Dongning Guo

Curriculum Vitae

Contact

Department of Electrical Engineering & Computer Science
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Research Interests

Information theory, wireless communications, communication networks.

Employment

9/2015–present	Professor Department of Electrical Engineering & Computer Science Northwestern University, Evanston, IL, USA.
9/2010–8/2015	Associate Professor Department of Electrical Engineering & Computer Science Northwestern University, Evanston, IL, USA.
9/2004–8/2010	Assistant Professor Department of Electrical Engineering & Computer Science Northwestern University, Evanston, IL, USA.
7/2014–6/2015	Visiting Scientist (courtesy appointment) Research Laboratory of Electronics Massachusetts Institute of Technology, Cambridge, MA, USA.
3/2011–8/2011	Consultant New Jersey Research & Development Center, Qualcomm Inc., Bridgewater, NJ, USA.
10/2010–2/2011	Visiting Professor Institute of Network Coding Chinese University of Hong Kong, China.
8/2006–9/2006	Visiting Professor Department of Electronics & Telecommunications Norwegian University of Science & Technology, Trondheim, Norway.
2/1998–8/1999	Research & Development Engineer Centre for Wireless Communications (now the Institute for Infocomm Research), Singapore.

Education

Ph.D., Electrical Engineering, 2004
Princeton University, Princeton, NJ, USA.
Thesis: *Gaussian Channels: Information, Estimation and Multiuser Detection*
Adviser: Sergio Verdú
Committee: Sergio Verdú, Shlomo Shamai, H. Vincent Poor, Robert Calderbank, Mung Chiang.

M.A., Electrical Engineering, 2001
Princeton University, Princeton, NJ, USA.

M.Eng., Electrical Engineering, 1999
National University of Singapore, Singapore.
Thesis: *Linear Parallel Interference Cancellation in CDMA*
Adviser: Lars K. Rasmussen

B.Eng., Electrical Engineering & Information Science, 1995
University of Science & Technology of China, Hefei, China.

Teaching Experience

EECS 222 Fundamentals of Signals and Systems (undergraduate)
Instructor: Fall 2005, 2006

EECS 302 Probabilistic Systems and Random Signals (undergraduate)
Instructor: Spring 2010, 2012, 2013

EECS 307 Communication Systems (undergraduate/graduate)
Instructor: Fall 2011, 2015

EECS 333 Introduction to Communication Networks (undergraduate/graduate)
Instructor: Spring 2005, 2006, 2007, Fall 2007, 2008, 2009, 2012, Spring 2014, 2015.

EECS 380 Wireless Communications (undergraduate/graduate)
Instructor: Spring 2008, 2009

EECS 428 Information Theory (graduate)
Instructor: Winter 2006, 2008, Fall 2009, Spring 2011, Fall 2013, Spring 2015.

EECS 395/495 Software Radio Laboratory
Instructor: Winter 2013

EECS 395/495 A Hands-on Course in Communications
Instructor: Winter 2014

EECS 510-1 Topics in Information Theory (graduate)
Instructor: Winter 2007, 2009, Spring 2012

EECS 510-3 Multiuser Communications (graduate)
Instructor: Winter 2005

MSIT-431 Probability and Statistical Methods
Instructor: Fall 2013, 2014, 2015

Short course: Network Information Theory
Instructor: Aug. 31–Sept. 2, 2008, University of Science & Technology of China, Hefei, China.

Short course: Information Theory
Instructor: Mar. 6 and 8, 2006, Institute of Infocomm Research, Singapore.

Grants

PI, "CIF:Small: Many-User Information Theory: A New Paradigm." Sponsored by the National Science Foundation (CISE/CCF Program), $499,771, Sept. 2014–Aug. 2017.

PI, "Collaborative Research: Virtual Full-Duplex Wireless Networking." Sponsored by the National Science Foundation (ECCS/CCSS Program), $235,548, Sept. 2012–Sept. 2015.

Co-PI (50%, with Michael L. Honig), "Graph-based Modeling and Algorithms for Interference Mitigation." Sponsored by Cisco Systems, Inc., $90,000, June 2013–Apr. 2015.

