

EDUCATION:

Stanford University	Electrical Engineering	Ph.D. Summer 2002
Stanford University	Electrical Engineering	M.S. Summer 1999
Harvey Mudd College	Engineering	B.S. Spring 1995

CURRENT ACADEMIC POSITIONS:

Cockrell Family Endowed Chair in Engineering (#17), UT Austin, Sept. 2019 – present
Professor, Dept. of Electrical and Computer Engineering, UT Austin, Sept. 2012 – present.
Director, 6G@UT, UT Austin, June 2021 – present.

PREVIOUS ACADEMIC POSITIONS:

Cullen Trust for Higher Education Endowed Professorship of Engineering (#1), Sept. 2013–Aug. 2019.
Director, Wireless Networking and Communications Group, UT Austin, Jan. 2008 – Jan. 2012.
Earl and Margaret Brasfield Endowed Faculty Fellow, UT Austin, Sept. 2007 – Sept. 2013.
Associate Professor, Dept. of Electrical and Computer Eng., UT Austin, Sept. 2008 – Aug. 2012.
Assistant Professor, Dept. of Electrical and Computer Eng., UT Austin, Sept. 2002 – Sept. 2008.
Associate Director, Wireless Networking and Communications Group, Jan. 2006 – Jan. 2008.

HONORS AND AWARDS:

- 2021, IEEE Communications Society Joe LoCicero Award for “outstanding leadership of the IEEE Transactions on Wireless Communications”
- 2021, Gordon T. Lepley IV Endowed Memorial Teaching Award, ECE Department, UT Austin
- 2021, Qualcomm Faculty Award
- 2020, Ranked #1 Most Influential Scholar worldwide on Internet of Things, AI 2000 by AMiner. <https://www.aminer.org/ai2000/iot>
- 2019, IEEE Communications Society Wireless Communications Technical Committee Recognition Award. Awarded annually to 1 or 2 people for contributions to wireless communications.
- 2019, Named the Cockrell Family Endowed Chair in Engineering (#17)
- 2019, IEEE Kiyo Tomiyasu Award, “for contributions to wireless communication systems”. This is an IEEE Technical Field Award “for outstanding early to mid-career contributions to technologies holding the promise of innovative applications.” R. Heath was the co-recipient.
- 2018, Leonard G. Abraham Prize Paper Award, IEEE Communications Society (best paper in prior 3 years in the *IEEE Journal on Selected Areas of Communications*)
- 2016, IEEE Communications Society & Information Theory Society Joint Paper Award (best paper in prior 3 years in any journal of those two societies)
- 2016, Heinrich Hertz Prize Paper Award, IEEE Communications Society (best paper in prior 3 years in the IEEE Communications Letters or IEEE Wireless Communications Letters)
- 2016, Named one of the world's Top 50 Industrial IoT and 5G Innovators, by RCR Wireless News.
- 2015, Best Paper Award, IEEE Workshop on Heterogeneous and Small Cell Networks.
- 2015, Terman Award, from the American Society of Engineering Education and Hewlett Packard "bestowed annually upon an outstanding young engineering educator".
- 2015, Co-author, IEEE Communications Society Young Author Best Paper Award (best paper in prior 3 years across all ComSoc publications, first author under 30 years of age).
- 2014, Stephen O. Rice Prize Paper Award, IEEE Communications Society (best paper in prior 3 years in the *IEEE Transactions on Communications*)
- 2014, Leonard G. Abraham Prize Paper Award, IEEE Communications Society (best paper in prior 3 years in the *IEEE Journal on Selected Areas of Communications*)
- 2014, Thomson Reuters Highly Cited Researcher (also in 2015 to 2021).
- 2014, Co-Author, Best Student Paper Award, European Wireless Conference.

