

# Curriculum Vitae of Andrea J. Goldsmith

## Contact Information:

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## Education:

Ph.D.	Electrical Engineering, University of California at Berkeley	1994
M.S.	Electrical Engineering, University of California at Berkeley	1991
B.S.	Electrical Engineering, University of California at Berkeley	1986

## Professional Experience:

Stanford University, Stephen Harris Professor of Engineering	10/12 – Present
Accelera/Plume Wifi, Founder, CTO, Board of Directors	08/10 – 08/14
Stanford University, Professor	05/07 – Present
Quantenna Communications (QTNA), Founder, CTO, Board of Directors	09/05 – 07/09
Stanford University, Associate Professor	09/02 – 04/07
Stanford University, Assistant Professor	01/99 – 08/02
Memorylink Corporation, Chief Scientist	05/98 – 05/02
California Institute of Technology- Assistant Professor	09/94 – 12/98
University of California, Berkeley - Research Assistant	08/89 – 08/94
AT&T Bell Laboratories, Intern and Consultant	06/91 – 08/92
MAXIM Technologies, Systems Engineer	06/86 – 09/90

## Awards and Honors:

- Thomson-Reuters Highly Cited Researcher (top 1%) – 2014, 2015, 2016
- IEEE Communications Society Edwin H. Armstrong Achievement Award “For sustained and fundamental contributions to wireless communications.” – 2014
- IEEE Communications Society Women in Communications Engineering Achievement Award – 2014
- Technical Achievement Award in Communication Theory: IEEE Communications Society – 2013
- Stephen Harris Endowed Chair in Stanford’s School of Engineering – 2012
- Interdigital Innovation Award – 2012
- Silicon Valley Business Journal Women of Influence Award – 2010.
- IEEE Information Theory Society Distinguished Lecturer – 2010-2011
- Technical Achievement Award in Wireless Communications: IEEE Communications Society - 2009

- Tsinghua Distinguished Chair Professorship – 2009-2011
- IEEE Communications Society Distinguished Lecturer – 2007-2008
- Stanford Postdoc Mentoring Award – 2008
- UCSD Shannon Memorial Lecture – 2007
- Stanford Fellow – 2005
- IEEE Fellow – 2005
- Stanford School of Engineering Bredt Faculty Development Scholar – 2003
- National Academy of Engineering Gilbreth Lectureship – 2002
- Alfred P. Sloan Fellowship – 2001
- The Stanford Terman Fellowship – 1999
- Okawa Foundation Award – 1999
- The Office of Naval Research Young Investigator Award 1999
- National Semiconductor Faculty Development Award – 1996, 1997
- The National Science Foundation CAREER Development Award – 1995
- IBM Fellow – 1992-93
- David Griep Memorial Prize for Excellence in Academic Achievement – 1991

#### **Paper Awards:**

- IEEE Communications Society Best Tutorial Paper Award (Five-Year Window) – 2013
- IEEE Joint Information Theory Society and Communications Society Best Paper Award (Three-Year Window) – 2004
- IEEE Global Communications Conference, Communication Theory Symposium Best Paper Award – 2013
- Power and Energy Society General Meeting Best Paper Award – 2013
- Asia-Pacific Conference on Signal and Information Processing Best Paper Award – 2012
- IEEE Global Communications Conference Best Paper Award – 2009
- IEEE International Communications Conference, Wireless Communications Symposium Best Paper Award – 2008
- IEEE International Symposium on Information Theory Best Student Paper Award – 2007

#### **Stanford Service and Leadership Roles:**

- Chair: National Rising Stars Faculty Job Preparation Workshop for Women Ph.D./Postdocs in EE and CS (2016-2017)
- Provost Search Committee (2016)
- University Budget Group (2010 – present)
- Committee on Research (2015-2017)
- Provost Task Force on Women and Leadership (2014 – present)
- Chair: Faculty Senate (2009-2010)
- Chair: Planning and Policy Board (2009-2010), Member (2009-2013, 2016-2017)
- University Cabinet (2009-2010)
- Faculty Senate (2001-2005, 2006-2010, 2011-2015)
- Senate Steering Committee (2004-2005, 2009-2010)
- Commission on Undergraduate Education (2011-2012)
- Commission on Graduate Education (2005-2006)

- Search Committee for Vice Provost and Dean of Research (2003)
- Freshman Advisor (2001-2002, 2004-2005, 2010-2013, 2015-2016)

### **Department Service and Leadership Roles:**

- Chair: Committee on Student Life (2012-present)
- Chair: Undergraduate Curriculum Committee (2003-2006), Member (2000-2003)
- Faculty Search Committees (2014-2015, 2009-2010)
- Academic Affairs Committee (1999-2004)

