/31/01
13. PI - K. R. Narayanan, "Low Density Parity Check Codes for High Order Signal Constellations", Tadiran Microwave Networks, \$38,000, 06/01/00-12/01/01
14. PI - K.R. Narayanan, "Low Complexity Iterative Decoding for Digital Magnetic Recording", Seagate Research Inc, Pittsburgh, \$80,106, 01/02-12/03
15. PI - K. R. Narayanan, "Concatenated Coding and Iterative Decoding", Rockwell Collins University Grants Program, \$41,500, 09/01/00-05/01/02
16. PI - K.R. Narayanan, "Research in Turbo Coding", GS Labs, \$16,000
17. PI - K. R. Narayanan, "Low Density Parity Check Codes for Wireless Communications", Texas Instruments, \$20,000, 09/01/00-08/31/01
18. PIs - C.N.Georghiadis, S.Miller, K.Narayanan, & X. Wang, "Space-Time Processing", Motorola Inc, Austin, \$60,000, 01/01/2000-01/01/2001
19. PI - G. Choi, Co-PI - K.R. Narayanan, "ASIC Design and Implementation of Advanced Coding Techniques for Wireless Data Networks", Advanced Technology Program, Texas Higher Education coordinating Board, \$142,600, 01/01/02-12/31/03

Internally Sponsored Research

1. PI - C.N. Georghiadis, Co-PIs - S.Miller, K.Narayanan, E. Serpedin, X. Wang, Z. Xiong and B. Zoghi, "Advanced Algorithms for High Speed Wireless Networks", Telecommunications Infrastructure & Technology Fund, Texas A&M University, \$485,000, 08/01/01 - 07/31/04

Book Chapters

1. K.R. Narayanan, Turbo Equalization, in Wiley Encyclopedia on Telecommunications, Editor - J.G. Proakis, Wiley, 2003
2. J. Li, E. Kurtas and K.R. Narayanan, Turbo Product Codes for Partial Response Channels, in CRC Handbook, CRC Press

Tutorials

- Low Density Parity Check Codes, IEEE WCNC 2004
- Low Density Parity Check Codes, 2005, IEEE Web-based tutorial, currently available for purchase from IEEE
- EXIT Charts: Properties, Extensions and Applications, Indian Institute of Science, 2005

Journal Publications in reverse chronological order

1. J. Jiang and K.R. Narayanan, "Bit Level Algebraic Soft Decision Decoding", *to appear in IEEE Transactions on Information Theory, 2008*
2. K. Bhattad, K.R. Narayanan, and G. Caire, "On the Distortion Exponent of Some Layered Transmission Schemes", *IEEE Transaction on Information Theory*, Vol. 54, No. 7, pp. 2943-2958, July 2008
3. K. R. Narayanan and N. Nangare, "A Non-Iterative Receiver for Achieving Near Capacity Performance on Inter Symbol Interference Channels", *to appear in IEEE Transactions on Communications*, 2007