2014, Named "Top 100 Wireless Technology Expert" by Today's Wireless World, one of 3 academics.
2014, EURASIP Best Paper Award for the EURASIP Journal on Advances in Signal Processing.
2013, Cullen Trust for Higher Education Endowed Professorship of Engineering #1.
2013, Best Paper Award, *IEEE Intl. Conf. on Communications*, Wireless Comm. Symposium.
2013, Elevated to IEEE Fellow "for contributions to cellular and ad hoc wireless communications"
2012, Elected to IEEE Information Theory Society Board of Governors (re-elected 2015)
2012, Best Technical Talk Award, given by Intel, Cisco, and Verizon at Oct. 2012 VAWN workshop
2011, IEEE Vehicular Technology Society Distinguished Lecturer
2011, Heinrich Hertz Prize Paper Award, IEEE Communications Society (best paper in prior 3 years in the IEEE Communications Letters)
2010, Best Tutorial Paper Award, IEEE Communications Society (best tutorial paper in prior 5 years in any IEEE publication)
2009, Best Paper Award, *IEEE Globecom*, Communication Theory Symposium.
2008, Co-author, Best Student Paper, *Asilomar*, Communications Area (1st runner up in conference)
2007, National Science Foundation CAREER Award
2007, Recipient of Earl and Margaret Brasfield Endowed Faculty Fellowship from UT Austin
2007, High Gain Award given by the UT ECE external advisory committee, 1st award ever given
2006, Co-author, Best Student Paper, *IEEE Globecom*, "Communication Systems" category.
2006, Elevated to IEEE Senior Member
1999, Distinguished Service Award from Stanford University EE department
1995, Graduated with High Distinction, Harvey Mudd College
1991, Gold Medals (1st place) in Mathematics, Science, and Essay, Arizona Academic Decathlon

PROFESSIONAL POSITIONS:

Andrews Broadband Communications, LLC, President, Summer 2007 – Present.
Sigpro (Clients: Microsoft, NASA, Ricoh, Teledex), Senior Systems Engineer, Spr. 1999 – Spr. 2002
Qualcomm, Engineer, Fall 1995 – Fall 1997
Intel Corporation, Engineering Intern, Spring 1994 – Summer 1994

BOARD POSITIONS:

Artemis Networks, San Francisco, Technical Advisory Board, 2016-present.
GenXComm, Austin, Technical Advisory Board, 2016-present.
FastBack Networks, San Jose, Technical Advisory Board, 2012-2017.
Accelera, Santa Clara, Technical Advisory Board, 2012 – 2015.
Wavemax, Austin, Board of Directors, Jan. 2010 – 2015
Eonsil, Austin, Board of Advisors, July 2010 – 2013
RCR Wireless News, Technical Advisory Board, Sept. 2011 – 2017
USFON, Austin, Board of Directors, Jan. 2008 – Feb. 2013.
Austin Technology Incubator, Board of Advisors, May 2008 – 2015.
Wideray, San Francisco, Board of Advisors, Fall 2000 – Summer 2002

PUBLICATIONS:

- All journal and conference papers are peer-reviewed except as indicated
- Citation information and PDFs of most papers can be downloaded at:

<http://scholar.google.com/citations?user=Hr9Gey0AAAAJ>

Books

[B1] S. Weber and J. G. Andrews, Transmission capacity of wireless networks, *Foundations and Trends in Networking*, NOW Publishers, 180 pages, Feb. 2012.

- [B2] A. Ghosh, J. Zhang, J. G. Andrews, and R. Muhamed, Fundamentals of LTE, Prentice-Hall, 418 pages, 2010. Also available in Chinese.
- [B3] J. G. Andrews, A. Ghosh, and R. Muhamed, Fundamentals of WiMAX, Prentice-Hall, 449 pages, 2007. Also available in Chinese (Taiwan) and Greek.

Book Chapters

- [B4] P. Xia, H. S. Jo, and J. G. Andrews, "Fundamentals of Access Control in Femtocells," Femtocell Networks: Deployment, PHY Techniques, and Resource Management, Cambridge University Press, 2012.
- [B5] A. Tulino, M. McKay, J. G. Andrews, R. W. Heath, and I. Collings, "Joint Detection for Multi-Antenna Channels," invited chapter on Advances in Multiuser Detection, Ed. M. Honig, 2009. Pages 311-355.
- [B6] W. Choi and J. G. Andrews, "Theoretical Limits of Cellular Systems with Distributed Antennas," invited chapter for Distributed Antenna Systems: Open Architecture for Future Wireless Communications, CRC Press, July 2007. Pages 65-86.