### **Professional Service and Leadership Roles:**

- Chair: Women in Technology Leadership Roundtable Metrics Working Group (2016-Present), Roundtable Member (2015-present)
- Chair: IEEE Technical Activities Board Ad Hoc Committee on Women and URM's (Nov. 2015-Present)
- Chair: IEEE Bell Medal Committee, 2014 – present (Member 2011 – Present)
- Chair: IEEE Communications Society Emerging Technology Committee, 2012 – 2014
- Member: IEEE Communications Society Strategic Planning Committee, 2012 – 2014
- Member: Marconi Society Award Jury, 2009 – 2011
- President: IEEE Information Theory Society – 2009 (Officer from 2007 – 2011)
- Jury Chair: BBVA Foundation Frontiers of Knowledge Award in Information and Communication Technology, 2009 – 2012
- Chair: IEEE Information Theory Society Claude E. Shannon Award Committee – 2009
- Chair: IEEE Information Theory Society Awards Committee – 2008
- Member: IEEE Technical Activities Board, 2008 – 2009
- Founder and Chair: IEEE Information Theory Society Student Committee, 2005 – 2008
- Board of Governors: IEEE Information Theory Society, 2002 – 2007
- Board of Governors: IEEE Communications Society, 2005 – 2008
- Committee Member: National Research Council Committee on Technology Investment for the Dept. of Homeland Security. 2009 – 2012
- Committee Member: National Research Council Committee on the Trends in Wireless Technology and Policy. August 2003 – 2006
- Committee Member: National Research Council Committee on the Future of Untethered Communication. 1996 – 1997

### **Multi-University Research Leadership Roles**

- Executive Committee and Lead Stanford Principle Investigator: NSF Center for Science of Information. September 2010-present (\$50M program across 11 universities and 26 faculty, 2008 – 2020).
- Lead Principle Investigator: Air Force Office of Sponsored Research, “Reduced Dimension Wireless Networks and Radio Design: Enabling new Radio Architecture and Network Controllers via Compressed Sensing” (\$2.25M program across 3 universities and 3 faculty, 2012 – 2017)
- Lead Principle Investigator: NSF, “Information Acquisition, State Estimation, and

Control in Cyber Physical Systems,” (\$1M program across 3 universities and 3 PIs, 2013 – 2016)

- Lead Principle Investigator: Defense Threat Reduction Agency, “Fundamental Performance Limits in Hybrid Networks under WMD Attack,” (\$1.2M across 2 universities and 2 faculty, 2008 – 2013).
- Lead Principle Investigator: DARPA, “Information Theory of Mobile Ad-Hoc Networks” (\$6M program across 4 universities and 12 faculty, 2006 – 2011)
- Lead Stanford Principle Investigator: Army Research Office, “Dynamic Ad-Hoc Wireless Networks” (\$6M program across 7 universities and 12 faculty, 2006-2010)

### **Corporate Technical Advisory Boards**

- Cohere: 2016-present
- Quantenna (QTNA): 2016-present
- Accenture (ACN): 2014-2016
- Interdigital (IDCC): 2010-present
- Sequans (SQNS): 2006-present
- Aviat Networks (AWN): 2010-2012

### **Plenary, Keynote, and Distinguished Lectures:**

- IEEE International Workshop on Emerging Technologies for 5G Wireless Cellular Networks, Washington DC, Dec. 2016
- IEEE International Symposium on Wireless Communication Systems, Poznan, Poland, Sept. 2016
- Chinese University of Hong Kong, Shenzhen, China, Aug. 2016
- Technion University Vincent Meyer Colloquium, Haifa, Israel, June 2016
- University of Maryland Advanced Networks Colloquium, College Park, MD, March 2016
- MIT Shannon-Boole Lecture, Cambridge, MA, Feb. 2016
- ACM Symposium on Mobile Ad Hoc Networking, Hangzhou, China, June 2015
- IEEE Personal and Indoor Mobile Radio Conference, Washington DC, September 2014
- IEEE International Symposium on Information Theory, Waikiki, HI, July 2014
- Qualcomm Technology Forum, San Diego, CA June 2014
- European Wireless Conference, Barcelona, Spain, May 2014
- International Zurich Seminar on Communications, Zurich, Switzerland, February 2014
- IEEE International Conference on Communications in China, Xi’an, China, August 2013
- International Conference on Signal Processing and Communications, Kunming, China, 2013
- IEEE Vehicular Technology Conference, Dresden, Germany, June 2013
- IEEE International Workshop on Heterogeneous and Small Cell Networks, Anaheim, CA, December 2012
- Electrical Engineering Distinguished Lecture Series, University of California at Berkeley, Berkeley, CA, November 2012
- IEEE Workshop on Convergence among Heterogeneous Wireless Systems in Future Internet, Ottawa, Canada, June 2012

- IEEE Wireless Communications and Networking Conference, Paris, France, March 2012
- IEEE Global Communications Conference, Miami, FL, December 2010
- IEEE Communications Society Distinguished Lecture Tour in Latin America, Sweden, and Canada, 2009
- IEEE Wireless Communications and Networking Conference, Budapest, Hungary, 2009.
- IEEE International Conference on Computers, Communications, and Networks, San Francisco, CA, August 2009
- IEEE International Symposium on Wireless Pervasive Computing, Santorini, Greece, May 2008
- Conference on Government Microcircuit Applications and Critical Technology, Las Vegas, NV, March 2008
- American Control Conference, Manhattan, NY, July 2007
- IEEE Conference on Information Sciences and Systems, Princeton, NJ, March 2006
- Workshop on Signal Processing for Wireless Communications, King's College, London, May 2006
- International Workshop on Wireless and Ad Hoc Networks, New York, NY, June 2006
- Electrical Engineering Distinguished Lecture Series, University of California at Berkeley, Berkeley, CA, February 2005
- Lillian Gilbreth Lecture, Annual National Academy of Engineering Meeting, Washington. DC, Oct 2002
- National Academy of Engineering Symposium on Frontiers of Engineering, Irvine, CA, March 2002.
- Caltech Ernest J. Watson Lecture Series, Pasadena, CA October 1996