4. G. Caire and K.R. Narayanan, "On the Distortion SNR Exponent of Hybrid Digital Analog Space Time Coding", *IEEE Transactions on Information Theory*, pp. 2867-2877, Vol. 53, No. 8, August 2007
5. K. Bhattad and K.R. Narayanan, "An MSE Based Transfer Chart for Analyzing Iterative Decoding Schemes", *IEEE Transaction on Information Theory*, pp. 22-38, Vol. 53, No. 1, Jan 2007
6. B. J. Peiris, K. R. Narayanan and S. L. Miller, "A Reduced Complexity Spectral Domain Approach to Design Spreading Sequences for DS-CDMA Systems in Frequency Selective Fading Channels," *to appear in IEEE Transactions on Wireless Communications*, pp. 2386-2395, Vol. 5, No. 9, Sept 2006
7. J. Jiang and K. R. Narayanan, "Iterative Soft Input Soft Output Decoding of Reed-Solomon Codes", *IEEE Transactions on Information Theory*, pp. 3746-3756, Vol. 52, No.8, August 2006
8. C. F. Lan, Z. Xiong and K.R. Narayanan, "Source-optimized Irregular Repeat Accumulate Codes with Inherent Unequal Error Protection Capabilities and Their Application to Scalable Image Transmission", *IEEE Tran. Image Processing*, pp. 1740-1750, Vol. 52, No. 7, July 2006
9. K. Bhattad and K. R. Narayanan, "A Decision Feedback Based Scheme for Slepian-Wolf Coding of Sources With Hidden Markov Correlation," *in IEEE Communications Letters*, pp. 378-380, Vol. 10, No. 5, May 2006
10. N. Nangare, X. Yang, E. Kurtas and K.R. Narayanan, "Performance of BCJR-DFE Detectors Over Recording Channels Using Pattern-Dependent Noise Prediction", *IEEE Tran. Magnetics*, pp. 2971-2973, vol. 41, no. 10, Oct. 2005
11. N.D. Doan, and K.R. Narayanan, "Design of Good Low Rate Codes for ISI Channels Based on Spectral Shaping", *IEEE Tran. Wireless Comm*, vol. 4, no. 5, pp. 2309-2317, Sept. 2005
12. H. Sankar and K.R. Narayanan, "Design of irregular repeat accumulate codes for OFDM systems with partial channel state information", *IEEE Tran. Wireless Communications*, pp. 2491-2497, Vol. 5, No. 4, Sept. 2005
13. X. Wang, G. Yue and K.R. Narayanan, "Optimization of LDPC Coded Turbo CDMA Systems", *IEEE Transactions on Signal Processing*, Vol. 53, No. 4, pp. 1500-1510, April 2005
14. K.R. Narayanan, X. Wang and G. Yue, "Estimating the PDF at the Output of the SIC/MMSE Equalizer and Its Applications in Designing LDPC Codes" *IEEE Tran. Wireless Communications*, Vol. 4, No. 1, pp. 278-287, Jan. 2005
15. J. Li, K.R. Narayanan and C.N. Georghiades, "An Efficient Algorithm to Compute the Euclidean Distance Spectrum of a General Intersymbol Interference Channel and Its Applications", *IEEE Tran. Communications*, Vol. 52, No. 12, pp. 2041-2046, Dec. 2004
16. H. Sankar and K.R. Narayanan, "Memory Efficient Implementation of Low Density Parity Check Codes", *in IEEE Tran. Communications*, vol. , no. , pp. 1225-1230, Aug. 2004
17. C. F. Lan, T. Chu, K.R. Narayanan and Z. Xiong, "Scalable Image Transmission Using Rate Compatible Irregular Repeat Accumulate Codes", *in IEEE Tran. Communications*, vol. 52, no. 7, pp. 1092-1101, July 2004

