

Curriculum Vitae
Muriel Médard
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Education:

<u>School</u>	<u>Degree</u>	<u>Date</u>
MIT	Bachelor of Science in Electrical Engineering	1989
MIT	Bachelor of Science in Mathematics	1989
MIT	Master of Science in Electrical Engineering	1991
MIT	Bachelor of Science in Humanities (Russian Studies)	1991
MIT	Doctor of Science in Electrical Engineering (minor in Management)	1995

1. Title of Sc.D. Thesis:

The Capacity of Multiple User Time Varying Channels in Wireless Communications.

2. Principal Fields of Interest:

Information Theory. Networks, Communications.

Awards Received:

<u>Award</u>	<u>Date</u>
NSF Career Award	2001
IEEE Leon K. Kirchmayer Prize Paper Award, presented by the IEEE Board of Directors for the most outstanding paper by an author(s) under 30 years of age, at the date of submission of the original manuscript for M. Médard, "The Effect Upon Channel Capacity in Wireless Communications of Perfect and Imperfect Knowledge of the Channel," <i>IEEE Transactions on Information Theory</i> , Vol. 46 Issue 3, May 2000, Pages: 935-946.	2002
Recipient of a 2003 Esther and Harold E. Edgerton MIT Chair	2002
Best Paper Award for G. Weichenberg, V. Chan, M. Médard, "Reliable Architectures for Networks Under Stress," Fourth International Workshop on the Design of Reliable Communication Networks (DRCN 2003), October 2003, Banff, Alberta, Canada	2003
Co-recipient of the Harold E. Edgerton Faculty Achievement Award, established in 1982 to honor junior faculty members "for distinction in research, teaching and service to the MIT community."	2004
Recognized in 2004 as a Siemens "outstanding mentor" for my work with high school students in science and engineering	2004
Gilbreth Lectureship, National Academy of Engineering	2007
2009 IEEE Communications Society and Information Theory Society Joint	2009

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Paper Award for T. Ho, M. Médard, R. Koetter, D. R. Karger, M. Effros, J. Shi, and B. Leong, "A Random Linear Network Coding Approach to Multicast," *IEEE Transactions on Information Theory*, vol. 52, no. 10, pp. 4413-4430, October 2006.

2009 William R. Bennett Prize in the Field of Communications 2009
Networking for S. Katti, Rahul, H., Hu, W., Katabi, D., Médard, M., and Crowcroft, J., "XORs in the Air: Practical Wireless Network Coding", *IEEE/ACM Transactions on Networking*, Volume 16, Issue 3, June 2008, pp. 497 – 510

Publications

1. Books
N.A.
2. Papers in Refereed Journals:
 1. M. Médard, Marquis, D., Barry, R.A., and Finn, S.G., "Security Issues in All-Optical Networks," *IEEE Network Magazine*, Vol. 11, Issue 3, pp. 42-48, May 1997.
 2. M. Médard, Chinn, S.R., Saengudomlert, P., "Attack Detection in All-Optical Networks," in *Trends in Optics and Photonics (TOPS)*-Vol. 20 -Optical Networks and their Applications, Barry, R.A., editor, published by the Optical Society of America, pp. 227-232, 1998. **
 3. S.G. Finn, Médard, M., Barry, R.A., "A New Algorithm for Bi-directional Link Self-Healing for Arbitrary Redundant Networks," in *Trends in Optics and Photonics (TOPS)*-Vol. 20-Optical Networks and their Applications, Barry, R.A., editor, published by the Optical Society of America, pp. 222-226, 1998.
 4. M. Médard, Barry, R.A., Finn, S.G., Gallager, R.G., "Automatic Protection Switching for Multicasting in Optical Mesh Networks," in *Trends in Optics and Photonics (TOPS)*-Vol. 20-Optical Networks and their Applications, Barry, R.A., editor, published by the Optical Society of America, pp. 216-221, 1998.
 5. M. Médard, Finn, S.G., Barry, R.A., Gallager, R.G., "Redundant Trees for Preplanned Recovery in Arbitrary Vertex-Redundant or Edge-Redundant Graphs," *IEEE/ACM Transactions on Networks*, Vol. 7, Issue 5, pp. 641 -652, October 1999.
 6. M. Médard, "The Effect Upon Channel Capacity in Wireless Communications of Perfect and Imperfect Knowledge of the Channel," *IEEE Transactions on Information Theory*, Vol. 46, Issue 3, pp. 935-946, May 2000. (**Winner of the IEEE 2002 Leon Kirchmayer Prize Paper Award**)
 7. S. Lumetta, Médard, M., and Tseng, Y., "Capacity Versus Robustness: A Tradeoff for Link Restoration in Mesh Networks," *IEEE Journal of Lightwave Technology*, Vol. 18, Issue 12, pp. 1765 -1775, March 2001. **
 8. M. Médard, Chinn, S.R., and Saengudomlert, P., "Node Wrappers for QoS Monitoring in Transparent Optical Nodes," *Journal of High Speed Networks* (yearly publication), IOS Press, pp. 247-268, 2001. **
 9. M. Médard and Lumetta, S.S., "Architectural Issues for Robust Optical Access," *IEEE*

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Communications Magazine, Vol. 39, Issue 7, pp. 116-220, July 2001.

10. M. Médard, Barry, R.A., Finn, S.G., He, W., Lumetta, S.S., "Generalized Loop-back Recovery in Optical Mesh Networks," *IEEE/ACM Transactions on Networking*, Vol. 10, Issue 1, pp. 153-164, February 2002. **
11. M. Médard and Gallager, R.G., "Bandwidth Scaling for Fading Multipath Channels," *IEEE Transactions on Information Theory*, Vol. 48, Issue 4, pp. 840 -852, April 2002.
12. P. Saengudomlert and Médard, M., "Guaranteeing BER in Transparent Optical Networks Using OOK Signaling," *IEEE Journal on Selected Areas in Communications*, Vol. 20, Issue 4, pp. 786-799, May 2002. **
13. M. Médard, Lumetta, S.S., and Li, L., "A Network Management Architecture for Robust Packet Routing in Mesh Optical Access Networks," invited paper in *IEEE Journal on Selected Areas in Communications*, Vol. 20, Issue 4, pp. 822-833, May 2002.
14. R. Koetter and Médard, M., "Beyond Routing: An Algebraic Approach to Network Coding," *IEEE/ACM Transactions on Networking*, Vol. 11, Issue 5, pp. 782-796, October 2003. (selected as one of the outstanding papers from INFOCOM for transfer to IEEE/ACM Transactions on Networking)
15. M. Jinno, Leonberger, F.J., Médard, M., Ransom, N., and Von Lehmen, A., "Guest Editorial: Optical Networks," *IEEE Journal of Lightwave Technology*, Vol. 21, Issue 11, pp. 2452-2454, November 2003.
16. M. Médard, "Channel Uncertainty in Communications," invited paper in *IEEE Information Theory Society Newsletter*, starting on page 1 (4 pages), June 2003.
17. M. Médard, Huang, J., Goldsmith, A., Meyn, S., and Coleman, T.P., "Capacity of Time-slotted ALOHA Packetized Multiple-Access Systems over the AWGN Channel," *IEEE Transactions on Wireless Communications*, Vol. 3, Issue 2, pp. 486-499, March 2004. **
18. D.S. Lun, Médard, M., and Abou-Fayçal, I.C., "On the Performance of Peak Capacity-achieving Signaling on Multipath Fading Channels," *IEEE Transactions on Communications*, Vol. 52, Issue 6, pp. 931-938, June 2004. **
19. T.P. Coleman and Médard, M., "A Distributed Scheme for Achieving Energy-Delay Tradeoffs with Multiple Service Classes over a Dynamically Varying Network," *IEEE Journal on Selected Areas in Communications-Special Issue on Advanced Mobility Management and QoS Protocols for Wireless Internet*, Vol. 22, Issue 5, pp. 929-941, June 2004. **
20. M. Effros, Médard, M., Ho, T., Ray, S., Karger, D., Koetter, R., and Hassibi, B., "Linear Network Codes: A Unified Framework for Source, Channel, and Network Coding," *Advances in Network Information Theory, DIMACS Series in Discrete Mathematics and Theoretical Computer Science*, Vol. 66, pp. 197-216, Editors: Gupta et al., 2004. **
21. G.E. Weichenberg, Chan, V.W.S., and Médard, M., "High-Reliability Topological Architectures for Networks under Stress," *IEEE Journal on Selected Areas in Communications: Optical Communications and Networking Series*, Vol. 22, Issue 9, pp. 1830-1845, November 2004. **
22. T. Ho, Médard M., and Koetter, R., "An Information Theoretic View of Network Management," *IEEE Transactions on Information Theory*, Vol. 51, Issue 4, pp. 1295-1312, April 2005. **
23. I. Abou-Fayçal, Médard, M., and Madhow, U., "Binary Adaptive Coded Pilot Symbol