### **Editorial Activities**

- Steering Committee: *IEEE Transactions on Wireless Communications*, 2010 – 2013
- Associate Editor: *IEEE Transactions on Information Theory*, 2007 – 2009
- Editorial Board: *NoW Journal on Foundations and Trends in Communications and Information Theory*, 2006 – present
- Editorial Board: *NoW Journal on Foundations and Trends in Networks*, 2006 – present
- Guest Editor: Special issue of *IEEE Journal on Selected Areas in Communications*, 2007
- Guest Editor-in-Chief: Special issues of *IEEE Wireless Communications Magazine*, 2006
- Guest Editor-in-Chief: Special issues of *IEEE Wireless Communications Magazine*, 2002
- Guest Editor-in-Chief: Special issues of *IEEE Wireless Communications Magazine*, 1998
- Editor: *IEEE Transactions on Communications*, 1995 – 2001
- Editor: *IEEE Wireless Communications Magazine*, 1995 – 2002

### **Technical Meetings - Leadership Roles**

- General Chair: IEEE Wireless Communications and Networking Conference, 2017
- General Chair: IEEE Information Theory Workshop, 2010
- General Chair: Joint Workshop on Coding and Communications, 2008
- General Chair: IEEE Communication Theory Symposium, 2000
- Technical Program Committee Chair: IEEE Information Theory Symposium 2007
- Technical Program Committee Chair: IEEE Communication Theory Workshop 1999

## Technical Meetings – Program Committee Member

- IEEE Information Theory Workshop, 2015
- IEEE International Symposium on Information Theory, 2015
- IEEE International Symposium on Information Theory, 2013
- IEEE Communications Theory Workshop, 2012
- IEEE International Symposium on Information Theory, 2012
- IEEE International Symposium on Information Theory, 2010
- IEEE Global Communications Conference, 2004
- IEEE International Conference on Communications, 2002
- IEEE Wireless Personal and Mobile Communications Conference, 2002
- IEEE International Symposium on Signals and Systems, 2000
- IEEE Global Communications Conference, 1999
- IEEE International Communications Conference, 1999
- IEEE Wireless Communications and Networking Conference, 1999
- IEEE Global Communications Conference, 1996
- IEEE Global Communications Conference, 1994

## Publication Summary:

Dr. Goldsmith has over 130 journal papers published or in press, two of which have won best paper awards and seven of which are invited papers. She has published 295 peer-reviewed conference papers, four of which have won best paper awards, with an additional thirty four invited. She is the author of three textbooks, one of which has been translated into Chinese, Japanese, and Russian. She has twenty-two issued patents with seven pending. Her publications have been cited over 49,000 times in Google Scholar with an h-index of 81 and she is in the category of “Highest Cited Authors” in Thompson’s ISI citation index by “ranking among the top 1% most cited for their subject field and year of publication”. Links to her publications can be found at the URL:

<http://scholar.google.com/citations?user=cPmMoXoAAAAJ&hl=en&oi=ao>

## Books:

1. *Wireless Communications*, Cambridge University Press, 2005. Translated into Chinese, Japanese, and Russian.
2. *An Introduction to MIMO Communication*. Cambridge University Press, 2006. Co-author. Translated into Chinese.
3. *Principles of Cognitive Radio*, Cambridge University Press, 2010. Co-author. A Choice Outstanding Academic Title, 2013.
4. Chapter on Wireless Communications in *High Performance Communication Networks*, Morgan-Kaufman, New York, NY. 2000.
5. *The Future of Untethered Communications*. National Academy Press. Washington, DC, 1997. Co-author.

### Journal and Magazine Papers (Invited):

1. A.J. Goldsmith, S. A. Jafar, I. Maric and S. Srinivasa, "Breaking Spectrum Gridlock with Cognitive Radios: An Information Theoretic Perspective", *Proceedings of the IEEE*, Vol. 97, No. 5, pp. 894-914, May 2009.
2. I. Maric, A.J. Goldsmith, G. Kramer and S. Shamai (Shitz), "On the Capacity of Interference Channels with One Cooperating Transmitter", *European Transactions on Telecommunications*, Vol. 19, pp. 405-420, April 2008.
3. S. Cui and A.J. Goldsmith, "Cross-layer Design in Energy-constrained Networks Using Cooperative MIMO Techniques", *EURASIP Journal on Applied Signal Processing*, Special Issue on Advances in Signal Processing-based Cross-layer Designs, Vol. 86, No. 8, pp. 1804-1814, August 2006.
4. E. Setton, T. Yoo, X. Zhu, A.J. Goldsmith, and B. Girod, "Cross-layer Design of Ad Hoc Networks for Real-Time Video Streaming", *IEEE Wireless Communications Magazine*, Vol. 12, No. 4, pp. 99-102, August 2005.
5. S. A. Jafar, G. Foschini, and A.J. Goldsmith, "PhantomNet: Exploring optimal multicellular multiple antenna systems", *EURASIP Journal on Applied Signal Processing*, Special Issue on MIMO Communications and Signal Processing, pp. 591-605, May 2004.
6. A.J. Goldsmith, S. A. Jafar, N. Jindal, and S. Vishwanath, "Capacity Limits of MIMO Channels", *IEEE Journal on Selected Areas in Communications*, Vol. 21, No. 5, pp. 684-702, June 2003.
7. A.J. Goldsmith and S. B. Wicker, "Design challenges for energy-constrained ad hoc wireless networks", *IEEE Wireless Communications Magazine*, Vol. 9, No. 4, pp. 8-27, August 2002.