18. J. Jiang and K.R. Narayanan, "Iterative Soft Decision Decoding of RS Codes", *IEEE Communications Letters*, Vol. 8, No. 4, pp. 244-246, April 2004
19. J. Li, Y. Cai, K.R. Narayanan, G. Lenner, A. Lucero, A. Pilipetskii and C. N. Georghiades, "On the Bit Error Rate of Product Accumulate Codes in Optical Fiber Communications", *IEEE Journal. of Lightwave Technology*, Vol. 22, No.2, pp. 640-646, Feb. 2004
20. J. Li, K.R. Narayanan, C.N.Georghiades, "Product Accumulate Codes: A Class of Low Complexity Capacity Approaching Codes", *IEEE Tran. Info Theory*, Vol. 50, No. 1, pp. 31-46, Jan 2004
21. K.R. Narayanan, I. Altunbas and R. Narayanaswami, "Design of Codes for Minimum Shift Keying based on Density Evolution", in *IEEE Tran. Communications*, pp. 1283-1295, Vol. 51, No. 8, Aug. 2003.
22. A. Mondragon, K.R. Narayanan, and E. Sanchez-Sinencio, "Floating Gate Analog Implementation of the Additive Soft-Input Soft-Output Decoding Algorithm", *IEEE Tran. Circuits and Systems*, pp. 1256-1269, Vol. 50, No. 10, Oct. 2003.
23. V. Gulati and K.R. Narayanan, "Concatenated Codes for Fading Channels Based on Recursive Space-Time Codes", in *IEEE Tran. Wireless Communications*, pp. 118-128, Vol. 2, Jan 2003.
24. S. Choe, C.N. Georghiades and K.R. Narayanan, "Improved Upper Bounds on Error Probability for Biorthogonal Trellis-Coded CDMA Systems", *IEEE Commun. Letters*, pp. 361-363, Vol.6, No.9, Sept. 2002.
25. A. Prabhakar and K.R. Narayanan, "Pseudo-Random Construction of Low Density Parity Check Codes using Linear Congruential Sequences", *IEEE Tran. Communications*, pp. 1389-1396, Vol. 50, No.9, September 2002 .
26. J. Li and K.R. Narayanan, "On the Performance of Single Parity Check based Turbo Product Codes and LDPC codes on Partial Response Channels", *IEEE Tran. Communications*, pp.723-734, vol. 50, no. 5, May, 2002.
27. N. D. Doan and K.R. Narayanan, "Iterative Retransmission Schemes for Inter Symbol Interference Channels", *IEEE Tran. Commun*, pp. 560-571, vol. 50, no. 4, April 2002.
28. B.Lu, X. Wang and K.R. Narayanan, "LDPC based Space-time Coded OFDM Systems over Correlated Fading Channels: Analysis and Receiver Design", *IEEE Tran. Communications*, pp. 74-88, vol. 50, no. 1, Jan. 2002.
29. I. Altunbas and K.R. Narayanan, "A Novel Serial Concatenated Coding Scheme with Minimum Shift Keying", in *IEE Electronics Letters*, pp.1393-1395, vol. 37, no. 23, Nov. 2001
30. U. Dasgupta and K. R. Narayanan, "Parallel Decoding of Turbo Codes using Soft Output M algorithms", *IEEE Comm. Letters*, pp.352-354, vol. 5, no. 8, August 2001.
31. J. Li, E. Kurtas, K.R. Narayanan, and C.N. Georghiades, "On the Performance of Turbo Product Codes for Partial Response Channels", *IEEE Tran. Magnetics*, pp. 1932-1934, vol. 37, no. 4, July 2001
32. K. R. Narayanan, "Effect of Precoding on the Convergence of Turbo Equalization for Partial Response Channels", *IEEE Journal Sel. Areas in Communications*, pp.686-698, vol. 19, no. 4, April 2001.

33. K. R. Narayanan & G. L. Stüber, “Performance of Trellis Coded CPM with Iterative Demodulation and Decoding”, *IEEE Trans. Communications*, pp. 676-687, vol. 49, no. 4, April 2001.
34. L. McPheters, S. W. McLaughlin, & K.R. Narayanan, “Precoded PRML, Serial Concatenation, and iterative (turbo) decoding for digital magnetic recording”, *IEEE Trans. Magnetism*, pp. 2325–2327, vol. 35, no. 5, Part:I, Sept. 1999
35. K.R.Narayanan & G.L.Stüber, “A Serial Concatenation Approach to Iterative Demodulation and Decoding,” *IEEE Trans. Comm.*, pp. 956-961, vol. 47, no. 7, July 1999
36. K.R.Narayanan & G.L.Stüber, “List Decoding of Turbo Codes,” *IEEE Trans. Comm.*, pp. 754-762, vol. 46, no. 6, June 1998
37. K.R.Narayanan & G.L.Stüber, “Selective Serial Concatenation of Turbo Codes,” *IEEE Comm. Letters*, pp. 136-139, vol. 1, no. 5, Sep. 1997
38. K.R. Narayanan & J.F.Doherty, “A Convex Projections Method for Improved Narrowband Interference Rejection in Direct Sequence Spread Spectrum Systems”, *IEEE Trans.Comm*, pp. 772-774, vol. 45, no. 7, July 1997
39. K.R.Narayanan & G.L.Stüber, “A Novel ARQ Technique Based on the Turbo Coding Principle,” *IEEE Comm. Letters*, pp. 49-51, vol. 1, no. 2, Feb. 1997