Journal Articles – Submitted/Under Revision

- [J1] M. Gupta, I. P. Roberts, and J. G. Andrews, "System-Level Analysis of Full-Duplex Self-Backhauled Millimeter Wave Networks", submitted to *IEEE Trans. on Wireless Comm.*, Dec. 2021.
- [J2] S. Gupta, V. Malik, A. K. Gupta, and J. G. Andrews, "Impact of Blocking Correlation on the Performance of mmWave Cellular Networks", submitted to *IEEE Trans. on Comm.*, Dec. 2021.
- [J3] I. P. Roberts, A. Chopra, T. Novlan, S. Vishwanath, and J. G. Andrews, "Self-Interference Channel Measurements at 28 GHz: Spatial Insights and Angular Spread", submitted to *IEEE Trans. on Wireless Comm.*, Oct. 2021.
- [J4] A. Doshi and J. G. Andrews, "Distributed Deep Reinforcement Learning for Adaptive Medium Access and Modulation in Shared Spectrum" submitted to *IEEE Transactions on Cognitive Communications and Networking*, Sept. 2021.
- [J5] N. Olson, J. G. Andrews and R. W. Heath, "Single Channel Equivalent Point Processes of Poisson Networks with Multiple Channel Laws", submitted to *IEEE Comm. Letters*, Sep. 2021.
- [J6] N. Olson, J. G. Andrews and R. W. Heath, "Coverage and Capacity of Terahertz Cellular Networks With Joint Transmission", submitted to *IEEE Trans. on Wireless Comm.*, Sep. 2021.
- [J7] Y. Heng, J. Mo, J. G. Andrews, "Learning Site-Specific Probing Beams for Fast mmWave Beam Alignment", submitted to *IEEE Trans. on Wireless Comm.*, June 2021.
- [J8] I. P. Roberts, H. Jain, S. Vishwanath, and J. G. Andrews, "Millimeter Wave Analog Beamforming Codebooks Robust to Self-Interference", submitted to *IEEE Trans. on Wireless Comm.*, May 2021.
- [J9] A. Alammouri, J. G. Andrews, and F. Baccelli, "Area Spectral Efficiency and SINR Scaling Laws in Multi-Antenna Cellular Networks", submitted to *IEEE Trans. on Wireless Comm.*, Feb. 2020.
- [J10] A. Alammouri, J. G. Andrews, and F. Baccelli, "Stability and Metastability of Traffic Dynamics in Uplink Random Access Networks", submitted to *IEEE Trans. on Information Theory*, June 2019.