PI, "Assured Wireless Coverage via Mobile Relays." Sponsored by the Northwestern Motorola Center for Seamless Wireless Communications, $120,000, Aug. 2012–Aug. 2014.

PI (50%, with Michael L. Honig), "CIF:Small: Limited Feedback and Information Exchange for Wireless Systems." Sponsored by the National Science Foundation (CISE/CCF Program), $498,084.00, Sept. 2010–Sept. 2014.

PI (NSF CAREER Award), "Information Transmission and Optimal Estimation: Fundamentals and Applications." Sponsored by the National Science Foundation (CISE/CCF Program), $400,000, Jan. 2007–Jan. 2013.

PI (50%, with Randall A. Berry), "Rethinking Mobile Ad Hoc Networks: A Non-Equilibrium Information Theory." Sponsored by DARPA (IT-MANET Program), Department of Defense, $700,456.67, Nov. 2006–Apr. 2011. (This is a subcontract of a grant across eight institutions totaling more than $6.5 million.)

PI, "Interference Cancellation and Dual Antennas for Emerging OFDM-Based Wireless Systems." Sponsored by the Northwestern Motorola Center for Seamless Wireless Communications, $150,000, Sept. 2005–Aug. 2008.

Co-PI (50%, with Randall A. Berry), "Proposal for Supporting Students Attending the Second Annual North American School of Information Theory." Sponsored by the National Science Foundation (CISE/CCF Program), $10,000, July 2009–Apr. 2010.

Co-PI (50%, with Randall A. Berry), "Request for Support for the Second An-

nual School of Information Theory." Sponsored by DARPA and ARO, $20,000, July 2009–Apr. 2010.

Honors & Awards

Finalist of the DARPA Spectrum Challenge, 2014. Leader of Team Northwestern Wildcats. Lead a group of 13 undergraduate and graduate students to participated in the Qualifying Contest, the Preliminary Challenge, and the Final Challenge over a period of 15 months. Was one of 15 finalists out of 90 teams nationally.

Adviser and co-author of Ph.D. student Lei Zhang, who won the 2011 IEEE International Symposium on Information Theory Student Paper Award![C26].

The IEEE Guglielmo Marconi Prize Paper Award in Wireless Communications, 2010 [J25]. (This annual award is for an original paper published in the IEEE Transactions on Wireless Communications.)

National Science Foundation Faculty Early Career Development (CAREER) Award, 2007–2012.

Runner-up of the 2007 Information Theory Society Paper Award [J37]. (Honorable mention in the Sept. 2007 issue of the IEEE Information Theory Society Newsletter.)

The Huber & Suhner Best Student Paper Award, International Zurich Seminar on Broadband Communications, Switzerland, 2000.

Press Coverage

My work with a team of material scientists and mechanical engineers from the McCormick School of Engineering and Applied Science discovered that using the data storage pattern from a Blu-ray disc improves solar cell performance. The findings were first published in Nature Communications and have thus far been reported by The WashingtonPost, NBC News, Fox News, Scientific America, IEEE Spectrum, Popular Science, Gizmodo, TheVerge, Engadget, Gizmag, Phys.org, LiveScience, ScienceDaily, ScienceNews, Motherboard (Vice), and BusinessInsider (Australia), among others.

Ph.D. Theses Supervised

[PhD1] M. Agarwal, *Training and limited feedback strategies for fading channel*. PhD thesis, Northwestern University, 2008. Co-advised with M. L. Honig. Manish Agarwal is now with AQR Capital Management, CT, USA.

[PhD2] J. Luo, *Estimation of hidden Markov processes and neighbor discovery in wireless networks*. PhD thesis, Northwestern University, 2010. Jun Luo was with Goldman Sachs; he is now founder and CEO of a derivatives trading firm in Beijing, China.

[PhD3] Y. Zhu, *Interference Channels with Channel Uncertainties*. PhD thesis, Northwestern University, 2011. Co-advised with M. L. Honig. Yan Zhu is now with Broadcom, Inc., CA, USA.

[PhD4] M. Xu, *Limited Feedback and Information Exchange for Wireless Cellular Networks*. PhD thesis, Northwestern University, 2012. Co-advised with M. L. Honig. Mingguang Xu is now with Marvell Technology Group, CA, USA.