**Journal
Papers
submitted**

1. M. P. Wilson, K.R. Narayanan, H. Pfister and A. Sprintson, “Joint Physical Layer and Network Coding for the Bi-Directional Relay Problem”, *submitted to the IEEE Transactions on Information theory*, June 2008
2. K. Bhattad and K.R. Narayanan, “A Note on the Rate of Decay of Mean-Square Error with SNR for the AWGN Channel”, *submitted to the IEEE Transactions on Information Theory*, November 2007
3. K.R. Narayanan and A. R. Srinivasa, “On the Thermodynamic Temperature of a General Distribution”, *submitted to Journal of Statistical Mechanics and Applications*, November 2007
4. M. P. Wilson, K.R. Narayanan and G. Caire, “Joint Source Channel Coding with Side Information using Hybrid Digital Analog Codes”, *submitted to IEEE Transactions on Information Theory*, November 2007
5. A. Prabhakar, K. Narayanan. A memory efficient scalable architecture for Low Density Parity check codes. *submitted to IEEE Transactions on Circuits and Systems, under revision*

**Journal
papers
under
preparation
Other
Significant
Publications**

1. H. Sankar and K. R. Narayanan, “Design of Near-Optimal Coding Schemes for Adaptive Modulation with Practical Constraints”, to be submitted to *IEEE Trans. on Wireless Communications*.
1. K.R. Narayanan & L.J.Cimini, “Equalizer Adaptation Algorithms for High Speed Wireless Communications”, *AT&T Technical Memorandum, 1998* (46 pages)
2. K.R. Narayanan and G. Caire, “Layered Costa Coding for Broadcasting with Bandwidth Compression”, *WCL Technical Memorandum, TR106*, October 2005

**Invited
Talks**

1. “Joint Source Channel Coding for Non-Ergodic MIMO Channels”, WINLAB Seminar, Rutgers University, April 24, 2007

2. "Joint Source Channel Coding for Non-Ergodic MIMO Channels", Columbia University, April 23, 2007
3. "Joint Source Channel Coding for Non-Ergodic MIMO Channels", MIT LIDS Colloquium, April 3, 2007
4. "Hybrid Digital Analog Coding with Side Information", UCSD Workshop on Information Theory and its Applications, February 2007
5. "Bit Level Soft Decision Decoding of Reed Solomon Codes", American Mathematical Society meeting, New Orleans, LA, January 2007
6. "Hybrid Digital Analog Strategies for Broadcasting", Rice University, TX, October 2006
7. "Iterative Signal Processing versus Decision Feedback Signal Processing", ICCSS, March 2006
8. "Hybrid Digital and Analog Space-Time Coding", The University of Texas at Austin, Feb 2006
9. "Further Results on the SNR Exponent of Hybrid Digital Analog Space-Time Codes", UCSD Workshop on Information theory, Feb 2006
10. "On the SNR Exponent of Hybrid Digital Analog Space-Time Codes", Indian Institute of Science, Bangalore, India, December 2005
11. "Soft Decision Decoding of RS Codes", Indian Institute of Science, Bangalore, India, June 2005 and again in December 2005 with updated results.
12. "To Iterate or Feedback? How to Achieve Universally Good Performance on Channels with Memory", Indian Insitute of Science, Bangalore, India, June 2005.
13. "To Iterate or Feedback? How to Achieve Universally Good Performance on Channels with Memory", Indian Institute of Technology, Madras, India, June 2005.
14. "To Iterate or Feedback? How to Achieve Universally Good Performance on Channels with Memory", Georgia Insitute of Technology, Lorraine, Metz, France, April 2005
15. "Soft Decision Decoding of RS Codes", Ecole Nationale Superieur des Telecommunications (ENST) - Paris, France, April 2005
16. "To Iterate or Feedback? How to Achieve Universally Good Performance on Channels with Memory", Ecole Nationale Superieur des Telecommunications (ENST - Paris), Paris, France, April 2005.
17. "Soft Decision Decoding of RS Codes", Ecole Nationale Superieur des Telecommunications (ENST) - Bretagne, France, March 2005
18. "To Iterate or Feedback? How to Achieve Universally Good Performance on Channels with Memory", Institut Eurecom, Sophia Antipolis, France, Jan 2005.
19. "Soft Decision Decoding of RS Codes", University of Notre Dame, IN, November 2005
20. "To Iterate or Feedback? How to Achieve Universally Good Performance on Channels with Memory", The University of Texas at Austin, October 2004
21. "Decision Feedback Signal Processing for Achieving Near Capacity Performance on Channels with Memory", The University of Illinois at Urbana-Champaign, October 2004