Journal Publications – Accepted/Appeared

- [J11] I. P. Roberts, J. G. Andrews and S. Vishwanath, “Hybrid Beamforming for Millimeter Wave Full-Duplex under Limited Receive Dynamic Range”, to appear, *IEEE Trans. on Wireless Comm.*
- [J12] E. Balevi and J. G. Andrews, “Unfolded Hybrid Beamforming with GAN Compressed Ultra-Low Feedback Overhead”, to appear, *IEEE Trans. on Wireless Comm.*
- [J13] Y. Heng, V. Chandrasekhar, and J. G. Andrews, “UTMobileNetTraffic2021: A Labeled Public Network Traffic Dataset”, *IEEE Networking Letters*, Vol. 3, No. 3, pp. 156-60, Sept. 2021.
- [J14] Y. Heng and J. G. Andrews, “Machine Learning-Assisted Beam Alignment for mmWave Systems”, to appear, *IEEE Trans. on Cognitive Comm. And Networking*.
- [J15] Y. Heng, J. G. Andrews, J. Mo, V. Va, A. Ali, B. Ng, and C. Zhang, “Six Key Challenges for Beam Management in 5.5G and 6G Systems”, *IEEE Communications Magazine*, Vol. 59, No. 7, pp. 74-79, July 2021.
- [J16] A. Doshi, S. Yerramalli, L. Ferrari, T. Yoo and J. G. Andrews, “A Deep Reinforcement Learning Framework for Contention-Based Spectrum Sharing”, *IEEE Journal on Sel. Areas in Communications*, special issue on Machine Learning, Vol. 39, No. 8, pp. 2526-40, Aug. 2021.
- [J17] D. Malak, M. Medard and J. G. Andrews, “Spatial Concentration of Caching in Wireless Heterogeneous Networks”, *IEEE Trans. On Wireless Communications*, Vol. 20, No. 6, pp 3397-3414, June 2021.
- [J18] E. Balevi and J. G. Andrews, “Wideband Channel Estimation with A Generative Adversarial Network”, *IEEE Trans. on Wireless Comm*, Vol. 20, No. 5, pp. 3049-60, May 2021.
- [J19] M. Cudak, Amitabha Ghosh, Arunabha Ghosh, and J. G. Andrews, “Integrated Access and Backhaul: A Key Enabler for 5G Millimeter Wave Deployments” *IEEE Communications Magazine*, Vol. 59, No. 4, pp. 88-94, April 2021.
- [J20] Y. Zhang, A. Doshi, R. Liston, W. Tan, X. Zhi, J. G. Andrews, and R. W. Heath, Jr. “DeepWiPHY: Deep Learning-Based IEEE 802.11ax Receiver”, *IEEE Trans. on Wireless Comm*, Vol. 20, No. 3, pp. 1596-1611, March 2021.
- [J21] I. P. Roberts, J. G. Andrews, H. Jain, and S. Vishwanath, “Millimeter Wave Full-Duplex Radios: New Challenges and Techniques”, *IEEE Wireless Communications*, Vol. 28. No. 1, pp. 36-43, Feb. 2021.
- [J22] E. Balevi, A. Doshi, A. Jalal, A. Dimakis, and J. G. Andrews, “High Dimensional Channel Estimation Using Deep Generative Networks”, *IEEE Journal on Sel. Areas in Communications*, Vol. 39, No. 1, pp. 18-30, Jan. 2021.
- [J23] R. Jurdi, J. G. Andrews and R. W. Heath, “Scheduling Observers Over a Shared Channel with Hard Delivery Deadlines”, *IEEE Trans. on Comm.*, Vol. 69, No. 1, pp. 133-148, Jan. 2021.
- [J24] F. Mismar, A. Almmouri, A. Alkhateeb, J. G. Andrews and B. L. Evans, “Deep Learning Predictive Band Switching in Wireless Networks”, *IEEE Trans. on Wireless Communications*, Vol. 20, No. 1, pp. 96-109, Jan. 2021.
- [J25] M. Gupta, A. Rao, E. Visotsky, A. Ghosh and J. G. Andrews, “Learning Link Schedules in Self-backhauled Millimeter Wave Cellular Networks”, *IEEE Trans. on Wireless Communications*, Vol. 19, No. 12, pp. 8024-38, Dec. 2020.
- [J26] A. Alammouri, M. Gupta, F. Baccelli and J. G. Andrews, “Escaping the Densification Plateau in Cellular Networks Through mmWave Beamforming”, *IEEE Wireless Comm. Letters*, Vol. 9, No. 11, pp. 1874-78, Nov. 2020.
- [J27] E. Balevi and J. G. Andrews, “Autoencoder-Based Error Correction Coding for One-Bit Quantization”, *IEEE Transactions on Communications*, Vol. 68, No. 6, pp. 3440-51, June 2020.