[PhD5] L. Zhang, *Virtual Full Duplex Wireless Networks*. PhD thesis, Northwestern University, 2012. Lei Zhang is now with Qualcomm, Inc., NJ, USA.

[PhD6] K. H. Hui, *Medium Access Control for Wireless Networks with Peer-to-Peer State Exchange*. PhD thesis, Northwestern University, 2012. Co-advised with R. A. Berry. Ka Hung Hui is now with Google, Inc., CA, USA.

[PhD7] B. Zhuang, *Interference and Resource Management in Heterogeneous Cellular Networks*. PhD thesis, Northwestern University, 2015. Co-advised with M. L. Honig. Binnan Zhuang is now with Samsung, San Diego, CA, USA.

Other Student and Postdoctoral Advisees

Postdoctoral fellows

1. Tsung-Yi Chen, Postdoctoral fellow (2013–4).
2. Yalin Sagduyu, Postdoctoral fellow (2007–9).

Current Ph.D. students

1. Fei Teng, Ph.D. student (since 2010, to graduate in 2015, co-advised with Michael L. Honig).
2. Xu Chen, Ph.D. student (since 2011).
3. Ryan Keating, Ph.D. student (since 2013).
4. Zhiyi Zhou, Ph.D. student (since 2013).
5. Jing Li, Ph.D. student (since 2015).

Master students

1. Koushik Sil, M.S., 2006.
2. Chih-Han Chen, M.S., 2007.
3. Kai Shen, M.S., 2011.
4. Tianyi Li, M.S., 2011.
5. Weihe Wang, M.S., 2012.

6. Tao Song, M.S., 2012.
7. Yucheng Dai, M.S., 2015.

Visitors Hosted

Visiting faculty

1. Yuming Jiang, Professor, Norwegian University of Science and Technology, Trondheim, Norway, Aug. 2009–Sept. 2010.
2. Hui Li, Lecturer, University of Science & Technology of China, Aug. 2011–Aug. 2012.

Visiting students

1. Daniel Ryan, Ph.D. student, University of Sydney, Sydney, Australia, Mar.–June 2006 (co-hosted with Michael L. Honig).
2. Francisco Rubio, Ph.D. student, CTTC, Barcelona, Spain, Sept.–Dec. 2007 (co-hosted with Michael L. Honig).
3. Hui Zhou, Ph.D. student, Tsinghua University, Beijing, China, Sept.–Dec. 2009.
4. Ming Gan, Ph.D. student, University of Science and Technology of China, Hefei, China, Sept. 2012–Aug. 2013.
5. Da Chen, Ph.D. student, Huazhong University of Science and Technology, Wuhan, China, Sept. 2012–Aug. 2013.
6. Xu Li, Ph.D. student, University of Science and Technology of China, Hefei, China, Sept. 2013–Sept. 2014.
7. Chuang Zhang, Ph.D. student, Tsinghua University, Beijing, China, Aug. 2014–Aug. 2015.

Services

Chair, Electrical Engineering Curriculum Committee, 2014–date.

Chair, EECS Faculty Search Committee (for a junior position in communications, networking and control), 2013–2014. Succeeded in hiring a junior faculty member (of underrepresented group).

Chair, EECS Faculty Search Committee (for a junior position in communications, networking and control), 2012–2013. Search concluded without hire.

Member, EECS Faculty Search Committee (for a junior position in graphics, human-computer interaction and cyberphysical systems), 2011–2012. Succeeded in hiring a junior faculty member.

Co-chair of the EECS Distinguished Lecture Committee, 2009–2014. Member of the EECS Distinguished Lecture Committee, 2006–2009.

Member of the Electrical Engineering Curriculum Committee, 2004–2012.

Panelist on Discussion "The n Things I Wish I Knew Before the PhD Job Search," Department of Electrical Engineering and Computer Science, Northwestern Unviersity, May 14, 2009.