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- Assisted Modulation over Rayleigh Fading Channels without Feedback," *IEEE Transactions on Communications*, Vol. 53, Issue 6, pp. 1036-1046, June 2005.
24. D. Karger and Médard, M., "Toward Using the Network as a Switch," *IEEE Journal on Selected Areas in Communications: Optical Communications and Networking Series*, Vol. 23, Issue 8, pp.1533-1541, August 2005.
 25. C. Luo, Médard, M., and Zheng, L., "On Achieving Wideband Capacity Using Multitone FSK," *IEEE Journal on Selected Areas in Communications (JSAC)-Special Issue on Differential and Noncoherent Wireless Communications*, Vol. 23, Issue 9, pp. 1830-1838, September 2005. **
 26. D.S. Lun, Ratnakar, N., Médard, M., Koetter, R., Karger, D.R., Ho, T., Ahmed, E., and Zhao, F., "Minimum-Cost Multicast over Coded Packet Networks," *IEEE Transactions on Information Theory*, Vol. 52, Issue 6, pp. 2608-2623, June 2006. **
 27. S. Deb, Médard, M., and Choute, C., "Algebraic Gossip: A Network Coding Approach to Optimal Multiple Rumor Mongering," *IEEE Transactions on Information Theory*, Vol. 52, Issue 6, pp. 2486-2507, June 2006. **
 28. N. Cai, Chiang, N.M., Effros, M., Koetter, R., Médard, M., Prabhakar, B., Srikant, R., Towsley, D., and Yeung, R.W., "Introduction to the Special Issue on Networking and Information Theory," *IEEE Transactions on Information Theory*, Vol. 52, Issue 6, pp. 2285-2288, June 2006.
 29. M. Médard and Srikant, R., "Capacity of Nearly-decomposable Markovian Fading Channels Under Asymmetric Receiver-sender Side Information," *IEEE Transactions on Information Theory*, Vol. 52, Issue 7, pp. 3052-3062, July 2006.
 30. T.P. Coleman, Lee, A.H., Médard, M., and Effros, M., "Low-Complexity Approaches to Slepian-Wolf Near-Lossless Distributed Data Compression," *IEEE Transactions on Information Theory*, Vol. 52, Issue 8, pp. 3546-3561, August 2006. **
 31. J. Huang, Meyn, S.P., and Médard, M., "Error Exponents for Channel Coding and Signal Constellation Design," *IEEE Journal on Selected Areas in Communications (JSAC)-Special Issue on Nonlinear Optimization of Communication Systems*, Vol. 24, Issue 8, pp.1647-1661, August 2006.
 32. T. Ho, Médard, M., Koetter, R., Karger, D.R., Effros, M., Shi, J., and Leong, B., "A Random Linear Network Coding Approach to Multicast," *IEEE Transactions on Information Theory*, Vol. 52, Issue 10, pp. 4413-4430, October 2006. ** **(Winner of the 2009 of the IEEE Communication Society and Information Theory Society joint Paper Award)**
 33. J.-S. Park, Lun, D.S., Yi, Y., Gerla, M., and Médard, M., "CodeCast: A Network Coding Based Ad Hoc Multicast Protocol," *IEEE Wireless Communications Magazine*, Vol. 13, Issue 5, pp. 76-81, October 2006. **
 34. A.J. Goldsmith and Médard, M., "Capacity of Time-Varying Channels With Causal Channel Side Information," *IEEE Transactions on Information Theory*, Vol. 53, Issue 13, pp. 881-899, March 2007.
 35. L. Zheng, Tse, D.N.C., and Médard, M., "Channel Coherence in the Low-SNR Regime," *IEEE Transactions on Information Theory*, Vol. 53, Issue 13, pp. 976-997, March 2007.
 36. D. S. Lun, Jennings, L.D., Koetter, R. Licht, S., and Médard, M., "An Information-Based Computational Technique for Estimation of Chromatographic Peak Purity", *Journal of*

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Chemical Information and Modeling, Volume 47, Issue 5, pp. 1973 - 1978

37. S. Ray, Médard, M., and Zheng, L., "On Non-coherent MIMO Channels in the Wideband Regime: Capacity and Reliability," *IEEE Transactions on Information Theory*, Volume 53, Issue 6, June 2007, pp. 1983 – 2009. **
38. M. Effros, Koetter, R., and Médard, M., "Breaking Network Logjams," *Scientific American*, Vol. 296, Number 6, pp. 78-85, June 2007.
39. G. Weichenberg, Chan, V., and Médard, M., "On the Capacity of Optical Networks: A Framework for Comparing Different Transport Architectures," *IEEE Journal on Selected Areas in Communications: Optical Communications and Networking Series*, Volume 25, Issue 6, August 2007, pp. 84 – 101. **
40. J.-K. Sundararajan, Deb, S., and Médard, M., "Extending the Birkhoff-von Neumann Switching Strategy for Multicast-On the use of Optical Splitting in Switches," *IEEE Journal on Selected Areas in Communications: Optical Communications and Networking Series*, Volume 25, Issue 6, August 2007, pp. 36-50. **
41. D. S. Lun, Médard, M., Koetter, R., Effros, M., "On coding for reliable communication over packet networks", *Physical Communication*, Volume 1, Issue 1, March 2008, pp. 3-20
42. S. Jaggi, Langberg M., Katti S. , Ho T. , Katabi D., Médard, M., and Effros, E., "Resilient Network Coding in the Presence of Byzantine Adversaries", *Special Issue on Information-theoretic Security of the IEEE Transactions on Information Theory*, Volume 54, Issue 6, June 2008, pp. 2596 - 2603
43. T. Ho, Leong, B., Koetter, R., Médard, M., and Effros, E., "Byzantine Modification Detection in Multicast Networks with Random Network Coding", *Special Issue on Information-theoretic Security of the IEEE Transactions on Information Theory*, Volume 54, Issue 6, June 2008, pp. 2798-2803
44. S. Katti, Rahul, H., Hu, W. , Katabi, D., Médard, M., and Crowcroft, J., "XORs in the Air: Practical Wireless Network Coding", *IEEE/ACM Transactions on Networking*, Volume 16, Issue 3, June 2008, pp. 497 – 510 (**winner of the 2009 William R. Bennett Prize in Network Communications**)
45. S. Jing, Zheng, L., and Médard, M., "On Training with Feedback in Wideband Channels", *IEEE Journal on Selected Areas in Communications: Special Issue on Limited Feedback*, Volume 26, Issue 8, October 2008, pp:1607 - 1614 **
46. L. D. Jennings, Lun, D. S., Médard, M., and Licht, S. "ClpP Hydrolyzes a Protein Substrate Processively and Independently with Respect to the ClpA ATPase: Mechanistic Studies of ATP-Independent Processive Proteolysis", *Biochemistry*, 47(44):11536-11546, November 2008
47. A. Eryilmaz, Ozdaglar, A., and Médard, M., "On the Delay and Throughput Gains of Coding in Unreliable Networks", *IEEE Transactions on Information Theory*, Volume 54, Issue 12, December 2008, pp:5511 - 5524
48. D. Lucani, Stojanovic, M., and Médard, M., "Channel Models and Network Coding based Lower Bound to Transmission Power for Multicast", *IEEE Journal on Selected Areas in Communications: Special Issue on Underwater Acoustic Networks*, Volume 26, Issue 9, December 2008, pp:1708 - 1719 **
49. P. Youssef-Massaad, Zheng, L., and Médard, M., "Bursty Transmission and Glue