- [J28] E. Balevi, A. Doshi, and J. G. Andrews, "Massive MIMO Channel Estimation with an Untrained Deep Neural Network", *IEEE Transactions on Wireless Communications*, Vol. 19, No. 3, pp. 2079-90, March 2020.
- [J29] E. Balevi and J. G. Andrews, "Online Antenna Tuning in Heterogeneous Cellular Networks with Deep Reinforcement Learning" *IEEE Transactions on Cognitive Communications and Networking*, Vol. 5, No. 4, pp. 1113-24, Dec. 2019.
- [J30] A. K. Gupta and J. G. Andrews, "Comments on 'Coverage Analysis of Multiuser Visible Light Communication Networks'", *IEEE Trans. on Wireless Communications*, Vol. 18, No. 9, pp. 4605-6, Sept. 2019.
- [J31] R. Amiri, M. Ahmadi, J. G. Andrews, and H. Mehrpouyan, "Reinforcement Learning for Self Organization and Power Control of Two-Tier Heterogeneous Networks", *IEEE Trans. on Wireless Communications*, Vol. 18, No. 8, pp. 3933-47, Aug. 2019.
- [J32] V. Chandrasekhar, Y. Heng, J. Cho, J. Lee, J. C. Zhang, and J. G. Andrews, "Experience-Centric Mobile Video Scheduling through Machine Learning", *IEEE Access*, Vol. 7, pp. 113017 – 113030, Aug. 2019.
- [J33] C. Saha, H. Dhillon, N. Miyoshi, and J. G. Andrews, "Unified Analysis of HetNets using Poisson Cluster Process under Max-Power Association", *IEEE Trans. on Wireless Communications*, Vol. 18, No. 8, pp. 3797-3812, Aug. 2019.
- [J34] E. Balevi and J. G. Andrews, "One-Bit OFDM Receivers via Deep Learning", *IEEE Trans. on Communications*, Vol. 67, No. 6, pp. 4326-36, June 2019.
- [J35] A. Alammouri, J. Mo, B. L. Ng, C. Zhang, and J. G. Andrews, "Hand Grip Impact on 5G mmWave Mobile Devices", *IEEE Access*, No. 7, pp. 60532-60544, May 2019.
- [J36] D. Malak, H. Huang and J. G. Andrews, "Throughput Maximization for Delay-Sensitive Random Access Communication", *IEEE Trans. on Wireless Communications*, Vol. 18. No. 1, pp. 709-23, Jan. 2019.
- [J37] R. Jurdi, S. Khosravirad, H. Viswanathan, J. G. Andrews, R. W. Heath "Outage of Periodic Downlink Wireless Networks with Hard Deadlines", *IEEE Trans. on Communications*, Vol. 67. No. 2, pp. 1238-53, Feb. 2019.
- [J38] A. Alammouri, J. G. Andrews, and F. Baccelli, "A Unified Asymptotic Analysis of Area Spectral Efficiency in Ultradense Cellular Networks", *IEEE Trans. on Information Theory*, Vol. 65, No. 2, pp. 1236-48, Feb. 2019.
- [J39] M. Kulkarni, E. Visotsky, and J. G. Andrews, "Correction Factor for Analysis of MIMO Wireless Networks With Highly Directional Beamforming", *IEEE Wireless Communications Letters*, Vol. 7, No. 5, pp. 756-59, Oct. 2018.
- [J40] Y. Li, F. Baccelli, J. G. Andrews, and C. Zhang, "Directional Cell Search Delay Analysis for Cellular Networks with Static Users", *IEEE Trans. on Communications*, Vol. 66, No. 9, pp. 4318 – 4332, Sept. 2018.
- [J41] J. Park, J. G. Andrews, and R. W. Heath, "Inter-Operator Base Station Coordination in Spectrum-Shared Millimeter Wave Cellular Networks", *IEEE Transactions on Cognitive Communications and Networking*, Vol. 4, No. 3, pp. 513-528, Sept. 2018.
- [J42] R. Jurdi, A. Gupta, J. G. Andrews, and R. W. Heath, "Modeling Co-location in Multi-Operator mmWave Networks with Spectrum Sharing", *IEEE Transactions on Cognitive Communications and Networking*, Vol. 4, No. 3, pp. 328 – 343, Sept. 2018.
- [J43] N. Kouzayha, Z. Dawy, J. G. Andrews, and H. Elsayy, "Joint Downlink/Uplink RF Wake-up Solution for IoT over Cellular Networks", *IEEE Trans. on Wireless Communications*, Vol. 17. No. 3, pp. 1574-1588, Mar. 2018.

