

Patents:

1. A. R. Hammons Jr and H. El Gamal, "Method of Generating Space-Time Codes for Generalized Layered Space-Time Architecture," *U.S patent 6,560,295*, May 2003.

Journal Articles in Print or in Press:

1. M. O. Damen, H. El Gamal, and N. C. Beaulieu, "Systematic Construction of Algebraic Full Diversity Constellations," *accepted for publication in the IEEE Transactions on Information Theory*, submitted Sep. 2002.
2. M. O. Damen, H. El Gamal, and G. Caire, "On ML Detection and the Search for the Closest Lattice Point," *accepted for publication in the IEEE Transactions on Information Theory subject to revisions (special issue on MIMO channels)*, submitted Oct. 2002.
3. M. O. Damen, H. El Gamal, and N. C. Beaulieu, "Space-Time Constellations: Fundamental Limits and Near Optimal Constructions," *accepted for publication in the IEEE Transactions on Information Theory (special issue on MIMO channels)*, submitted Aug. 2002.
4. H. El Gamal, A. R. Hammons Jr, Y. Liu, M. P. Fitz, and O. Takeshita "On the Design of Space-Time and Space-Frequency Codes for MIMO Frequency Selective Fading Channels," *to appear in the IEEE Transactions on Information Theory*, 2003.
5. H. El Gamal, M. P. Fitz, and D. Aktas "On the Design and Maximum Likelihood Decoding of Space-Time Trellis Codes," *to appear in the IEEE Transactions on Communications*, 2003.
6. H. El Gamal, A. R. Hammons Jr, and A. Stefanov, "Space-Time Overlays for Convolutionally Coded Systems," *to appear in the IEEE Transactions on Communications*, 2003.
7. H. El Gamal and M. O. Damen, "Universal Space-Time Coding," *to appear in the IEEE Transactions on Information Theory*, May. 2003 (submitted Jan. 2002).
8. H. El Gamal and A. R. Hammons Jr, "On the Design of Algebraic Space-Time Codes for MIMO Block Fading Channels," *IEEE Transactions on Information Theory*, Jan. 2003.
9. H. El Gamal, "On the Robustness of Space-Time Coding," *IEEE Transactions on Signal Processing*, Oct. 2002.
10. H. El Gamal, "On the Design of Layered Space-Time Systems for Autocoding," *IEEE Transactions on Communications*, Sept. 2002.
11. H. El Gamal and A. R. Hammons Jr, "On the Design and Performance of Algebraic Space-Time Codes for BPSK and QPSK Modulation," *IEEE Transactions on Communications*, June 2002.
12. H. El Gamal and E. Geraniotis, "Iterative Processing of FH/SSMA Signals," *to appear in the IEEE Transactions on Communications*, Feb. 2002.
13. B. Beidas, H. El Gamal, and S. Kay, "Iterative Interference Cancellation for High Spectral Efficiency Satellite Communications," *IEEE Transactions on Communications*, Jan. 2002.

14. H. El Gamal, and A. R. Hammons Jr, "A New Approach for Layered Space-Time Coding and Signal Processing," *IEEE Transactions on Information Theory*, vol. 47, no. 6: 2321:2334, Sep. 2001
15. N. Sharma, H. El Gamal, and E. Geraniotis, "Joint Demodulation and Iterative Multi-User Decoding for SFH/SSMA," *IEEE Transactions on Communications*, vol. 49, no. 8: 1437:1446, Aug. 2001
16. H. El Gamal and A. R. Hammons Jr, "Analyzing the Turbo Decoder Using the Gaussian Approximation," *IEEE Transactions of Information Theory*, vol. 47, no. 2: 671:686, Feb. 2001.
17. A. R. Hammons Jr and H. El Gamal, "On the Theory of Space-Time Codes for PSK Modulation," *IEEE Transactions on Information Theory*, vol. 46, no. 2: 524:542, Mar. 2000.
18. H. El Gamal and E. Geraniotis, "Iterative Multi-User Detection for Coded CDMA Signals in AWGN and Fading Channels," *IEEE Journal on Selected Areas in Communications*, vol. 18, no. 1: 30:41, Jan. 2000.