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- Pouring: on Wireless Channels with Overhead Costs”, *IEEE Transactions on Wireless Communications*, Volume 7, Issue 12, Part 2, December 2008, pp:5188 - 5194 **
50. G. Weichenberg, Chan, V., and Médard, M., “Design and Analysis of Optical Flow Switched Networks”, *IEEE/OSA Journal of Optical Communications and Optical Networking*, Volume 1, Issue 3, August 2009, pp:B81 - B97**
 51. M. Kim, Lima, L., Zhao, F., Barros, J., Médard, M., Koetter, R., Kalker, T. and Han, K., “On Counteracting Byzantine Attacks in Network Coded Peer-to-Peer Networks”, accepted to the *IEEE Journal on Selected Areas in Communications: Special Issue on Mission-Critical Infrastructure***
 52. W. Chen, Traskov, D., Heindlmaier, M., Médard, M., Meyn, S., Ozdaglar, A., “Coding and Control for Communication Networks”, accepted to the *Queueing Systems Erlang Centennial Issue*
3. Proceedings of Refereed Conferences:
1. T.P. McGarty and Médard, M., “Wireless Architectural Alternatives: Current Economic Valuations Versus Broadband Options, The Gilder Conjecture,” *Telecommunications Policy Research Conference*, Section 1, pp. 174-200, October 1994.
 2. M. Médard and Gallager, R.G., “The Issue of Spreading in Multipath Time-Varying Channels,” *IEEE Vehicular Technology Conference (VTC)*, Volume 1, pp. 1-5, July 1995.
 3. M. Médard and Gallager, R.G., “The Effect of a Randomly Time-varying Channel on Mutual Information,” *IEEE International Symposium on Information Theory (ISIT)*, pg. 139, September 1995.
 4. M. Médard and Gallager, R.G., “The Effect of Channel Variations upon Capacity,” *IEEE Vehicular Technology Conference (VTC)*, Volume 3, pp. 1781-1785, April 1996.
 5. M. Médard, “Security Issues for All-Optical Networks,” invited panelist statement, at the *National Information Systems Security Conference*, Volume 2, pg. 882, October 1996.
 6. M. Médard, Finn, S.G., and Barry, R.A., “Automatic Protection Switching for Multicasting in Optical Mesh Networks,” *Optical Fiber Communication Conference (OFC)*, pp. 314-315, February 1997.
 7. S.G. Finn, Médard, M., and Barry, R.A., “A Novel Approach to Automatic Protection Switching,” *IEEE International Conference on Communications (ICC)*, pp. 272-276, Vol.1, June 1997.
 8. R.G. Gallager and Médard, M., “Bandwidth Scaling for Fading Channels,” *IEEE International Symposium on Information Theory (ISIT)*, pg. 471, July 1997.
 9. M. Médard and Goldsmith, A.J., “Capacity of Time-Varying Channels with Channel Side Information,” *IEEE International Symposium on Information Theory (ISIT)*, pg. 372, July 1997.
 10. A.H. Chan and Médard, M., “Reconfigurable Feedback Shift Registers,” *IEEE International Symposium on Information Theory (ISIT)*, pg. 178, July 1997.
 11. M. Médard, “Capacity of Correlated Jamming Channels,” *Allerton Conference on Communication, Control, and Computing*, pp. 1043-1052, November 1997.
 12. M. Médard, “Bound on Mutual Information for DS-CDMA spreading over Independent Channels,” invited paper, *Asilomar Conference on Signals, Systems and Computers*,

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Volume1, pp. 187-191, October 1997.

13. D. Marquis, Médard, M., Barry, R.A., Finn, S.G., "Physical Security Considerations in All-Optical Networks," invited paper, *Proceedings of the International Society for Optical Engineering (SPIE)*, vol. 3228, pp. 260-271, November 1997.
14. M. Médard, Chan, A.H., Moores, J.D., Hall, K.A., Rauschenbach, K.R., and Parikh, S., "Ultrafast Cryptography Using Optical Logic in Reconfigurable Feedback Shift Registers," *Proceedings of the International Society for Optical Engineering (SPIE)*, vol. 3228, pp. 342-345, November 1997.
15. S.G. Finn, Médard, M., and Barry, R.A., "A New Algorithm for Bi-directional Self Healing for Arbitrary Redundant Networks," *Optical Fiber Communication Conference (OFC)*, pp. 298-299, February 1998
16. M. Médard, Chinn, S.R., and Saengudomlert, P., "Attack Detection in All-optical Networks," *Optical Fiber Communication Conference (OFC)*, pp. 272-273, February 1998. **
17. R. Bergman, Médard, M., and Chan, S., "Distributed Algorithms for Attack Localization in All-Optical Networks," *Internet Society Network and Distributed System Security (NDSS) Symposium*, Session 3, paper 1 (15 pages), February 1998.
18. M. Médard, Marquis, D., and Chinn, S.R., "Attack Detection Methods for All-Optical Networks," *Internet Society Network and Distributed System Security (NDSS) Symposium*, Session 3, paper 2 (17 pages), February 1998.
19. Barry, R.A. and Médard, M., "BER Analysis of Low-rate Communications Through a Single Electro-Optic R2 Nonlinear Regenerator," *IEEE Conference on Lasers and Electro-Optics (CLEO)*, pp. 455-456, May 1998.
20. R.G. Gallager, Médard, M., Barry, R.A., and Finn, S.G., "Multicast Automatic Protection Switching in Arbitrary Redundant Graphs," *IEEE International Conference on Communications (ICC)*, Volume 1, pp. 640-644, June 1998.
21. J. Yueh, Chan, A.H., and Médard, M., "On the Complexity of Reconfigurable Feedback Shift Register Sequences," *IEEE International Symposium on Information Theory (ISIT)*, pg. 133, August 1998.
22. M. Médard, "A Coding Theorem for Multiple-Access Decorrelating Channels," *IEEE International Symposium on Information Theory (ISIT)*, pg. 215, August 1998.
23. M. Médard, "Secure Optical Communications," invited paper, FE3, *Lasers and Electro-Optics Society (LEOS) Annual Meeting*, pp. 323-324, Vol.2, December 1998.
24. M. Médard, Finn, S.G., and Barry, R.A., "WDM Loop-back in Mesh Networks," *Annual Joint Conference of the IEEE Computer and Communications Societies (INFOCOM)*, pp. 752-759. Vol.2, March 1999.
25. M. Médard and Goldsmith, A.J., "Capacity of Time-Varying Channels with Side Information at the Sender and the Receiver," *Miniconference on Information Theory, IEEE International Conference on Communications (ICC)*, pp. 16-20, June 1999.
26. M. Médard, "Processing of Wireless Signals to Preserve Wireline Network Resources," invited paper, *IEEE Wireless Communications and Networking Conference (WCNC)*, Volume 1, pp. 61-65, September 1999.
27. M. Médard and Goldsmith, A., "Capacity of Time-Slotted ALOHA Systems," invited