22. "Iterative Decoding of RS Codes Based on Adaptive Parity Check Matrices", March 2004, Workshop on Theoretical Advances in Information Recording, DIMACS, Rutgers University
23. "Simplified Design and Analysis of LDPC Codes for ISI Channels with Turbo Equalization", April 2003, Harvard University.
24. "Design of LDPC codes with MMSE Turbo Equalization", Information Theory Workshop, October 2002
25. "Product Accumulate Codes on Fading Channels", Asilomar Conference on Signals and Systems, November 2002
26. "Design and Analysis of Codes for Turbo Equalization with Optimal and Sub-optimal Soft Output Decoding", Allerton conference on communications and control, October 2002 (upcoming)
27. "Product Accumulate Codes: Construction and Properties", Information Theory Workshop, September 2001
28. "Effect of Precoding on the Convergence of Turbo Equalization for Partial Response Channels", The Magnetic Recording Conference, Santa Clara, August 2000
29. "Design considerations for iterative equalization and decoding", Conference on Information Science and Systems (CISS), Princeton, Mar 2000
30. "Iterative demodulation, equalization and decoding", IEEE signal processing society, Dallas TX, January 20, 2000
31. "Performance of Turbo Coded CPM with Iterative Demodulation", IEEE Military Commun. Conf, 1999
32. "Turbo coding and Low density parity check codes for microwave communications", Tadiran Microwave Networks, Houston, TX, December 2, 1999

Consulting Experience

- GLS Labs, Atlanta, GA, 2002
- GLS Labs, Atlanta, GA, 2004
- Microwave Networks, Stafford, TX, 2004
- Wilmer Hale Associates LLP, Boston, MA

Professional Activities

- Lead guest editor, IEEE Journal of Selected Areas on Communications special issue on "Equalization with Applications to Wireless Communications", February 2008
- General Co-Chair, IEEE Information Theory Workshop 2007 in Lake Tahoe, CA, September 2007
- Proposal reviewer and/or panelist for the National Science Foundation, Israel Ministry of Science, MICRO proposals for state of California, State of S. Carolina, Hongkong ministry of science, SABIC proposals for King Fahd University of Petroleum and Mines, Saudi Arabia
- Reviewer for IEEE Tran. Info Theory, IEEE Tran. Commun, IEEE Tran. Wireless Commun., IEEE Journal Sel. Areas in Commun, IEEE Communications Letters, Wiley Inter-Science Journal, several IEEE conferences