### Journal Papers:

1. M. Chowdhury, A. Manolakos, A. Goldsmith, "Multiplexing and diversity gains in noncoherent massive MIMO systems," To appear in *IEEE Transactions on Wireless Communications*, 2017.
2. M. Chowdhury, A. Manolakos and A. Goldsmith, "Scaling Laws for Noncoherent Energy-Based Communications in the SIMO MAC," in *IEEE Transactions on Information Theory*, Vol. 62, No. 4, pp. 1980-1992, April 2016.
3. K. Ganesan, P. Grover, J. Rabaey and A. Goldsmith, "On the Total Power Capacity of Regular-LDPC Codes With Iterative Message-Passing Decoders," in *IEEE Journal on Selected Areas in Communications*, Vol. 34, No. 2, pp. 375-396, Feb. 2016.
4. M.S. Alouini, E. Biglieri, D. Divsalar, S. Dolinar, A.J. Goldsmith, L. Milstein, "The Life and Work of Marvin Kenneth Simon," To appear: IEEE Tutorial and Survey Papers.
5. M. Chowdhury, M. Rao, Y. Zhao, T. Javidi and A. Goldsmith, "Benefits of Storage Control for Wind Power Producers in Power Markets," in *IEEE Transactions on Sustainable Energy*, Vol. 7, No. 4, pp. 1492-1505, Oct. 2016.

6. S. Rini and A. Goldsmith, "A Unified Graphical Approach to Random Coding for Single-Hop Networks," in *IEEE Transactions on Information Theory*, Vol. 62, No. 1, pp. 56-88, Jan. 2016.
7. A. Kipnis, A. J. Goldsmith, Y. C. Eldar and T. Weissman, "Distortion Rate Function of Sub-Nyquist Sampled Gaussian Sources," in *IEEE Transactions on Information Theory*, Vol. 62, No. 1, pp. 401-429, Jan. 2016.
8. N. Farsad, A.J. Goldsmith, "A Novel Molecular Communication System Using Acids, Bases And Hydrogen Ions," arXiv preprint arXiv:1511.08957, Nov. 2015.
9. M. Alizadeh; H. T. Wai; M. Chowdhury; A. Goldsmith; A. Scaglione; T. Javidi, "Optimal Pricing to Manage Electric Vehicles in Coupled Power and Transportation Networks," in *IEEE Transactions on Control of Network Systems* Vol. PP, No. 99, pp.1-1, Nov. 2015.
10. F. J. Lopez-Martinez, E. Kurniawan, R. Islam and A. Goldsmith, "Average Fade Duration for Amplify-and-Forward Relay Networks in Fading Channels," in *IEEE Transactions on Wireless Communications*, Vol. 14, No. 10, pp. 5454-5467, Oct. 2015.
11. Y. P. Zhang, P. Wang and A. Goldsmith, "Rainfall Effect on the Performance of Millimeter-Wave MIMO Systems," in *IEEE Transactions on Wireless Communications*, vol. 14, no. 9, pp. 4857-4866, Sept. 2015.
12. Y. Chen, Y. Chi and A. J. Goldsmith, "Exact and Stable Covariance Estimation From Quadratic Sampling via Convex Programming," in *IEEE Transactions on Information Theory*, Vol. 61, No. 7, pp. 4034-4059, July 2015.
13. K. Ganesan, P. Grover, J. Rabaey, A.J. Goldsmith, "Towards approaching total-power-capacity: Transmit and decoding power minimization for LDPC codes," CoRR, vol. abs/1504.01019, April 2015.
14. R. Sevlian, Y. Zhao, A. J. Goldsmith, R. Rajagopal, H.V. Poor, "Distribution System Outage Detection using Consumer Load and Line Flow Measurements," arXiv preprint arXiv:1503.08244, March 2015.
15. F. Lopez-Martinez, E. Martos-Naya, J. Paris, and A.J. Goldsmith, "Eigenvalue Dynamics of a Central Wishart Matrix with Application to MIMO Systems," *IEEE Transactions on Information Theory*, Vol. 61, No. 5, pp. 2693-2707, March 2015.
16. A. Manolakos, Y. Noam, and A.J. Goldsmith, "Null Space Learning in Cooperative MIMO Cellular Networks using Interference Feedback," *IEEE Transactions on Wireless Communications*, Vol. 13, No.10, pp. 5699-5715, October 2014.
17. D. Zahavi, L. Zhang, I. Maric, R. Dabora, A.J. Goldsmith, and S. Cui, "Diversity-Multiplexing Tradeoff for the Interference Channel with a Relay," *IEEE Transactions on Information Theory*, Vol. 61, No. 2, pp. 963 – 982, February 2015.
18. M. Chowdhury and A.J. Goldsmith, "Reliable Uncoded Communication in the SIMO MAC", *IEEE Transactions on Information Theory*, Vol.61, No.1, pp.388-403, January 2015.
19. Y Chen, A.J. Goldsmith, and Y.C. Eldar, "Backing off from Infinity: Performance Bounds via Concentration of Spectral Measure for Random MIMO Channels", *IEEE Transactions on Information Theory*, Vol. 61, No. 1, pp. 366 - 387, January 2015.
20. A. Manolakos, I. Ochoa, K. Venkat, A.J. Goldsmith, and O. Gevaert, "CaMoDi: a New Method for Cancer Module Discovery", *BMC Genomics*, Vol. 15 Supp. 10, December 2014.