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- paper, *IEEE Wireless Communications and Networking Conference (WCNC)*, Volume 1, pp. 490-494, September 1999.
28. M. Médard, Huang, J., Meyn, S.P., and Goldsmith, A., "Capacity of Time-Slotted ALOHA Systems," *IEEE International Symposium on Information Theory (ISIT)*, pg. 407, June 2000. **
 29. M. Médard and Srikant, R., "Capacity of Nearly-decomposable Markovian Fading Channels under Asymmetric Receiver-Sender Side Information," *IEEE International Symposium on Information Theory (ISIT)*, pg. 413, June 2000.
 30. S.S. Lumetta and Médard, M., "Robust Routing for Local Area Optical Access Networks," *IEEE Lasers and Electro-Optics Society (LEOS) Summer Topical Meeting*, pp. IV39 - IV40, July 2000.
 31. M. Médard, Lumetta, S.S., and Tseng, Y., "Capacity-Efficient Restoration for Optical Networks," *Optical Fiber Communication Conference (OFC)*, paper ThO2, pp. 207-209, March 2000. **
 32. M. Médard and Tse, D.N.C., "Spreading in Block-Fading Channels," *Asilomar Conference on Signals, Systems, and Computers*, Volume 2, pp. 1598-1602, November 2000.
 33. P. Saengudomlert and Médard, M., "Limits of BER Guarantees in Transparent Optical Networks Using OOK Signaling," invited paper, *38th Annual Allerton Conference on Communication, Control, and Computing*, Volume 1, pp. 583-592, October 2000. **
 34. M. Médard, Abou-Fayçal, I., and Madhow, U., "Adaptive Coding with Pilot Signals," invited paper, *38th Annual Allerton Conference on Communication, Control, and Computing*, pp. 337-346, October 2000. **
 35. M. Médard and Srikant, R., "The Effect on Capacity of Decoupling Slow Fades from Fast Fades in Channels with Asymmetric Channel Information," *IEEE International Symposium on Information Theory and its Applications (ISITA)*, pp. 697-700, November 2000.
 36. S.S. Lumetta and Médard, M., "Classification of Two-link Failures in All-optical Networks," *Optical Fiber Communication Conference (OFC)*, Volume 1, pp. TuO3- 1- TuO3-3, March 2001.
 37. A. Narula-Tam, Finn, S.G., and Médard, M., "Analysis of Reconfiguration of IP over WDM Access Networks," *Optical Fiber Communication Conference (OFC)*, sponsored by the Optical Society of America, Volume 1, pp. MN4-1 -MN4-3, March 2001.
 38. S. Lumetta and Médard, M., "Towards a Deeper Understanding of Link Restoration Algorithms for Mesh Networks," *Annual Joint Conference of the IEEE Computer and Communications Societies (INFOCOM)*, Volume 1, pp. 367-375, April 2001.
 39. R. Koetter and Médard, M., "An algebraic approach to network coding and robust networks," *IEEE International Symposium on Information Theory (ISIT)*, pg. 104, June 2001.
 40. A.L. Libarikian and Médard, M., "A Robust Optical Folded Bus Architecture for Overlay Access Networks," invited paper, *39th Annual Allerton Conference on Communication, Control, and Computing*, pp. 633-645, October 2001. **
 41. T.P. Coleman and Médard, M., "Trade-off Between Power Consumption and Delay in Wireless Packetized Systems," invited paper, *39th Annual Allerton Conference on Communication, Control, and Computing*, pp. 501-512, October 2001. **

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42. R. Koetter and Médard, M., "Beyond Routing: An Algebraic Approach to Network Coding," *Annual Joint Conference of the IEEE Computer and Communications Societies (INFOCOM)*, Volume 1, pp. 122-130, July 2002. **(selected as one of the outstanding papers from INFOCOM for transfer to IEEE/ACM Transactions on Networking)**
43. H. Wang, Modiano, E., and Médard, M., "Using Local Information for WDM Network Protection," invited paper, *Symposium on Photonics, Networks and Computing, (JCIS)*, pp. 1398-1401, March 2002. **
44. H. Wang, Modiano, E., and Médard, M., "Partial Path Protection for WDM networks," *Sixth Institute for Operations Research and the Management Sciences (INFORMS) Telecommunications Conference*, paper ME01.2 (2 pages), March 2002. **
45. D.S. Lun, Médard, M., and Abou-Fayçal, I., "Error Exponents for Wideband Multipath Fading Channels-a Strong Coding Theorem," *Conference on Information Sciences and Systems (CISS)*, Princeton, pp. 866-870, April 2002. **
46. T. Ho, Médard, M., and Koetter, R., "A Coding View of Network Recovery and Management for Single Receiver Communications," *Conference on Information Sciences and Systems (CISS)*, Princeton, pp. 590-597, April 2002, **
47. M. Médard, "Optical Network Survivability Beyond the Core," invited paper, *Proceedings of the International Society for Optical Engineering (SPIE)*, Volume 4872, pp. 239-253, July 2002.
48. H. Wang, Modiano, E., and Médard, M., "Partial Path Protection for WDM Networks: End-to-End Recovery Using Local Failure Information," *IEEE Symposium on Computers and Communications (ISCC)*, pp. 719-725, July 2002. **
49. T. Ho, Médard, M., and Koetter, R., "A Coding View of Network Capacity, Recovery and Management," *International Symposium on Information Theory*, pg. 137, July 2002. **
50. D.S. Lun, Médard, M., and Abou-Fayçal, I., "An Upper Bound on the Error probability of Capacity-Achieving Signaling On Broadband Rayleigh Fading Channels," *IEEE Vehicular Technology Conference*, Volume 1, pp. 577-581, September 2002. **
51. C. Luo and Médard, M., "FSK for Ultrawideband-How Close to Capacity Can We Get?" *International Symposium on Information Theory and its Applications*, pp. 839-842, October 2002. **
52. D.S. Lun, Médard, M., and Abou-Fayçal, I., "Error Exponents for Capacity-Achieving Signaling on Wideband Rayleigh Fading Channels," *International Symposium on Information Theory and its Applications*, pp. 255-258, October 2002. **
53. C. Luo and Médard, M., "Frequency Shift Keying for Ultrawideband-Achieving rates of the Order of Capacity," invited paper, *40th Annual Allerton Conference on Communication, Control, and Computing*, Volume 2, pp. 785-796, October 2002. **
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July 2008**.