- [J44] A. Alammouri, J. G. Andrews, and F. Baccelli, "SINR and Throughput of Dense Cellular Networks with Stretched Exponential Path Loss", *IEEE Trans. on Wireless Communications*, Vol. 17, No. 2, pp. 1147-60, Feb. 2018.
- [J45] A. K. Gupta, J. G. Andrews, and R. W. Heath, "Macro diversity in Cellular Networks with Random Blockages", *IEEE Trans. on Wireless Communications*, Vol. 17, No. 2, pp. 996-1010, Feb. 2018.
- [J46] D. Malak, M. Shalash, and J. G. Andrews, "Spatially Correlated Content Caching for Device-to-Device Communications", *IEEE Trans. on Wireless Communications*, Vol. 17, No. 1, pp. 56-70, Jan. 2018.
- [J47] C. S. Choi, J. O. Woo, J. G. Andrews, "Modeling a Spatially Correlated Cellular Network with Strong Repulsion", *IEEE Trans. on Communications*, Vol. 66, No. 2, pp. 862-874, Feb. 2018.
- [J48] M. K. Kulkarni, J. G. Andrews, and A. Ghosh, "Performance of Dynamic and Static TDD in Self-backhauled mmWave Cellular Networks", *IEEE Trans. on Wireless Communications*, Vol. 16, No. 10, pp. 6460-78, Oct. 2017.
- [J49] Y. Li, J. G. Andrews, F. Baccelli, T. Novlan, and C. Zhang, "Design and Analysis of Initial Access in Millimeter Wave Cellular Networks", *IEEE Trans. on Wireless Communications*, Vol. 16, No. 10, pp. 6409-25, Oct. 2017.
- [J50] H. Yang, G. Geraci, T. Quek, and J. G. Andrews, "Cell-Edge-Aware Precoding for Downlink Massive MIMO Cellular Networks", *IEEE Trans. on Signal Processing*, Vol. 65, No. 13, pp. 3344-3358, July 2017.
- [J51] Z. Dawy, W. Saad, A. Ghosh, J. G. Andrews, E. Yaacoub, "Towards Massive Machine Type Cellular Communication", *IEEE Wireless Communications Magazine*, Vol. 24, No. 1, pp. 120-28, Feb. 2017.
- [J52] J. G. Andrews, T. Bai, M. Kulkarni, A. Alkhateeb, A. Gupta, and R. W. Heath, "Modeling and Analyzing Millimeter Wave Cellular Systems", invited paper, *IEEE Trans. on Communications*, Vol. 65, No. 1, pp. 403-430, Jan. 2017.
- [J53] A. Gupta, A. Alkhateeb, J. G. Andrews, and R. W. Heath, "Gains of Restricted Secondary Licensing in Millimeter Wave Cellular Systems", *IEEE Journal on Sel. Areas in Communications*, special issue on Spectrum Sharing and Aggregation, Vol. 34, No. 11, pp. 2935-50, Nov. 2016.
- [J54] D. Malak, M. Shalash, J. G. Andrews, "Optimizing Content Caching to Maximize the Density of Successful Receptions in Device-to-Device Networking", *IEEE Trans. on Communications*, Vol. 64, No. 10, pp. 4365-80, Oct. 2016.
- [J55] J. G. Andrews, X. Zhang, G. Durgin, and A. Gupta, "Are We Approaching the Fundamental Limits of Wireless Network Densification?", *IEEE Communications Magazine*, Vol. 54, No. 10, pp. 184-90, Oct. 2016.
- [J56] Y. Li, F. Baccelli, J. G. Andrews, T. Novlan, and C. Zhang, "Modeling and Analyzing the Coexistence of Wi-Fi and LTE in Unlicensed Spectrum", *IEEE Trans. on Wireless Communications*, Vol. 15, No. 9, pp. 6310-26, Sept. 2016.
- [J57] A. Gupta, J. G. Andrews, and R. W. Heath, "On the Feasibility of Sharing Spectrum Licenses in mmWave Cellular Systems", *IEEE Trans. on Communications*, Vol. 64, No. 9, pp. 3981-95, Sept. 2016.
- [J58] H. El Shaer, J. G. Andrews, F. Boccardi, M. Dohler, and M. Kulkarni, "Downlink and Uplink Cell Association with Traditional Macrocells and Millimeter Wave Small Cells", *IEEE Trans. on Wireless Communications*, Vol. 15, No. 9, pp. 6244-58, Sept. 2016.