21. Y. Zhao, J. Chen, A.J. Goldsmith, and H. V. Poor, "Identification of outages in Power Systems with Uncertain States and Optimal Sensor Locations", *IEEE Journal of Selected Topics in Signal Processing*, Vol. 8, No. 6, pp. 1140-1153, December 2014.
22. S. Rini and A.J. Goldsmith, "On the Capacity of the Multiantenna Gaussian Cognitive Interference Channel", *IEEE Journal on Selected Areas in Communications*, Vol. 32, No. 11, pp. 2252-2267, November 2014.
23. Y. Noam, A. Manolakos, and A.J. Goldsmith, "Null Space Learning with Interference Feedback for Spatial Division Multiple Access", *IEEE Transactions on Wireless Communications*, Vol. 13, No. 10, pp. 5699 – 5715, October 2014.
24. Y. Zhao, J. Qin, R. Rajagopal, A.J. Goldsmith, and H.V. Poor, "Wind Aggregation via Risky Power Markets," *IEEE Transactions on Power Systems*, Vol. 29, No. 5, pp. 1-11, September 2014.
25. Y. Chen, A.J. Goldsmith, and Y.C. Eldar, "Channel Capacity under Sub-Nyquist Nonuniform Sampling", *IEEE Transactions on Information Theory*, Vol. 60, No. 8, pp. 4739 – 4756, August 2014.
26. S. Rini, D. Tuninetti, N. Devroye, and A.J. Goldsmith, "On the Capacity of the Interference Channel with a Cognitive Relay", *IEEE Transactions on Information Theory*, Vol. 60, No. 4, pp. 2148-2179, April 2014.
27. S. Rini, E. Kurniawan, L. Ghaghanidze, and A.J. Goldsmith, "Energy Efficient Cooperative Strategies for Relay-Assisted Downlink Cellular Systems," *IEEE Journal on Selected Areas in Communications*, Vol. 32, No. 11, pp. 2017-2089, November 2014.
28. Y. Noam and A.J. Goldsmith, "The One-Bit Null Space Learning Algorithm and its Convergence," *IEEE Transactions on Signal Processing*, Vol. 61, No. 99, pp. 6135-6149, December 2013.
29. A.J. Goldsmith, "Promoting Emerging Technologies within COMSOC," *IEEE Communications Magazine*, Vol. 51, No. 12, pp.12-13, December 2013.
30. R. Mirghaderi, A.J. Goldsmith, and T. Weissman, "Achievable Error Exponents in the Gaussian Channel With Rate-Limited Feedback," *IEEE Transactions on Information Theory*, Vol. 59, No. 12, pp. 8144-8156, December 2013.
31. Y. Noam and A.J. Goldsmith, "Blind Null-Space Learning for MIMO Underlay Cognitive Radio with Primary User Interference Adaptation", *IEEE Transactions on Wireless Communications*, Vol. 12, No. 4, pp. 1722-1734, December 2013.
32. N. S. Zuckerman, Y. Noam, A.J. Goldsmith, and P. P. Lee, "A Self-directed Method for Cell-type Identification and Separation of Gene Expression Microarrays", *PLoS Computational Biology*, Vol. 9, No. 8, August 2013.
33. Y. Chen, Y.C. Eldar, and A.J. Goldsmith, "Shannon meets Nyquist: Capacity of Sampled Gaussian Channels," *IEEE Transactions on Information Theory*, Vol. 59, No. 8, pp. 4889-4914, August 2013.
34. D. Gunduz, E. Erkip, A.J. Goldsmith, and H.V. Poor, "Reliable Joint Source-Channel Cooperative Transmission Over Relay Networks," *IEEE Transactions on Information Theory*, Vol. 59, No. 4, pp. 2442-2458, April 2013
35. N. Liu, I. Maric, A.J. Goldsmith, and S. Shamai, "Capacity Bounds and Exact Results for the Cognitive Z-Interference Channel," *IEEE Transactions on Information Theory*, Vol. 59, No. 2, pp. 886-893, February 2013.