179. M. Xiao, Aulin, T., and Médard, M., "Systematic Binary Deterministic Rateless Codes", *ISIT 2008*, July 2008.
180. S. Katti, Katabi, D., Balakrishnan, H., and Médard, M., "Symbol Level Network Coding for Wireless Mesh Networks", *Sigcomm*, August 2008
181. A. ParandehGheibi, Eryilmaz, A. Ozdaglar, A., and Médard, M., "Information Theory vs. Queueing Theory for Resource Allocation in Multiple Access Channels", **invited** paper, *PIMRC*, September 2008**
182. S. Jing, Zheng, L., and Médard, M., "Layered Source-Channel Coding: Towards Unifying Multiple Description and Successive Refinement", **invited** paper, *Allerton Conference*, October 2008**
183. M. Kim, Médard, M., O'Reilly, U.-M., "Integrating Network Coding into Heterogeneous Wireless Networks", *MILCOM*, November 2008** (9.3)
184. M. Kim, Médard, M., Barros, J., "Counteracting Byzantine Adversaries with Network Coding: An Overhead Analysis", *MILCOM*, November 2008** (9.5)
185. D. Lucani, Médard, M., and Stojanovic, M., "A Lower Bound to Transmission Power for Multicast in Underwater Networks using Network Coding", accepted to *ISITA*, December 2008**
186. J.-K. Sundararajan, Shah, D., and Médard, M., "Online Network Coding for Optimal Throughput and Delay – the Three-Receiver Case", *ISITA*, December 2008**
187. L. Lima, Barros, J., Vilela, J.-P., and Médard, M., "An Information-Theoretic Cryptanalysis of Randomized Network Coding - is Protecting the Code Enough?", *ISITA*, December 2008
188. D. Traskov, Heindlmaier, M., Médard, M., Koetter, R. and Lun, D.S., "Scheduling for Network Coded Multicast: A Conflict Graph Formulation", *4th IEEE Workshop on Broadband Wireless Access*, December 2008
189. D. Lucani, Médard, M. and Stojanovic, M. , "On Coding for Delay: New Approaches Based on Network Coding in Networks with Large Latency", **invited paper**, *ITA conference*, February 2009
190. D. Lucani, Médard, M. and Stojanovic, M. , "Random Linear Network Coding for Time Division Duplexing: When to Stop Talking and Start Listening", *INFOCOM 2009*, April 2009**
191. M. Kim, O'Reilly, U.-M., Médard, M. and Traskov, D., "An Evolutionary Approach To Inter-Session Network Coding", *INFOCOM 2009*, April 2009**
192. J.-K. Sundararajan, Shah, D., Médard, M., Mitzenmacher, M, Barros, J. "Network Coding Meets TCP", *INFOCOM 2009*, April 2009**
193. D. Lucani, Médard, M. and Stojanovic, M. , "Random Linear Network Coding For Time Division Duplexing: Energy Analysis", *ICC Communication Theory Workshop*, June 2009**
194. C. Ng, Médard, M. and Ozdaglar, A., "Completion Time Minimization and Robust Power Control in Wireless Packet Networks", *ICC Communication Theory Workshop*, June 2009
195. D. Lucani, Médard, M. and Stojanovic, M. , "Completion Time Minimization and Robust Power Control in Wireless Packet Networks", *ICC Communication Theory Workshop*, June 2009**
196. G. Weichenberg, Chan, V.W.S. and Médard, M., "Performance Analysis of Optical Flow Switching", *ICC Optical Networks*, June 2009**

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197. R. Koetter, Effros, M. and Médard, M., "On a theory of network equivalence", *Information Theory Workshop*, June 2009
198. D. Lucani, Fitzek, F., Médard, M. and Stojanovic, M., "Network Coding For Data Dissemination: It Is Not What You Know, But What Your Neighbors Don't Know", **invited** paper, *RAWNETs*, June 2009**
199. J.-K. Sundararajan, Sadeghi, P. and Médard, M., "A feedback-based adaptive broadcast coding scheme for minimizing in-order delivery delay", *Netcod*, June 2009**
200. D. Lucani, Médard, M. and Stojanovic, M., "Broadcasting in time-division duplexing: A random linear network coding approach", *Netcod*, June 2009**
201. M. Kim, Médard, M., Barros, J. and Koetter, R., "An Algebraic Watchdog for Wireless Network Coding", *ISIT*, July 2009**
202. D. Lucani, Médard, M. and Stojanovic, M., "Random Linear Network Coding for Time-Division Duplexing: Queueing Analysis", *ISIT*, July 2009**
203. G. Maierbacher, Barros, J., and Médard, M., "Practical Source-Network Decoding", **invited** paper, accepted to *IEEE International Symposium on Wireless Communication Systems*, 2009
204. D. Lucani, Médard, M. and Stojanovic, M., "Random Linear Network Coding for Time-Division Duplexing: Field Size Considerations", accepted to the *IEEE Globecom 2009 Communication Theory Symposium***
205. D. Traskov, Médard, M., Sadeghi, P. and Koetter, R., "Joint Scheduling and Instantaneously Decodable Network Coding", accepted to the *IEEE Globecom 2009 Communication Theory Symposium*
206. S. Feizi, and Médard, M., "Multi-Functional Compression with Side Information", accepted to the *IEEE Globecom 2009 Communication Theory Symposium*
207. S. Feizi and Médard, M., "Only Sources Need to Compute, On Functional Compression in Tree Networks", *2009 Annual Allerton Conference on Communication, Control, and Computing***
208. D. Lucani, Médard, M. and Stojanovic, M., "Sharing Information in Time-Division Duplexing Channels: A Network Coding Approach", *2009 Annual Allerton Conference on Communication, Control, and Computing***
209. M. Langberg and Médard, M., "The Multiple Unicast Network Coding Conjecture", *2009 Annual Allerton Conference on Communication, Control, and Computing*
210. M.-J. Montpetit and Médard, M., "Video-centric Network Coding Strategies for 4G Wireless Networks: An Overview", accepted to the *2010 IEEE Consumer Communications and Networking Conference*.

4. Other publications:

1. Book Chapter: M. Médard and Lumetta, S.S., "Network Reliability and Fault Tolerance," *Wiley Encyclopedia of Engineering*, Editor: J.G. Proakis.
2. Book Chapter: D.S. Lun, Ho, T., Ratnakar, N., Koetter, R., and Médard, M., "Network Coding in Wireless Networks -A survey of techniques for efficient operation of coded wireless packet networks," *Cooperation in Wireless Communications: Principles and Applications*, Springer, Editors: F. Fitzek and M. Katz, 2007.
3. Book Chapter: F. Zhao, Médard, M., Lun, D.S., and Ozdaglar, A., "Minimum Cost Subgraph Algorithms for Static and Dynamic Multicasts with Network Coding", *Directions in Wireless Communications*, Springer, Editor: Vahid Tarokh, 2009.