Patent Applications:

1. A. R. Hammons Jr, H. El Gamal, L. Lee, A. McDonald, J. Rozmaryn, and B. Beidas "Space-Time Trellis Coded OFDM System for MMDS Applications," *U.S. patent application*, Nov. 2001.
2. H. El Gamal and A. R. Hammons Jr, "Space-Time Trellis Coding for OFDM," *U.S. patent application*, Nov. 2001.
3. H. El Gamal and A. R. Hammons Jr, "Method and Constructions for Space-Time Overlays for Convolutionally Coded Systems," *U.S. patent application*, Nov. 2001.
4. H. El Gamal and A. R. Hammons Jr. "Method and Constructions for Space-Time and Space-Frequency Codes for Multi-Input Multi-Output Frequency Selective Fading Channels," *U.S. patent application*, Nov. 2001.
5. H. El Gamal and A. R. Hammons Jr, "Method and Constructions for Space-Time Codes for Block Fading Channels," *U.S. patent application*, Nov. 2001.
6. H. El Gamal, A. R. Hammons Jr, and M. Eroz, "Interleaver Design for Parsed Parallel Concatenated Convolutional Codes," *U.S patent application*, Nov. 2000.
7. H. El Gamal and A. R. Hammons Jr, "New Turbo-like Error Correction Codes with Improved Weight Spectrum," *U.S patent application*, Sep. 2000.
8. H. El Gamal and A. R. Hammons Jr, "Method and Construction for Space-Time Transmitter and Receiver," *U.S patent application*, July 2000.
9. H. El Gamal and A. R. Hammons Jr, "Method and Constructions for Space-Time Codes for PSK Constellations for Spatial Diversity in Multiple-Element Antenna Systems," *U.S patent application*, Sep. 1999.

10. H. El Gamal and B. Beidas, "Combined Interference Cancellation and FEC Decoding for High Spectral Efficiency Satellite Communications," *U.S patent application*, Nov. 1999.

Journal Articles in Submission:

1. H. El Gamal, "On the Scaling Laws of Dense Wireless Sensor Networks," *submitted to the IEEE Transactions on Information Theory*, April. 2003.
2. M. O. Damen, H. El Gamal, and N. C. Beaulieu, "Full Diversity Quasi-Orthogonal Space-Time Constellations: Filling the Empty Threads," *submitted to the IEEE Transactions on Communications*, April. 2003.
3. Anand Arunachalam and H. El Gamal, "Space-Time Coding for MIMO Systems with Co-Channel Interference," *submitted to the IEEE Transactions on Wireless Communications*, Jan. 2003.
4. H. El Gamal and M. Bourles, "On the Design of Adaptive Space-Time Codes," *submitted to the IEEE Transactions on Communications*, April 2002.
5. H. El Gamal and D. Hamon, "Turbo Multi-User Detectors: User Capacity and Power Allocation," *submitted to the IEEE Transactions on Communications*, April 2002.

Conference Presentations:

1. H. El Gamal and M. O. Damen, "Lattice Space-Time Constellations," *Presented at the IEEE Communication Theory Workshop (CTW)*, Arizona, April 2003 (Invited paper).
2. H. El Gamal and M. O. Damen, "Threaded Algebraic Space-Time Coding," *in Proc. of the IEEE Information Theory Workshop (CTW)*, Bangalore, India, Oct 2002 (Invited paper).
3. H. El Gamal and M. O. Damen, "SISO Codes for MIMO Channels," *in Proc. the 40-th Annual Allerton Conference*, Illinois, Oct 2002.
4. H. El Gamal and M. O. Damen, "An Algebraic Number Theoretic Framework for Space-Time Coding," *in Proc. of the IEEE International Symposium on Information Theory (ISIT)*, Laussane, Switzerland, July 2002.
5. H. El Gamal, "On the Robustness of Space-Time Coding," *in Proc. of the IEEE International Symposium on Information Theory (ISIT)*, Laussane, Switzerland, July 2002.
6. H. El Gamal and M. Bourles, "Adaptive Space-Time Parsing," *in Proc. of the 2002 Conference on Information Sciences and Systems*, Princeton, N.J., March 2002.
7. H. El Gamal and D. Hamon, "On the User Capacity of Turbo Multi-User Detectors," *in Proc. of the 39th Annual Allerton Conference*, Urbana, Oct. 2001.
8. H. El Gamal, M. P. Fitz, and D. Aktas, "Canonical Space-Time Coding," *in Proc. of the 39th Annual Allerton Conference*, Urbana, Oct. 2001 (Invited paper).
9. H. El Gamal, "On the Design of Space-Frequency Codes," *in Proc. of WPMC*, Denmark, Sep. 2001 (Invited paper).