36. R. Dabora and A.J. Goldsmith, "On the Capacity of Indecomposable Finite-State Channels with Feedback," *IEEE Transactions on Information Theory*, Vol. 59, No. 1, pp. 193-2013, January 2013.
37. D. Gunduz, A.Yener, A.J. Goldsmith, and H.V. Poor, "The Multiway Relay Channel", *IEEE Transactions on Information Theory*, Vol. 59, No. 1, pp. 51-63, January 2013.
38. M. Levorato, S. Firouzabadi, and A.J. Goldsmith, "A Learning Framework for Cognitive Interference Networks with Partial and Noisy Observations," *IEEE Transactions on Wireless Communications*, Vol. 11, No. 9, pp. 3101-3111, September 2012.
39. M. Levorato, U. Mitra, A.J. Goldsmith, "Structure-Based Learning in Wireless Networks via Sparse Approximation", *EURASIP Journal on Wireless Communications and Networking*, August 2012.
40. S. Adlakha, S. Lall, and A.J. Goldsmith, "Networked Markov Decision Processes with Delays," *IEEE Transactions on Automatic Control*, Vol. 57, No. 4, pp. 1013-1018, April 2012.
41. C.T.K. Ng, C. Tian, C. A.J. Goldsmith, and S. Shamai, "Minimum Expected Distortion in Gaussian Source Coding With Fading Side Information," *IEEE Transactions on Information Theory*, pp. 5725-5739, Vo. 58, No. 9, September 2012.
42. I. Marić, R. Dabora. and A.J. Goldsmith, "Relaying in the Presence of Interference: Achievable Rates, Interference Forwarding, and Outer Bounds," *IEEE Transactions on Information Theory*, Vol. 58, No. 7, pp. 4342-4354, July 2012.
43. E. Garone, B. Sinopoli, A.J. Goldsmith, and A. Casavola, "LQG control for MIMO Systems over Multiple Erasure Channels with Perfect Acknowledgment", *IEEE Transactions on Automatic Control*, Vol. 57, No. 2, pp. 450-456, February 2012.
44. I. Maric, A.J. Goldsmith, and M. Medard, "Multihop Analog Network Coding via Amplify-and-Forward: The High SNR Regime," *IEEE Transactions on Information Theory*, Vol.58, No.2, pp.793-803, February 2012.
45. T. Yoo; G.J. Foschini, R. A. Valenzuela, and A.J. Goldsmith, "Common Rate Support in Multi-Antenna Downlink Channels Using Semi-Orthogonal User Selection," *IEEE Transactions on Information Theory*, Vol. 56, No. 6, pp. 3449-3461. June 2011.
46. A.J. Goldsmith, M. Effros, R. Koetter, M. Médard, A. Ozdaglar, and L. Zheng; "Beyond Shannon: the Quest for Fundamental Performance Limits of Wireless Ad Hoc Networks," *IEEE Communications Magazine*, Vol. 49, No.5, pp. 195-205, May 2011.
47. S. Adlakha, S. Lall, and A.J. Goldsmith, "Networked Markov Decision Processes with Delays," *IEEE Transactions on Automatic Control*, Vol. 56, No. 5, pp. 101-110, May 2011.
48. L. Zhang; J. Jiang, A.J. Goldsmith, and S. Cui; "Study of Gaussian Relay Channels with Correlated Noises," *IEEE Transactions on Communications*, Vol. 10, No. 3, pp. 863-876, March 2011.
49. N. Liu, D. Gündüz, A.J. Goldsmith, and H.V. Poor, "Interference Channels with Correlated Receiver Side Information," *IEEE Transactions on Information Theory*, Vol. 56, No. 12, pp. 5984-5998, December 2010.
50. D. Gündüz, O. Simeone, A.J. Goldsmith, H.V. Poor, and S. Shamai, "Multiple Multicasts with the Help of a Relay" *IEEE Transactions on Information Theory*, Vol. 56, No. 12, pp. 6142-6158, December 2010.

51. R. Dabora and A.J. Goldsmith, "Capacity Theorems for Discrete, Finite-State Broadcast Channels with Feedback and Unidirectional Receiver Cooperation," *IEEE Transactions on Information Theory*, Vol. 56, No. 12, pp. 5958-5983, December 2010.
52. U. Fernandez-Plazaola, E. Martos-Naya, J.F. Paris, and A.J. Goldsmith, "Adaptive Modulation for MIMO Systems with Channel Prediction Errors", *IEEE Transactions on Wireless Communications*, Vol. 9, No. 9, pp. 2516-2527, September 2010.
53. M. Effros, A.J. Goldsmith, and Y. Liang, "Generalizing Capacity: New Definitions and Capacity Theorems for Composite Channels," *IEEE Transactions on Information Theory*, Vol. 56, No.7, pp. 3069-3087, July 2010.
54. D. Günduz, M.A. Khojastepour, A.J. Goldsmith, and H.V. Poor, "Multi-hop MIMO Relay Networks: Diversity-Multiplexing Trade-Off Analysis," *IEEE Transactions on Wireless Communications*, Vol. 9, No. 5, May 2010.
55. R. Dabora and A.J. Goldsmith, "The Capacity Region of the Degraded Finite-State Broadcast Channel," *IEEE Transactions on Information Theory*, Vol. 56, No. 4, pp. 1828-1851, April 2010.
56. N. Liu and A.J. Goldsmith, "Capacity Regions and Bounds for a Class of Z-interference Channels", *IEEE Transactions on Information Theory*, Vol. 55, No. 11, November 2009.
57. C.T.K. Ng, D. Gunduz, A.J. Goldsmith, and E. Erkip, "Distortion Minimization in Gaussian Layered Broadcast Coding With Successive Refinement," *IEEE Transactions on Information Theory*, Vol.55, No.11, pp. 5074-5086, November 2009.
58. D. Gunduz, E. Erkip, A.J. Goldsmith, and H.V. Poor, "Source and Channel Coding for Correlated Sources Over Multiuser Channels," *IEEE Transactions on Information Theory*, Vol. 55, No. 9, pp. 3927-3946, September 2009.
59. S. Adlakha, S. Lall, and A.J. Goldsmith, "Networked Markov Decision Processes with Delays," *IEEE Transactions on Automatic Control*, Vol. 57, No. 4, pp. 1013 – 1018, August 2009.
60. O. Simeone, D. Gunduz, H.V. Poor, A.J. Goldsmith, and S. Shamai, "Compound Multiple-Access Channels with Partial Cooperation," *IEEE Transactions on Information Theory*, Vol.55, No. 6, pp.2425-2441, June 2009.
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### Submitted Journal Papers