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5. Invited Lectures:

Spring 1997 "Optical Network Security," Steering Committee Lecture, MIT Lincoln Laboratory
Fall 1997 "Spreading and Recovery: topics in communications," **invited** seminar, University of California, Berkeley
Fall 1997 "Topics in Communications," **invited** seminar, University of Illinois Urbana-Champaign
Spring 1998 "Topics in Optical Network Security," **invited** seminar, University of Maryland and MIT
Spring 1998 "Security in Optical Networks," **invited** seminar, Rensselaer Polytechnic Institute
Fall 1998 "Restoration in Optical Networks," Coordinated Science Laboratory (CSL) Seminar, University of Illinois, Urbana-Champaign
Fall 1998 "Spreading in Time-varying Channels," **invited** seminar, University of Michigan
Spring 1999 "Capacity of Time-varying Channels with Side Information," **invited** seminar, University of Michigan and MIT
Summer 1999 "Capacity of Time-varying Channels with Side Information," **invited** seminar, Northwestern University
Fall 1999 "An Overview of Security for Optical Networks," Coordinated Science Laboratory (CSL) Seminar, University of Illinois Urbana-Champaign
Fall 1999 "Capacity of Fast Time-varying Channels with Side Information," Coordinated Science Laboratory (CSL) Seminar, University of Illinois Urbana-Champaign
Fall 2000 "Restoration in Optical Networks," **invited** seminar, Carnegie-Mellon University
Spring 2001 M. Médard, "Robustness and Recovery in Optical Networks," **invited** presentation, *IEEE Gigabit Networking Workshop*, also **invited** seminar, George Washington University
May 2001 "Some different aspects of adaptive coding for wireless communications," **invited** seminar, Stanford University and **invited** seminar, Lucent Bell Labs (June 2001)
June 2001, "Robust Optical Communications," **invited** seminar, Lucent Bell Labs
May 2001 and August 2001 "Robustness and Security in Optical Networks," presentation for AFOSR URI kickoff at Stanford University and AFOSR program review at Wright-Patterson Air Force Base
October 2001 "Some New Directions in Communications and Networking," **invited** tutorial, Federal Communications Commission
December 2001, "Network Coding for Capacity and Robustness," **invited** talk at the DIMACS (Center for Discrete Mathematics and Theoretical Computer Science at Rutgers University) Workshop on Codes and Complexity
December 2001, "Optical Network Security," **invited** talk to the DARPA Information Assurance for Optical Networks (OpticIA) Workshop
March 2002, "When the Physical Layer Matters -a perspective on networking aspects of wireless communications," **invited** talk, Information Science and Technology (ISAT) study group for DARPA on "Robust Networks for Critical Missions and Critical Infrastructure"
April 2002, "Some Aspects of Robustness in Wireless Networks," **invited** seminar, University of Massachusetts, Amherst

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June 2002, "Overview of New Results in Optical Access Networks Robustness," **invited** Photonics Series seminar at the University of Illinois Urbana-Champaign

October 2002, M. Médard and Kim, M., "A Bound on Backup Path Lengths Using a Random Graph Approach," **invited** paper, IEEE Annual Computer Communications Workshop, 2002

October 2002, "Network Coding and Network Management-Towards Fundamental Limits?" **invited** seminar, Cornell University, also **invited** seminar, Boston University

November 2002, "Security in Optical Networks," **invited** briefing to the Assistant Secretary of Defense (C3I) (Highland Forum), at the Pentagon (Washington, D.C.)

Spring 2003, "Network Coding: Towards an Unified View of Routing, Network Management, Coding and Compression?" **invited** seminar, Applied Mathematics Department, Brown University, also **invited** seminar, ECE Department, Georgia Tech, also **invited** IBM Lecture, Notre Dame University

Fall 2004, "Network Coding: Towards an Unified View of Routing, Recovery, Coding and Compression?" **invited** seminar, Harvard University

Spring 2004, "Coding for Networks," **invited** presentation, the Annual Lee Center Workshop (Caltech's Lee Center for Advanced Networking), in which 4 guest speakers present to Caltech faculty, students and alumni

May 2004, D.S. Lun, M. Médard, T. Ho, Koetter, R., "Network Coding with a Cost Criterion," **invited** talk, Communication Theory Workshop

May 2004, "Network Coding: an Introduction," a one-day course given to the Centre for Wireless Communications at the University of Oulu, Finland (co-taught with Ralf Koetter of UIUC)

August 2004, "Towards a Random, Distributed Operation of Networks," **invited** presentation, Lucent Bell Labs, also Colloquium, Northeastern University, October 2004

October 2004, "Byzantine Modification Detection in Multicast Networks Using Randomized Network Coding," **invited** seminar, Northeastern University

October 2004, "On the Implications of Optical Splitting for Multicasting," **invited** presentation, 19th IEEE Annual Computer Communications Workshop

December 2004, "Network Coding," one-day tutorial at the IEEE Global Telecommunications Conference (Globecom) (co-taught with Ralf Koetter of UIUC and Phil Chou of Microsoft)

January 2005, "An Overview of the Use of Distributed Mechanisms in Network Coding," **invited** presentation, DIMACS (Center for Discrete Mathematics and Theoretical Computer Science at Rutgers University) Workshop on Network Coding

April 2005, "Network Coding for Cost, Reliability and Ease of Management," **invited** seminar, Yale University

June 2005, "Network Coding in Wireless Networks," **Plenary Speaker**, IEEE Workshop on Signal Processing Advances in Wireless Communications (SPAWC), New York

June 2005, "Network Coding -an Introduction," **invited** seminar, Seminaire Euronetlab, Universite Pierre et Marie Curie, Paris

June 2005 "Network Coding for Cost, Reliability and Ease of Management," **invited** seminar, Ecole Nationale Supérieure de Telecommunications de Bretagne, also Joint IEEE Comsoc & IT-Lab Conference on Communications and Coding, **invited** seminar, ENST Paris, June 2005, also **invited** seminar, Ecole Polytechnique Federale de Lausanne, July 2005

September 2005, "On Distributed Optimization for Networks," **Keynote Speaker**, Mobile

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Information and Communications Systems Scientific Conference, Loewenberg, Switzerland
September 2005, "Network Coding," one-day tutorial at the IEEE International Symposium on Information Theory (co-taught with Ralf Koetter of UIUC and Phil Chou of Microsoft)
December 2005, "Wireless Network Coding," Signal Processing/ Communications **invited** seminar, University of California at Los Angeles
April 2006, "Wireless Network Coding," **invited** seminar, University of Texas at Austin,
May 2006, "Network Coding-Where to Now?" **Plenary Speaker**, IFIP Networking 2006, also **invited** seminar, May 2006, University of Porto, Portugal
June 2006, "Network Coding-An Overview," **invited** seminar, Ecole Nationale Supérieure de Télécommunications de Bretagne, Rennes
June 2006, "Distributed Network Coding for Sensor Networks," **tutorial**, International Workshop on Wireless and Ad Hoc Networks 2006
August 2006, "Network Coding: A Tutorial," **tutorial**, University of California at San Diego, ITA Center (co-taught with Ralf Koetter of UIUC)
August 2006, "Network Coding for Wireless Networks," **invited** seminar, University of Southern California
March 2007, "Network Coding-an Optimization View," **Plenary Speaker**, Conference on Information Sciences and Systems, Johns Hopkins University, also April 2007 **General Dynamics Distinguished Lecture Series**, University of Michigan and **invited** seminar Intel Workshop on Wireless Communications (last two cancelled because of sickness)
May 2007, "Some Interesting Directions in Network Coding," **invited** presentation, workshop on Algorithms, Inference and Statistical Physics, Santa Fe, NM, organized by the Los Alamos National Laboratory and the Center for Nonlinear Studies
May 2007, "Introduction to Network Coding," **tutorial**, IFIP Networking 2007, Atlanta, Georgia, also Workshop on Network Coding, Hong Kong, January 2008
May 2007, "On Security Aspects of Network Coding," **invited** talk, IEEE Communications Theory Workshop, Sedona, Arizona
September 2007, "Le codage sur réseaux - théorie, applications et nouvelles frontières", **Plenary Speaker**, GRETSI 2007, Troyes, France
September 2007, "New Directions in Wireless Communications," **Gilbreth Lecture** to the National Academy of Engineering
January 2008, "On Theory and Practice in Network Coding", **Keynote Lecture**, Coordinated Science Laboratory at UIUC 3rd annual Student Conference in the areas of Control, Communications and Signal Processing.
February 2008, "Delay and throughput in network coding", **invited** seminar, Iowa State University
June 2008, "Network Coding", **invited** course, First School of Information Theory, organized by the IEEE Information Theory Society at Penn State
June 2008, "Network coding and security", **Keynote Address**, IEEE Workshop on Wireless Network Coding, San Francisco
June 2008, "An Introduction to Network Coding", short course given at Bretagne Telecom, France