10. H. El Gamal and A. R. Hammons Jr, "Algebraic Space-Time Codes for Block Fading Channels," in *Proc. of the IEEE International Symposium on Information Theory (ISIT)*, Washington D.C., June 2001.
11. H. El Gamal and A. R. Hammons Jr, "Convergence Based Design of Turbo Codes," in *Proc. of the IEEE International Symposium on Information Theory (ISIT)*, Washington D.C., June 2001.
12. H. El Gamal and A. R. Hammons Jr, "New Algebraic Space-Time Codes for BPSK and QPSK Modulation," in *Proc. of the Conference on Information Sciences and Systems (CISS)*, Baltimore, Mar. 2001.
13. H. El Gamal and A. R. Hammons Jr, "On the Design of Coherent and Differentially Coherent Space-Time Codes," in *Proc. of the IEEE WCNC*, Chicago, Sept. 2000 (Invited paper).
14. A. R. Hammons Jr and H. El Gamal, "On the Convergence of the Turbo Decoder," in *Proc. of the Conference on Information Sciences and Systems (CISS)*, Princeton, Mar. 2000.
15. H. El Gamal and A. R. Hammons Jr, "Space-Time Coding for Block Fading Channels," in *Proc. of the Conference on Information Sciences and Systems (CISS)*, Princeton, Mar. 2000.
16. H. El Gamal and A. R. Hammons Jr, "Analyzing the Turbo Decoder Using the Gaussian Approximation," in *Proc. of the IEEE International Symposium on Information Theory (ISIT)*, Italy, June 2000.
17. H. El Gamal, B. Beidas, and S. Kay, "Turbo Decoding For High Spectral Efficiency Satellite Communication," in *Proc. of the IEEE International Conference on Communications (ICC) 2000*, New Orleans, June 2000.
18. H. El Gamal and A. R. Hammons Jr, "Binary Rank Criteria for PSK Modulated Space-Time Codes," in *Proc. of the 37th Annual Allerton Conference*, Urbana, Sept. 1999.
19. H. El Gamal and A. R. Hammons Jr, "New Approach for Space-Time Transmitter/Receiver Design," in *Proc. of the 37th Annual Allerton Conference*, Urbana, Sep 1999.
20. H. El Gamal and A. R. Hammons Jr, "On the Design of Space-Time Codes for PSK Modulation," in *Proc. of the IEEE Information Theory Workshop*, Greece, July 1999.
21. H. El Gamal and E. Geraniotis, "Novel Iterative Multi-User Detector for CDMA Signals Based on the MMSE Criterion," in *Proc. of the IEEE Vehicular Technology Conference (VTC)*, Dallas-Texas, Mar. 1999.
22. N. Sharma, H. El Gamal, and E. Geraniotis, "Combined Decoding and Interference Cancellation for FH/SSMA Signals," in *Proc. of the IEEE Military Communications Conference (MILCOM)*, New Jersey, Nov. 1999.
23. H. El Gamal and E. Geraniotis, "Comparing FH/SSMA and DS/CDMA Networks: Capacity vs Antijam Margin Tradeoff," in *Proc. of Presented the IEEE Military Communications Conference (MILCOM)*, Boston, Oct. 1998.

24. H. El Gamal and E. Geraniotis, "Turbo Codes with Channel Estimation and Dynamic Power Allocation for Anti-jam SFH/SSMA," in *Proc. of the IEEE Military Communications Conference (MILCOM)*, Boston, Oct. 1998.
25. H. El Gamal and E. Geraniotis, "Comparing the Capacities of FH/SSMA and DS/CDMA Networks," in *Proc. of the IEEE international Symposium on Personal, Indoor, and Mobile Radio Communications (PIMRC)*, Boston, Oct. 1998.
26. H. El Gamal, M. Khairy, and E. Geraniotis, "Iterative Decoding and Channel Estimation in DS/CDMA Networks," in *Proc. of the IEEE international Symposium on Personal, Indoor, and Mobile Radio Communications (PIMRC)*, Boston, Oct. 1998.
27. H. El Gamal and E. Geraniotis, "High Capacity Synchronous FH/SSMA with Turbo Coding," in *Proc. of the IEEE international Symposium on Spread Spectrum Applications (ISSSTA)*, South Africa, Sep. 1998.
28. H. El Gamal and E. Geraniotis, "Turbo Codes for Time Varying AWGN Channels with Application to FH/SSMA," in *Proc. of the International Symposium on Information Theory (ISIT)*, Boston, Aug. 1998.
29. H. El Gamal and E. Geraniotis, "Enhancing the Capacity of Frequency Hopped Networks: Synchronous FH/SSMA," in *Proc. of the Conference on Information Sciences and Systems (CISS)*, Princeton, Mar. 1998.