1. A. Manolakos, M. Chowdhury, A.J. Goldsmith, "Energy-Based Modulation For Noncoherent Massive SIMO Systems," arXiv preprint arXiv:1507.04978, July 2015.
2. N. Farsad, Y. Murin, A. Eckford, A.J. Goldsmith, "Capacity Limits Of Diffusion-Based Molecular Timing Channels," arXiv preprint arXiv:1602.07757.
3. M. Alizadeh, H.T. Wai, M. Chowdhury, A.J. Goldsmith, A. Scaglione, T. Javidi, "Joint Management of Electric Vehicles in Coupled Power and Transportation Networks," arXiv preprint arXiv:1511.03611.
4. N. Farsad, H.B. Yilmaz, C.B. Chae, A.J. Goldsmith, "Energy Model for Vesicle-Based Active Transport Molecular Communication," arXiv preprint arXiv:1510.05075.
5. S. Mohammadi, N. Zuckerman, A.J. Goldsmith, A. Grama, "A Critical Survey of Deconvolution Methods for Separating cell-types in Complex Tissues," arXiv preprint arXiv:1510.04583.

### Invited Conference Publications:

1. Y. Murin, J. Kim, and A. Goldsmith, "Tracking Epileptic Seizure Activity via Information Theoretic Graphs," *Proceedings of the Asilomar Conference on Communications and Signal Processing*, Pacific Grove, CA, November 2016.
2. M. Alizadeh, A. Goldsmith, and A. Scaglione, "The Perils of Dynamic Electricity Pricing in the Presence of Retail Market Power", *Proceedings of the Asilomar Conference on Signals, Systems and Computers*, Pacific Grove, CA, November 2016.
3. M. Alizadeh, A. Scaglione, A.J. Goldsmith, and G. Kesidis, "Capturing Aggregate Flexibility in Demand Response", *Proceedings of the IEEE Conference on Decision and Control*, Los Angeles, CA, December 2014.
4. Y. Zhao, J. Chen, A.J. Goldsmith and H. Vincent Poor, "Dynamic Joint Outage Identification and State Estimation in Power Systems," *Proceedings of the Asilomar Conference on Communications and Signal Processing*, Pacific Grove, CA, November 2014.
5. J. Chen, Y. Zhao, A.J. Goldsmith and H. Vincent Poor, "Line Outage Detection in Power Transmission Networks via Message Passing Algorithms," *Proceedings of the Asilomar Conference on Communications and Signal Processing*, Pacific Grove, CA, November 2014.



6. M. Alizadeh, H.T. Wai, A. Scaglione, A. Goldsmith, Y. Fan, and T. Javidi, "Optimized Path Planning for Electric Vehicle Routing and Charging" *Proceedings of the Allerton Conference on Communications, Computing, and Signal Processing*, Monticello, IL, October 2014.
7. P. Grover and A.J. Goldsmith, "Implicit Communication for Security in Cyber-physical Systems," *Proceedings of the IEEE Conference on Information Sciences and Systems*, Princeton, NJ, March 2012.
8. A. Gupta, P. Grover, C. Langbort, and A.J. Goldsmith, "The Importance of "Implicit" Communication with Context Misalignment," *Proceedings of the IEEE Conference on Information Sciences and Systems*, Princeton, NJ, March 2012.
9. A.J. Goldsmith, D. Gunduz, N. Liu, I. Maric, and H. V. Poor "Cooperation and Cognition in Wireless Networks, *Joint Workshop on Communications and Coding*, St. Helena, CA, October 2008.
10. F. Meshkati, A.J. Goldsmith, H. V. Poor, and S. C. Schwartz. "A Game Theoretic Approach to Energy-Efficient Modulation in CDMA Networks with Delay Constraints," *Proceedings of the IEEE Radio and Wireless Symposium*, Long Beach, CA, January 2007.
11. Y. Liang, T. Yoo and A.J. Goldsmith, Coverage Spectral Efficiency of Cellular Systems with Cooperative Base Stations, *Proceedings of the Asilomar Conference on Signals, Systems, and Computers*, Pacific Grove CA, October 2006.
12. T. Holliday, A.J. Goldsmith, and P. Glynn, "Shannon Meets Lyapunov: Connections between Information Theory and Dynamical Systems", *Proceedings of the IEEE Conference on Decision and Control*, Seville, Spain, December 2005.
13. L. Savidge, H. Lee, H. Aghajan, and A.J. Goldsmith, "QoS-Based Geographic Routing for event-Driven Image Sensor Networks," *Proceedings of International Conference on Broadband Networks*, Workshop on Broadband Advanced Sensor Networks, Boston, MA, October 2005.
14. X. Liu and A.J. Goldsmith, "Wireless Network Design for Distributed Control," *Proceedings of the Allerton Conference on Communications, Control, and Computing*, Monticello, IL, September 2005.
15. S. Cui and A.J. Goldsmith, "Cross-Layer Optimization of Sensor Networks based on Cooperative MIMO Techniques with Rate Adaptation", *Proceedings of the IEEE workshop on Signal Processing Advances in Wireless Communications*, New York, NY, June 2005.
16. S. Cui and A.J. Goldsmith, "Energy Efficient Routing Based on Cooperative MIMO Techniques," *Proceedings of the International Conference on Acoustics, Speech, and Signal Processing*, Philadelphia, PA, March 2005.
17. X. Liu and A.J. Goldsmith, "Wireless Network Design for Distributed Control", *Proceedings of the IEEE Conference on Decision and Control*, Atlantis, Paradise Island, Bahamas, December 2004.
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19. M. Effros, R. Koetter, A.J. Goldsmith, and M. Medard, "On Source and Channel Codes for Multiple Inputs and Outputs: Does Multiple Descriptions Beat Space Time?" *Proceedings of the IEEE Information Theory Workshop*, San Antonio, TX, October 2004.