Professional Activities

Editor, Foundations and Trends in Communications and Information Theory (2012–)

Associate Editor in the area of Shannon Theory, IEEE Transactions on Information Theory (2010–2013)

Guest Editor of the IEEE Journal on Selected Areas in Communications Special Issue on In-Band Full-Duplex Wireless Communication and Networks, 2014.

Chair Position at Conferences:

Co-chair of Program and Local Arrangements: Second North American School of Information Theory, Evanston, IL, USA, Aug. 10–13, 2009. (About 150 students and 20 faculty from over 40 institutions attended the event.)

Finance Chair: 2008 IEEE Communication Theory Workshop; 2010 IEEE Communication Theory Workshop; 2012 IEEE Communication Theory Workshop.

Member of Technical Program Committee:

2016 IEEE Information Theory Workshop.

2016 IEEE International Symposium on Information Theory.

2015 International Symposium on Modeling and Optimization in Mobile, Ad Hoc and Wireless Networks (WiOpt).

2015 IEEE Information Theory Workshop.

2014 IEEE International Symposium on Information Theory.

2013 ChinaSIP.

2013 IEEE Information Theory Workshop.

2013 IEEE International Conference on Communications, Communications Theory Symposium.

2013 IEEE Wireless Communications & Networking Conference.

2013 ICC - Workshop on Networking across disciplines: Communication Networks, Complex Systems and Statistical Physics (NETSTAT).

2012 International Conference on Connected Vehicles and Expo.

the 2nd International Workshop on Network Coding in Wireless Relay Networks, 2012 IEEE International Symposium on Personal, Indoor and Mobile Radio Communications.

2012 IEEE International Conference on Communication Systems.

2012 IEEE International Conference on Communications, Communications Theory Symposium.

2011 First International ICST Workshop on Network Coding in Wireless Relay Networks (NRN).

2010 IEEE International Symposium on Information Theory.

2010 IEEE International Conference on Communications, Communications Theory Symposium.

2009 IEEE Globecom, Communications Theory Symposium.

2009 IEEE International Conference on Communications, Communications Theory Symposium.

2009 IEEE International Conference on Communications, Wireless Communications Symposium.

The 2nd Workshop on Physics-Inspired Paradigms in Wireless Communications and Networks (PHYSCOMNET), 2009.

2008 IEEE GLOBECOM, Wireless Communications Symposium.

2008 IEEE International Conference on Communications, Wireless Communications Symposium.

The 1st Workshop on Physics-Inspired Paradigms in Wireless Communications and Networks (PHYSCOMNET), 2008.

2007 IEEE GLOBECOM, Wireless Communications Symposium.

2007 IEEE Wireless Communications & Networking Conference.

2006 International Wireless Communications and Mobile Computing Conference, Information and communication theory symposium.

Panelist:

NSF panelist, CISE/CCF program, 2015.

NSF panelist, ECCS/CCSS program, 2012.

NSF panelist, Theoretical Foundations program, 2007.

NSF panelist, Theoretical Foundations program, 2006.

Invited Research Talks

At conferences and workshops:

[LW1] "Traffic-driven spectrum allocation in (5G) heterogeneous networks." The 3rd Workshop on the Frontiers of Networks: Theory and Algorithms, Hangzhou, China, June 22, 2015.

[LW2] "Spectrum sharing: policy, games, and optimization." Workshop on LTE in Unlicensed Bands (LTE-U), London, UK, June 12, 2015. (Plenary).

[LW3] "Spectrum allocation in many-cell heterogeneous networks." Information Theory and Applications Workshop, San Diego, CA, USA, Jan. 27, 2015.

[LW4] "LTE in unlicensed spectrum." IEEE Communication Theory Workshop, May 27, 2014.

[LW5] "Traffic driven spectrum allocation in heterogeneous wireless networks." Information Theory and Applications Workshop, San Diego, CA, USA, Feb. 10, 2014.

[LW6] "Virtual full-duplex wireless communication via rapid on-off-division duplex." Information Theory and Applications Workshop, San Diego, CA, USA, Feb. 7, 2011.

[LW7] "Medium access control via nearest neighbor interactions." Information Theory and Applications Workshop, San Diego, CA, USA, Feb. 2, 2010.