- Member of best student paper award committee, IEEE signal processing society, data storage sub committee
- Session Chair, IEEE VTC 1999, IEEE ICC 2000, Globecom 2000, Globecom 2001
- Session Organizer, Globecom 2000, Globecom 2001, Globecom 2002, Globecom 2003

Honors

- Outstanding Professor Award, Department of Electrical Engineering, Texas A&M University, 2002
- Faculty early CAREER development award, National Science Foundation, 2001
- Select Young Faculty Award within College of Engineering at Texas A&M University, 2001
- Nominated for Montague Teaching Excellence Award at Texas A&M University from Dept. of Electrical Engineering in Year 2001 (did not receive the award)
- Recipient of Harpole, Palmer and Litton Graduate Fellowship from the Dept. of Electrical Engineering, Iowa State University, Ames, IA
- Recipient of the Premium for Academic Excellence award from Graduate College, Iowa State University, Ames, IA
- Member of Phi Kappa Phi (1994-95)
- Graduated at the top of the class in bachelor's degree

Conference Publications

1. K.R. Narayanan, G. Caire and M. Wilson, "Duality Between Broadcasting with Bandwidth Expansion and Bandwidth Compression", *Proc. IEEE ISIT*, 2007
2. M. Wilson, K.R. Narayanan and G. Caire, "Joint Source Channel Coding with Side Information Using Hybrid Digital Analog Codes", *Proc. 2nd ITA Workshop*, Jan 2007
3. J. Jiang and K. R. Narayanan, "Multilevel Coding Schemes for Channels with Non-uniform Inputs and Rateless Transmission over the BSC" *to appear in ISIT*, 2006.
4. H. Sankar and K. R. Narayanan, "Design of Near-Optimal Coding Schemes for Adaptive Modulation with Practical Constraints", accepted for publication in ICC '06.
5. J. Jiang, C. He, E. Kurtas, and K. R. Narayanan, "Performance of Soft Feedback Equalization over Magnetic Recording Channels" *Intermag*, 2006, accepted
6. K.R. Narayanan and G. Caire, "Further Results on the SNR Exponent of Hybrid Digital Analog Space-Time Codes", *Proc. UCSD Workshop on Info. Theory and Its Applications*
7. N. Nangare, K.R. Narayanan, X. Yang, and E. Kurtas, "Joint Timing Recovery, ISI Equalization and Decoding Using Per-Survivor BCJR-DFE", *in Proc. of IEEE Global Telecommunications Conference*, pp. 1620-1624, Dec 2005
8. B. J. Peiris, K. R. Narayanan and S. L. Miller, "A Frequency Domain Approach to Design Constrained Amplitude Spreading Sequences for DS-CDMA Systems for Frequency Selective Fading Channels," *Global Telecommunications Conference*, Nov. 2005.