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June 2008, “Le codage sur réseaux – principes et applications”, **invited** lecture, at the PRACOM conference, Bretagne Telecom, France

September 2008, “Introduction to Network Coding”, tutorial at the IEEE International Symposium on Personal, Indoor and Mobile Radio Communications (PIMRC) 2008, Cannes, France, co-taught with Ralf Koetter of TUM

September 2008, “How to Get There from Here”, presentation to the Networking Networking (N²) Women Forum, Cannes, France

September 2008, “On the intersection between queueing and information theory - some new results”, **invited** seminar at Eurecom, France, **invited** seminar, University of Illinois, Chicago (November 2008), **invited** seminar, Harvard (February 2009), **invited** seminar, University of California San Diego (April 2009), **invited** seminar, Ohio State University (May 2009), **invited** seminar at KAIST, Korea (July 2009), **invited** seminar at CTTC under Catalonia’s Invited Lectureship Program, Barcelona, Spain (July 2009)

May 2009, “On the Confluence of Information Theory and Networking”, **Plenary Lecture**, Conftele, Portugal

May 2009, “Network coding and security - new paradigms”, **Keynote Address**, European Wireless Conference, Aalborg, Denmark

May 2009, “Network coding”, tutorial, Muriel Médard, Joerg Widmer and Frank H.P. Fitzek, European Wireless Conference, Aalborg, Denmark

September 2009, “Bringing network coding into the network”, **Keynote Address**, International Teletraffic Conference, Paris, France

Theses Supervised

Summary

	Total	Completed	In Progress
Bachelor	0	0	0
Master of Engineering	9	8	1
Master of Science	16	13	3
Engineer	0	0	0
Doctoral			
As Supervisor	15	8	7
As Reader	31	29	2

Bachelor’s Theses

None

Master’s of Engineering Theses

Zheng, Changqing, “Optimum Spreading Bandwidth for DS-CDMA on Time and Frequency Fading Channels,” May 2002

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Rettig, Pascal, "Transmit Simulation and Receive Optimization for 802.11b Networks" (6-A student at Qualcomm), May 2002

Le Cocq, Cécile, "Delay Improvements from Multiple Wavelengths in an Optical Folded Bus," September 2003

Choute, Clifford, "Performance of Random Network Coding for Data Dissemination," (co-supervised with Supratim Deb), June 2005

Lee, Anna, "Simplified Random Network Codes for Multicast Networks," June 2005

Tang, Jianlong, "Secure Network Coding with a Cost Criterion," June 2006

Ebad Ahmed, "Economic Aspects of Network Coding", (co-supervised with Asuman Ozdaglar and Atilla Eryilmaz), June 2007

Minji Kim, "Network Coding for Speed-up in Switches," August 2007

Kim, Anthony, started June 2010 (co-supervised with Una-May O'Reilly)

Master's Theses

Saengudomlert, Poompat, "Analysis and Detection of Jamming Attacks in an All-optical Network," June 1998 (co-supervised with Robert G. Gallager)

Huang, Jianyi, "Capacity of Time-slotted ALOHA Systems," June 2000, University of Illinois Urbana-Champaign (co-supervised with Sean P. Meyn)

He, Wenbo, "Heuristic Algorithms for Failure Recovery in Mesh Networks," August 2000, University of Illinois Urbana-Champaign

Wang, Hung Jen, "Routing Policy on Robustness in Optical Networks," March 2002 (co-supervised with Eytan Modiano)

Libarikian, Ari, "Robustness of Bus Overlays in Optical Networks," April 2002, **winner of a MIT Masterworks (one of 9 in EECS)**

Coleman, Todd, "Trade-off Between Power Consumption and Delay in Wireless Packetized Systems," April 2002, **winner of the Morris J. Levin Award (First Prize) at the MIT Masterworks**

Lun, Desmond, "Error Exponent for Multipath Fading Channels: Strong Coding Theorem," September 2002 (co-supervised with Ibrahim Abou-Fayçal)

Weichenberg, Guy, "High-Reliability Architectures for Networks Under Stress," June 2003 (co-supervised with Vincent Chan)

Kim, Minkyu, "Robustness in Large-Scale Random Networks," June 2003

Ray, Siddharth, "Achievable Rates Over Bursty Multiple-Access Noise-Free Channels," September 2003 (co-supervised with Jinane Abounadi)

Youssef-Massaad, Pamela, "[Impact of processing energy on the capacity of wireless channels](#)," started Fall 2003 (co-supervised with Lizhong Zheng)

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Sundararajan, Jay Kumar, "Extending the Birkhoff-von Neumann Switching Strategy to Multicast Switching" June 2005 (co-supervised with Supratim Deb), **winner of a Morris J. Levin Award at the MIT Masterworks**

Jing, Sheng, "On Sounding in Wideband Channels," June 2006, (co-supervised with Lizhong Zheng)

Doshi, Vishal, "Functional Compression: Theory and Applications", February 2008 (co-supervised with Devavrat Shah)

ParandehGhebi, Ali, "Fair Resource Allocation in Multiple Access Channels", June 2008 (co-supervised with Asuman Ozdaglar)

Shi, Shirley, "Joint Base-Calling of Two DNA Sequences with Factor Graphs", September 2009 (co-supervised with Desmond Lun from the Broad Institute)

Feizi-Khankandi, Soheil, started September 2008

Engineers Theses

None

Doctoral Theses, Supervisor

Ho, Tracey, "Networking from a Network Coding Perspective," May 2004. Committee: David Karger, Ralf Koetter (UIUC), Michelle Effros (Caltech) (**received an Honorable Mention from the George M. Sprowls Award for the best doctoral theses in computer science**)

Peranginangin, Nathanael, "On Capacity of Relay Networks with Finite Memory Relays," September 2004. Committee: Robert G. Gallager, Ralf Koetter (UIUC), Vincent Chan.

Luo, Cheng, "Communication for Wideband Fading Channels: on Theory and Practice," (co-supervised with Lizhong Zheng), October 2005. Committee: Greg Wornell, Vincent Chan, Dennis Goeckel (University of Massachusetts Amherst).

Coleman, Todd, "Low-Complexity Approaches to Distributed Data Dissemination," November 2005. Committee: John Tsitsiklis, Ralf Koetter (UIUC), Michelle Effros (Caltech), Andrea Goldsmith (Stanford).

Lun, Desmond, "Efficient Operation of Coded Packet Networks," June 2006. Committee: John Tsitsiklis, Ralf Koetter (UIUC), Michelle Effros (Caltech).