20. C. T. K. Ng and A.J. Goldsmith, "Transmitter Cooperation in Ad-Hoc Wireless Networks: Does Dirty-Payer Coding Beat Relaying?" *Proceedings of the IEEE Information Theory Workshop*, San Antonio, TX, October 2004.
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26. H. Mandyam and A.J. Goldsmith, "Communication under Energy Constraints", *Proceedings of the Allerton Conference on Communications, Control, and Computing*, Monticello, IL, October 2001.
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28. S. Toumpis and A.J. Goldsmith, "Ad-Hoc Network Capacity", *Proceedings of the IEEE Asilomar Conference on Signals, Systems, and Computers*, Pacific Grove, CA, November 2000.
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36. A. J. Goldsmith, "Multiuser Capacity of Cellular Time-varying Channels", *Proceedings of the IEEE Asilomar Conference on Signals, Systems, and Computers*, Pacific Grove, CA, October 1994.

### Conference Papers:

1. R. Song, S. Rini, A. Kipnis and A. J. Goldsmith, "Optimal rate allocation in multiterminal compress-and-estimate source coding," *2016 IEEE Information Theory Workshop (ITW)*, pp. 111-115, Cambridge, October 2016.
2. V. Jamali, N. Farsad, R. Schober, A.J. Goldsmith, "Non-Coherent Multiple-Symbol Detection for Diffusive Molecular Communications," *Proceedings the of 3rd ACM International Conference on Nanoscale Computing and Communication*, New York, NY Sept. 2016.
3. M. Chowdhury and A. Goldsmith, "Capacity of block Rayleigh fading channels without CSI," *2016 IEEE International Symposium on Information Theory (ISIT)*, pp. 1884-1888, Barcelona, July 2016.
4. A. Kipnis, S. Rini and A. J. Goldsmith, "Multiterminal compress-and-estimate source coding," *2016 IEEE International Symposium on Information Theory (ISIT)*, pp. 540-544, Barcelona, July 2016.
5. N. Farsad and A. Goldsmith, "A molecular communication system using acids, bases and hydrogen ions," *2016 IEEE 17th International Workshop on Signal Processing Advances in Wireless Communications (SPAWC)*, pp. 1-6, Edinburgh , July 2016.
6. Y. Zhao, A. Goldsmith and H. V. Poor, "A polynomial-time method to find the sparsest unobservable attacks in power networks," *2016 American Control Conference (ACC)*, pp. 276-282, Boston, MA, July 2016.
7. Y. Murin, N. Farsad, M. Chowdhury, A.J. Goldsmith, "On Time-Slotted Communication over Molecular Timing Channels," *Proceedings of the 3rd ACM International Conference on Nanoscale Computing and Communication*, New York, NY, Sept. 2016.
8. M. Chowdhury, A. Manolakos and A. J. Goldsmith, "Multiplexing-diversity tradeoffs in noncoherent massive MIMO systems," *2015 49th Asilomar Conference on Signals, Systems and Computers*, pp. 312-316, Pacific Grove, CA, November 2015.
9. M. Alizadeh, A. Goldsmith and A. Scaglione, "The perils of dynamic electricity pricing tariffs in the presence of retail market imperfections," *2015 49th Asilomar Conference on Signals, Systems and Computers*, pp. 683-688, Pacific Grove, CA, November 2015.

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11. A. Kipnis, Y. C. Eldar and A. J. Goldsmith, "Optimal trade-off between sampling rate and quantization precision in A/D conversion," *2015 53rd Annual Allerton Conference on Communication, Control, and Computing (Allerton)*, pp. 1083-1090, Monticello, IL, September 2015.
12. Mainak Chowdhury, Milind Rao, Yue Zhao, Tara Javidi, Andrea Goldsmith, "Value of storage for wind power producers in forward power markets", *2015 American Control Conference (ACC)*, pp. 5686-5691, Chicago, IL, July 2015.
13. J. Chen, A. Goldsmith, A. Özgür and S. Yang, "Degrees of freedom of the MIMO interference channel with parallel multicasting," *2015 IEEE International Symposium on Information Theory (ISIT)*, pp. 1069-1073, Hong Kong , June 2015.
14. M. Chowdhury, A. Manolakos, and A. J. Goldsmith, "Coherent versus Noncoherent Massive SIMO Systems: Which has Better Performance?" *Proceedings of the IEEE International Communications Conference*, pp. 1691-1696, London, June 2015.
15. M. Rao, F.J. Lopez-Martinez, M. Alouini, and A.J. Goldsmith, "MGF Approach to the Analysis of Generalized Two-Ray Fading Models," *2015 IEEE International Conference on Communications (ICC)*, 14.5, pp. 4278-4284, London, June 2015.
16. A. Kipnis, A. J. Goldsmith, and Y.C. Eldar, "Sub-Nyquist Sampling Achieves Optimal Rate-Distortion," *Proceedings of the IEEE Information Theory Workshop*, pp. 1-5, Jerusalem, April 2015.
17. M. Chowdhury, A. Manolakos, F. Gomez-Cuba, Elza Erkip, and A. J. Goldsmith, "Capacity Scaling in Noncoherent Wideband Massive SIMO Systems," *Proceedings of the IEEE Information Theory Workshop*, pp. 1-5, Jerusalem, April 2015.
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