[LW8] "Neighbor discovery in ad hoc networks as a compressed sensing problem." Information Theory and Applications Workshop, San Diego, CA, USA, February 13, 2009.

[LW9] "Information, estimation and thermodynamics in large random linear systems." Workshop on Random Matrix Theory and Wireless Communications, Boulder, Colorado, USA, July 16, 2008.

[LW10] "Limited feedback of channel state and receiver state." IEEE Communication Theory Workshop, St. Croix, USVI, May 12, 2008.

[LW11] "Nonlinear precoding for MIMO channels: Analysis and convex design." Information Theory and Applications Workshop, San Diego, CA, USA, January 28, 2008.

[LW12] "On the entropy, filtering and smoothing of hidden Markov processes." BIRS Workshop on the Entropy of Hidden Markov Processes and Connections to Dynamical Systems, Banff, AB, Canada, October 3, 2007.

[LW13] "Sparse linear systems via noisy channels: The information and estimation aspects." Research Workshop of the Israel Science Foundation: Statistical Physics and Its Application to Complex Problems in Communications, Eilat, Israel, March 12, 2007.

[LW14] "Information measures and statistical inference on some large graphical models." Information Theory and Applications Workshop, San Diego, CA, USA, February 1, 2007.

In academia:

[LA1] "Toward a many-user information theory." Imperial College London, UK, Aug. 20, 2015.

[LA2] "Radio resource management in (5G) heterogeneous networks." University of Science and Technology of China, Hefei, China, July 3, 2015.

[LA3] "Radio resource management in (5G) heterogeneous networks." ShanghaiTech, Shanghai, China, June 26, 2015.

[LA4] "Toward a many-user information theory." Zhejiang University, Hangzhou, China, June 23, 2015.

[LA5] "Radio resource management in (5G) heterogeneous networks." MIT, Cambridge, MA, USA, Apr. 27, 2015.

[LA6] "Toward a many-user information theory." Boston University, Boston, MA, USA, Apr. 24, 2015.

[LA7] "Radio resource management in (5G) heterogeneous networks." Worcester Polytechnic Institute, Worcester, MA, USA, Mar. 26, 2015.

[LA8] "Toward a many-user information theory." Univ. of California, Los Angeles, CA, USA, Jan. 30, 2015.

[LA9] "Toward a many-user information theory." Univ. of California, Irvine, CA, USA, Jan. 29, 2015.

[LA10] "Radio resource management in (5G) heterogeneous networks." Univ. of California, Santa Barbara, CA, USA, Jan. 27, 2015.

[LA11] "Toward a many-user information theory." Simons Institute, Univ. of California, Berkeley, CA, USA, Jan. 26, 2015.

[LA12] "Spectrum allocation in heterogeneous wireless networks." Northeastern University, Boston, MA, USA, Nov. 10, 2014.

[LA13] "Spectrum allocation in heterogeneous wireless networks." Harvard University, Cambridge, MA, USA, Oct. 8, 2014.

[LA14] "Toward a many-user information theory." MIT, Cambridge, MA, USA, Sept. 11, 2014.

[LA15] "Toward a many-user information theory: the cases of many access and many broadcast." Communications Seminars, the Coordinated Science Laboratory, University of Illinois at Urbana-Champaign, Urbana, IL, USA, Apr. 7, 2014.

[LA16] "Compressed sensing and wireless communications." University of California, Davis, CA, USA, Feb. 7, 2014.

[LA17] "Toward a many-user information theory: initial results." ISL Colloquium, Stanford University, Stanford, CA, USA, Feb. 6, 2014.

[LA18] "Compressed sensing and wireless communications." University of Illinois, Chicago, IL, USA, Jan. 24, 2014.

[LA19] "Compressed sensing and wireless communications." Xidian University, Xi'an, China, July 1, 2013.

[LA20] "Compressed sensing and wireless communications." University of Science and Technology of China, June 18, 2013.

[LA21] "Bidirectional training and estimation in wireless channels." Communications Seminars, the Coordinated Science Laboratory, University of Illinois at Urbana-Champaign, Urbana, IL, USA, Feb. 27, 2012.