9. G. Caire and K.R. Narayanan, "On the SNR Exponent of Hybrid Digital Analog Space-Time Coding", *Proc. Allerton Conf. on Communications, control and computing*, Oct. 2005
10. J. Jiang and K. R. Narayanan, "Performance Analysis of Algebraic Soft Decoding of Reed-Solomon Codes over Binary Symmetric and Erasure Channels" in *Proc. International Symposium on Information Theory*, pp. 1186-1190, Sept. 2005
11. K. Bhattad, N. Ratnakar, R. Koetter, and K. R. Narayanan, "Minimal Network Coding for Multicast," *Proc. International Symposium on Information Theory 2005*, ISIT 2005, pp. 1730-1734, Adelaide, Australia, Sep. 2005.
12. V. Sethuraman, B. Hajek and K.R. Narayanan, "On the Capacity of Non-Coherent Fading Channels with a Peak Constraint", in *Proc. of IEEE International Symposium on Information Theory*, ISIT, pp. 515-519, Adelaide, Australia, Sep. 2005
13. A. Prabhakar and K. R. Narayanan, "A Scalable Architecture for Linear Congruential LDPC Codes", *IEEE Conf. on Communications, ICC 2005*, pp. 1911-1915, 16-20 May 2005
14. K. Bhattad and K.R. Narayanan, "Weakly Secure Network Coding," *First Workshop on Network Coding, Theory, and Applications*, NETCOD 2005, Riva Del Garda, Italy, April 2005
15. A. Prabhakar, K. Narayanan. A Memory Efficient Serial LDPC Decoder Architecture. *IEEE International Conference on Acoustics, Speech and Signal Processing, 2005*, vol.5, 18-23 March 2005, pages:41-44.
16. H. Sankar, N. Sindhushayana, K. R. Narayanan, "Design of LDPC Codes for high-order constellations," *IEEE Globecom*, vol.5, pp. 3113-3117, Nov. 29 - Dec. 3, 2004, Dallas, USA.
17. K. Bhattad and K. R. Narayanan, "An MSE Based Transfer Chart to Analyze Iterative Decoding Schemes," *42nd Allerton Conference on Communications, Control, and Computing*, Monticello, IL, Oct. 2004.
18. K.R. Narayanan and N. Nangare, "A BCJR-DFE Algorithm for Achieving Near Capacity Performance on Channels with Memory", in *Proc. of 42nd Allerton Conference on Communications, Control and Computing*, Monticello, IL, Oct. 2004
19. H. Sankar and K. R. Narayanan, "Design of IRA Codes for OFDM with partial CSI", WCNG Conf., University of Texas at Austin, Oct. 23, 2004.
20. J. Jiang and K. R. Narayanan, "Iterative Soft Decision Decoding of Reed-Solomon Codes Based Adaptive Parity Check Matrices" in *Proc. ISIT*, pp. 258, Sept. 2004
21. J. Jiang and K. R. Narayanan, "An Iterative Decoding for Soft Decision Decoding of RS Codes and Its Applications" in *Proc. of DIMACS workshop on theoretical advances in information recording*, Mar. 2004
22. B. J. Peiris, K. R. Narayanan and S. L. Miller, "A Technique to design spreading sequences for the uplink of a DS-CDMA system in Frequency selective fading channels," *Global Telecommunications Conference*, vol. 4, pp. 1867- 1871, Dec. 2003.

23. K.R. Narayanan, X. Wang and G. Yue, "Design of LDPC Codes for Turbo Equalization", *Proc. IEEE Info. Theory Workshop*, Oct. 2002, Bangalore, India.
24. K.R. Narayanan, R.V. Tamma and N.D. Doan, "Design and Analysis of LDPC Codes for Turbo Equalization with Optimal and Sub-Optimal Equalizers", *Proc. Allerton Conf. Commun, Control and Computing*, Oct. 2002
25. V. Gulati and K.R. Narayanan, "Concatenated Codes for Quasi Static Fading Channels: Constrained Capacity and Code Design", *to appear in Proc. of Comm. Theory Mini Conf.*, GLOBECOM 2002.
26. C. F. Lan, K.R. Narayanan and Z. Xiong, "Scalable Image Transmission Using Rate Compatible Irregular Repeat Accumulate Codes", *to appear in Intl. Conf. Image Processing*, 2002.
27. K.R. Narayanan, and X. Wang, "LDPC Code Design for MMSE Turbo Equalization", *to appear in IEEE Intl. Symp. on Info. Theory*, June 2002.
28. D.N. Doan and K.R. Narayanan, "Some New Results on the Design of Codes with Turbo Equalization", *in Proc. IEEE Intl. Conf. Commun*, pp. 1873–1877, 2002.
29. K.R. Narayanan, I. Altunbas and R. Narayanaswami, "On the Design of LDPC codes for Minimum Shift Keying", *in Proc. of Comm Theory Mini Conf, GLOBECOM 2001*.
30. J. Li, K.R. Narayanan, and C. N. Georghiades, "Generalized Product Accumulate Codes", *in Proc. of Comm Theory Mini Conf, GLOBECOM 2001*.
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