Ray, Siddharth, "Energy-Efficient Multiple Antenna Communication", (co-supervised with Lizhong Zheng), August 2006. Committee: Pierre Moulin (UIUC), Pramod Viswanath (UIUC).

Kim, Minkyu, "Evolutionary Approaches Toward Practical Network Coding (co-supervised with Una-May O'Reilly), September 2008. Committee: Michelle Effros (Caltech).

Weichenberg, Guy, "Design and Analysis of Optical Flow Switched Networks" (co-supervised with Vincent Chan), January 2009. Committee: Eric Swanson.

Sundararajan, Jay-Kumar, started Fall 2005 (co-supervised with Devavrat Shah)

Sheng, Jing, "Towards Unifying Multi-Resolution and Multi-Description - A Distortion-Diversity Perspective", September 2009, (co-supervised with Lizhong Zheng)

Zhao, Fang, started Fall 2003 (co-supervised with Asuman Ozdaglar)

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Lucani, Daniel, started Fall 2006 (co-supervised with Milica Stojanovic (Northeastern University))

Kim, Minji, started Fall 2007

Shirley Shi, started Fall 2008

Ali ParandehGheibi, started Fall 2008 (co-supervised with Asu Ozdaglar)

Doctoral Theses, Reader

Visotsky, Yevgeny, "Space-time Transmit Precoding and Interference Suppression for a Wireless Downlink," June 2000 (supervised by Upamanyu Madhow), University of Illinois Urbana-Champaign

Abou-Fayçal, Ibrahim, "An Information Theoretic Study of Reduced Complexity Receivers for Intersymbol Interference Channels," January 2001 (supervised by Amos Lapidoth)

Yeh, Edmund, "Successive Decoding in Multiple-user Communications," June 2001 (supervised by Robert G. Gallager)

Klein, Thierry, "Capacity of Gaussian Noise Channels with Side Information and Feedback," June 2001 (supervised by Robert G. Gallager)

Laneman, Nicholas, "Cooperative Diversity in Wireless Networks: Algorithms and Devices," July 2002 (supervised by Greg Wornell)

Roy, Sandip, "Moment Linear Stochastic Systems and Their Applications," June 2003 (supervised by George Verghese)

Yao, Huan, "Efficient Signal, Code, and Receiver Designs for MIMO Communication Systems," June 2003 (supervised by Greg Wornell)

Min, Rex, "Energy and Quality Scalable Wireless Communication," June 2003 (supervised by Anantha Chandrakasan)

Shulman, Nadav, "Communication over an Unknown Channel via Common Broadcasting," July 2003 (supervised by Meier Feder), Tel Aviv University

De Couto, Douglas, "High-Throughput Routing for Multi-Hop Wireless Networks," May 2004 (supervised by Robert Morris)

Huang, Jianyi, "Characterization and Computation of Optimal Distributions for Channel Coding," August 2004 (supervised by Sean Meyn), University of Illinois Urbana-Champaign

Wu, Xin Zhou, "Wireless Communications in the Energy-Limited Regime," October 2004 (supervised by R. Srikant), University of Illinois Urbana-Champaign

Rasala-Lehman, April, "Network Coding," January 2005 (supervised by Madhu Sudan)

Gentry, Sommer, "Dancing Cheek to Cheek: Haptic Communication between Partner Dancers and Swing as a Finite State Machine," June 2005 (supervised by Eric Feron)

Chen, Li-Wei, "A Study on the Tradeoff between Efficient Resource Allocation and Node Complexity in WDM Optical Networks," August 2005 (supervised by Eytan Modiano)

Jaggi, Siddharth, "Design and Analysis of Network Codes," November 2005 (supervised by Michelle Effros), California Institute of Technology

Khalili, Ramin, "On the Properties of the Packet Layer Transmission," December 2005

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(supervised by Kaveh Salamatian), Université Pierre et Marie Curie, France

Sicot, Guillaume, "Etude du codage dans l'ADN," June 2006 (supervised by Ramesh Pyndiah), l'Ecole Nationale Supérieure de Télécommunications de Bretagne, France

Sethuraman, Vignesh, "On Non-Coherent Communication over Correlated Fading Channels with Practical Power Constraints," July 2006 (supervised by Bruce Hajek), University of Illinois Urbana-Champaign

Ratnakar, Narajan, "On Joint Resource Allocation and Network Coding in Networks of Point to Point Links and on Multicasting in Aref Networks", August 2006 (supervised by Ralf Koetter), University of Illinois Urbana-Champaign

Miliou, Natalia, "On Error Exponents for Fading Channels and Network Coding for Wireless Networks," April 2007 (supervised by Amos Lapidoth), ETH Zurich, Switzerland

Piantanida, Pablo, "Multi-User Information Theory: State Information and Imperfect Channel Knowledge," May 2007 (supervised by Pierre Duhamel), University of Paris-Sud XI (Supélec), France

Edalat, Farinaz, "Real-time Sub-carrier Adaptive Modulation and Coding in Wideband Orthogonal Frequency Division Multiplexing Wireless Systems", December 2007 (supervised by Charles Sodini)

Wen, Yonggang, "Efficient Fault Management Architecture for Cost-Optimized Dynamic All-Optical Networks: A Systematic Approach", December 2007 (supervised by Vincent W.S. Chan)

Katti, Sachin, "Network Coded Wireless Architecture", September 2008 (supervised by Dina Katabi)

Chirawat Kotcharsan, "Robust Joint Transmitter and Receiver Power Allocation for Multi-user Communications", July 2008 (supervised by Poompat Saengulomert), Asian Institute of Technology, Thailand

Fawaz, Nadia, "Cooperative Communications for Wireless Ad Hoc Networks", December 2008 (supervised by Mérouane Debbah and David Gesbert), Eurecom/ Supélec, France

Sundaram, Shreyas, "Linear Iterative Strategies for Information Dissemination and Processing in Distributed Systems", April 2009 (supervised by Chris Hadjicostis), University of Illinois Urbana-Champaign

Kim, Sang Joon, "Performance bounds for bi-directional relaying protocols", April 2009 (supervised by Vahid Tarokh), Harvard

Kabat, Andrzej (supervised by Ramesh Pyndiah), "Contributions au Codage Correcteur d'Erreurs: Décodage Pondéré des Codes de Reed-Solomon et Codage Distribué pour les Communications Coopératives Sans Fil", Bretagne Télécom, France

Lima, Luisa (supervised by Joao Barros), University of Porto

Mahmino, Ali (supervised by Jerome Lacan), "Applications du Codage Réseau aux Architectures aux Garanties de Qualité de Service (QoS)", Université de Toulouse, France

Postdoctoral Fellows Supervised

Current Postdocs

Curriculum Vitae
Muriel Médard
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<u>Name</u>	<u>Dates of Appointment</u>	<u>PhD Granting Institution</u>	<u>Current Position</u>
Lucille Sassatelli	November 2008	ETIS Lab (ENSEA/UCP)	
Nadia Fawaz	January 2009	Supelec	

Previous Postdocs

<u>Name</u>	<u>Current Title</u>	<u>Current Employer</u>
Chris Ng	Member of Tech. Staff	Alcatel Lucent Bell Labs
Atilla Eryilmaz	Asst. Professor	Ohio State University
Siddarth Jaggi	Asst. Professor	Chinese University of Hong Kong
Supratim Deb	Member of Tech. Staff	Alcatel Lucent Bell Labs, India
Ibrahim Abou-Fayçal	Asst. Professor	American Univ. of Beirut