[LA22] "A clean-slate design of wireless ad hoc networks using on-off-division duplex." California Institute of Technology, Pasadena, CA, USA, Mar. 3, 2011.

[LA23] "A clean-slate design of wireless ad hoc networks using on-off-division duplex." University of Southern California, Los Angeles, CA, USA, Mar. 2, 2011.

[LA24] "A clean-slate design of wireless ad hoc networks using on-off-division duplex." Univeristy of California, Berkeley, CA, USA, Feb. 24, 2011.

[LA25] "Entropy power inequality: Proofs and applications." Institute of Network Coding, Chinese University of Hong Kong, Hong Kong, China, Jan. 19, 2011.

[LA26] "A clean-slate design of wireless ad hoc networks using on-off-division duplex." Tsinghua University, Beijing, China, Dec. 1, 2010.

[LA27] "A clean-slate design of wireless ad hoc networks using on-off-division duplex." University of Science & Technology of China, Hefei, China, Nov. 30, 2010.

[LA28] "A clean-slate design of wireless ad hoc networks using on-off-division duplex." Hong Kong University of Science & Technology, Hong Kong, China, Nov. 3, 2010.

[LA29] "A clean-slate design of wireless ad hoc networks using on-off-division duplex." City University of Hong Kong, Hong Kong, China, Nov. 10, 2010.

[LA30] "A clean-slate design of wireless ad hoc networks using on-off-division duplex." Institute of Network Coding, Chinese University of Hong Kong, Hong Kong, China, Oct. 6, 2010.

[LA31] "Compressed neighbor discovery in ad hoc networks." Department of Electronic Engineering, Tsinghua University, Beijing, China, July 10, 2009.

[LA32] "Compressed sensing and its application in large wireless networks." Northwestern Institute on Complex Systems, Northwestern University, Evanston, IL, USA, May 27, 2009.

[LA33] "Relative entropy and score function: A connection via perturbation." Exploratory Seminar: The Interface between Information Theory and Estimation, Princeton University, Princeton, NJ, USA, April 11, 2009.

[LA34] "Single-letter characterization of compressed sensing, with application in wireless networks." Communications Seminars, the Coordinated Science Laboratory, University of Illinois at Urbana-Champaign, Urbana, IL, USA, April 6, 2009.

[LA35] "When information theory meets estimation theory." Information Sciences and Systems Seminar, Princeton University, Princeton NJ, USA, April 24, 2008.

[LA36] "Nonlinear precoding for MIMO channels: Analysis and convex design." School of Engineering Science, Simon Fraser University, Burnaby, B.C. Canada, March 6, 2008.

[LA37] "The wireless challenge: An information-theoretic view." Meet-the-faculty Seminars, Department of Electrical Engineering & Computer Science, Northwestern University, Evanston, IL, USA, November 16, 2007.

[LA38] "When information theory meets estimation theory." Department of Electrical Engineering, Peking University, Beijing, China, September 11, 2007.

[LA39] "Error exponent for Gaussian channels with partial feedback." Department of Communications and Electronics, École Nationale Supérieure des Télécommunications (ENST), Paris, France, July 9, 2007.

[LA40] "Sparse linear systems in noise: Information measures and statistical inference." Department of Electrical Engineering, University of Notre Dame, South Bend, IN, USA, May 8, 2007.

[LA41] "Sparse linear systems in noise: Information measures and statistical inference." Department of Electrical Engineering, Technion–Israel Institute of Technology, Haifa, Israel, March 19, 2007.

[LA42] "Information measures and statistical inference in large graphical models." Department of Electronic Engineering, Tsinghua University, Beijing, China, December 20, 2006.

[LA43] "When information theory meets estimation theory—several pleasant results." Department of Electronics and Telecommunications, Norwegian University of Science and Technology, Trondheim, Norway, August 25, 2006.

[LA44] "On linear and nonliear detection in large random systems." Institute for Mathematical Sciences, National University of Singapore, Singapore, March 1, 2006.

[LA45] "Information, estimation and multiuser detection." Xi'an Jiao Tong University, Xi'an, China, June 21, 2005.

[LA46] "Information, estimation and multiuser detection." Department of Electronic Engineering, Tsinghua University, Beijing, China, June 17, 2005.

[LA47] "Information, estimation and multiuser detection." University of Science & Technology of China, Hefei, China, June 12, 2005.

[LA48] "Mutual information and MMSE in Gaussian channels." University of Toronto, Toronto, ON, Canada, April 27, 2004.

[LA49] "Interactions of information theory and estimation in single- and multi-user communications." Department of Electrical Engineering, Massachusettes Institute of Technology, Cambridge, MA, USA, April 12, 2004.

[LA50] "Interactions of information theory and estimation in single- and multi-user communications." Department of Electrical and Computer Engineering, Queen's University, Kingston, ON, Canada, March 29, 2004.

[LA51] "Interactions of information theory and estimation in single- and multi-user communications." Department of Electrical and Computer Engineering, Texas A&M University, College Station, TX, USA, March 23, 2004.

[LA52] "Interactions of information theory and estimation in single- and multi-user communications." Department of Electrical Engineering, University of Maryland at College Park, College Park, MD, USA, March 15, 2004.

[LA53] "Interactions of information theory and estimation in single- and multi-user communications." Department of Electrical and Computer Engineering, Purdue University, West Lafayette, IN, USA, March 10, 2004.

[LA54] "Interactions of information theory and estimation in single- and multi-user communications." Department of Electrical and Computer Engineering, University of Minnesota, Minneapolis, MN, USA, March 8, 2004.

[LA55] "Interactions of information theory and estimation in single- and multi-user communications." Department of Electrical and Computer Engineering, Northwestern University, Evanston, IL, USA, February 26, 2004.

[LA56] "Interactions of information theory and estimation in single- and multi-user communications." Department of Electrical Engineering, University of California at Santa Cruz, Santa Cruz, CA, USA, February 18, 2004.

[LA57] "Analysis of multiuser communication systems using the replica method." Laboratoire de Physique Théorique de l'École Normale Supérieure, Paris, France, April 5, 2003.

In industry:

[LI1] "Many-user information theory and SCMA." Huawei University Day, Rolling Meadows, IL, USA, Aug. 7, 2015.

[LI2] "Radio resource management in current and future cellular wireless networks." Boeing Distinguished Researcher and Scholar Seminar, Huntington Beach, CA, USA, Jan. 28, 2015.

[LI3] "Unlicensed LTE." Huawei University Day, Aug. 12, 2014.

[LI4] "The public safety broadband network: Relay assisted device-to-device communication." Motorola Solutions, Dec. 19, 2013.

[LI5] "Public safety network architecture." Motorola Solutions' Science Advisory Board Associates (SABA) Conference, Nov. 13, 2012.

[LI6] "A new architecture for public safety networks." Motorola Solutions, Sept. 7, 2012.

[LI7] "Discovery and communication via sparse recovery." Huawei University Day, Aug. 27, 2012.

[LI8] "Local information exchange in wireless networks." Huawei University Day, Nov. 22, 2011.

[LI9] "Compressed neighbor discovery for wireless networks." Qualcomm-Flarion Technologies, NJ, USA, Mar. 19, 2010.

[LI10] "The wireless challenge: Fundamentals and practice." Honeywell Research Labs, Golden Valley, MN, USA, March 31, 2008.

[LI11] "When information theory meets estimation theory—several pleasant results." Motorola Labs, Schaumburg, IL, USA, March 23, 2007.

Publications

H-index by Google Scholar: 28

Book

[B1] D. Guo, S. Shamai (Shitz), and S. Verdú, *The Interplay between Information and Estimation Measures*. Foundations and Trends in Signal Processing, NOW Publishers, 2012.

Book Chapters

[BC1] D. Guo and T. Tanaka, "Generic multiuser detection and statistical physics," in *Advances in Multiuser Detection* (M. Honig, ed.), ch. 5, Wiley-IEEE Press, 2009.

[BC2] D. Guo and S. Verdú, "Multiuser detection and statistical mechanics," in *Communications, Information and Network Security* (V. Bhargava, H. V. Poor, V. Tarokh, and S. Yoon, eds.), ch. 13, pp. 229–277, Kluwer Academic Publishers, 2002.

Journal Articles (Published/In Press)

[J1] X. Li, D. Guo, J. Grosspietsch, H. Yin, and G. Wei, "Maximizing mobile coverage via optimal deployment of base station and relays," *IEEE Trans. Veh. Technol.*, 2015. Early access.

[J2] M. Xu, D. Guo, and M. L. Honig, "Distributed bi-directional training of nonlinear precoders and receivers in cellular networks," *IEEE Trans. Signal Process.*, vol. 63, pp. 5597–5608, 2015.

[J3] B. Zhuang, D. Guo, and M. L. Honig, "Traffic-driven spectrum allocation in heterogeneous networks," *IEEE J. Sel. Areas Commun. Special Issue on Recent Advances in Heterogeneous Cellular Networks*, vol. 33, no. 10, pp. 2027–2038, 2015.

[J4] H. Li, S. M. Moser, and D. Guo, "Capacity of the memoryless additive inverse Gaussian noise channel," *IEEE J. Select. Areas Commun., Molecular, Biological, and Multi-Scale Communications Series*, vol. 32, pp. 2315–2329, Dec. 2014.

[J5] A. J. Smith, C. Wang, D. Guo, C. Sun, and J. Huang, "Repurposing Blu-ray movie discs as quasi-random nanoimprinting templates for photon management," *Nature Communications*, vol. 5, Oct. 2014.

[J6] L. Zhang and D. Guo, "Virtual full duplex wireless broadcasting via compressed sensing," *IEEE/ACM Trans. Netw.*, vol. 22, pp. 1659–1671, Oct. 2014.

[J7] A. Sabharwal, P. Schniter, D. Guo, D. W. Bliss, S. Rangarajan, and R. Wichman, "In-band full-duplex wireless: challenges and opportunities," *IEEE J. Sel. Areas Commun. Special Issue on In-band Full-duplex Wireless Communications and Networks*, vol. 32, pp. 1637–1652, Sept. 2014.

[J8] C. Gil Taborda, F. Pérez-Cruz, and D. Guo, "Information–estimation relationships over binomial and negative binomial models," *IEEE Trans. Inf. Theory*, vol. 60, pp. 2630–2646, May 2014.

[J9] L. Zhang, H. Li, and D. Guo, "Capacity of Gaussian channels with duty cycle and power constraints," *IEEE Trans. Inf. Theory*, vol. 60, pp. 1615–1629, Mar. 2014.

[J10] F. Wang, X. Yuan, S. C. Liew, and D. Guo, "Wireless MIMO switching: weighted sum mean square error and sum rate optimization," *IEEE Trans. Inf. Theory*, vol. 59, no. 9, pp. 5297–5312, 2013.

[J11] M. Xu, D. Guo, and M. L. Honig, "Downlink noncoherent cooperation without transmitter phase alignment," *IEEE Trans. Wireless Commun.*, vol. 12, no. 8, pp. 3920–3931, 2013.

[J12] M. Agarwal, D. Guo, and M. L. Honig, "Error exponent for Gaussian channels with partial sequential feedback," *IEEE Trans. Inf. Theory*, vol. 59, no. 8, pp. 4757–4766, 2013.

[J13] Y. E. Sagduyu, R. A. Berry, and D. Guo, "Throughput and stability for relay-assisted wireless broadcast with network coding," *IEEE J. Sel. Areas Commun.*, vol. 31, no. 8, pp. 1506–1516, 2013.

[J14] L. Zhang, J. Luo, and D. Guo, "Neighbor discovery for wireless networks via compressed sensing," *Performance Evaluation*, vol. 70, pp. 457–471, 2013.

[J15] M. Xu, D. Guo, and M. L. Honig, "Multicarrier beamforming with limited feedback: a rate distortion approach," *IEEE Trans. Inf. Theory*, vol. 59, no. 2, pp. 916–927, 2013.

[J16] F. Wang, S. C. Liew, and D. Guo, "Wireless MIMO switching with zero forcing and network coding," *IEEE J. Sel. Areas Commun.*, vol. 30, pp. 1452–1463, 2012.

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