- [J59] J. Park, N. Lee, J. G. Andrews, R. W. Heath, "How Much Feedback is Required in Multi-Antenna Downlink Cellular Systems?", *IEEE Trans. on Wireless Communications*, Vol. 15, No. 8, pp. 5748-62, Aug. 2016.
- [J60] Q. Ye, O. Bursalioglu, H. Papadopoulos, C. Caramanis, and J. G. Andrews, "User Association and Interference Management in Massive MIMO HetNets", *IEEE Trans. on Communications*, Vol. 64, No. 5, pp. 2049-65, May 2016.
- [J61] M. Kulkarni, A. Ghosh, and J. G. Andrews, "A Comparison of MIMO Techniques in Downlink Millimeter Wave Cellular Networks", *IEEE Trans. on Communications*, Vol. 64, No. 5, pp. 1952-67, May 2016.
- [J62] C. Li, J. Zhang, J. G. Andrews, and K. B. Letaief, "Success Probability and Area Spectral Efficiency in Multiuser MIMO HetNets", *IEEE Trans. on Communications*, Vol. 64, No. 3, pp. 1544-56, April 2016.
- [J63] D. Malak, H. S. Dhillon, J. G. Andrews, "Optimizing Data Aggregation for Uplink Machine-to-Machine Communication Networks", *IEEE Trans. on Communications*, Vol. 64, No. 3, pp. 1274-90, March 2016.
- [J64] F. Boccardi, J. G. Andrews, H. Elshaer, M. Dohler, S. Parkvall, P. Popovski, S. Singh, "Why to Decouple the Uplink and Downlink in Cellular Networks and How To Do It", *IEEE Communications Magazine*, Vol. 54, No. 3, pp. 110-117, March 2016.
- [J65] A. Gupta, X. Zhang, and J. G. Andrews, "SINR and Throughput Scaling in Ultradense Urban Cellular Networks", *IEEE Wireless Communications Letters*, vol. 4, No. 6, pp. 605-8, Dec. 2015.
- [J66] S. Singh, X. Zhang, and J. G. Andrews, "Joint Rate and SINR Coverage Analysis for Decoupled Uplink-Downlink Biased Cell Associations in HetNets", *IEEE Trans. on Wireless Communications*, Vol. 14, No. 10, pp. 5360-73, Oct. 2015.
- [J67] S. Singh, M. Kulkarni, A. Ghosh, and J. G. Andrews, "Tractable Model for Rate in Self-Backhauled Millimeter Wave Cellular Networks", *IEEE Journal on Sel. Areas in Comm.*, special issue on Recent Advances in Heterogeneous Cellular Networks, pp. 2196 – 2211, Oct. 2015. **Received 2018 IEEE Leonard G. Abraham Prize Paper Award.**
- [J68] X. Lin, L. Jiang, and J.G. Andrews, "Performance Analysis of Asynchronous Multicarrier Wireless Networks", *IEEE Trans. on Communications*, Vol. 63, No. 9, pp. 3377 – 3390, Sept. 2015.
- [J69] Y. Li, F. Baccelli, H. S. Dhillon, and J. G. Andrews, "Statistical Modeling and Probabilistic Analysis of Cellular Networks with Determinantal Point Processes", *IEEE Trans. on Communications*, Vol. 63, No. 9, pp. 3405 – 3422, Sept. 2015.
- [J70] X. Lin, R. W. Heath, and J. G. Andrews, "The Interplay between Massive MIMO and Underlaid D2D Networking", *IEEE Transactions on Wireless Communications*, Vol. 14, No. 6, pp. 3337-51, June 2015.
- [J71] X. Zhang and J.G. Andrews, "Downlink Cellular Network Analysis with Multi-slope Path Loss Models", *IEEE Trans. on Communications*, Vol. 63, No. 5, pp. 1881-94, May 2015.
- [J72] X. Lin and J. G. Andrews, "Connectivity of Millimeter Wave Networks with Multi-hop Relaying", *IEEE Wireless Communications Letters*, Vol. 4, No. 2, pp. 209-12, Feb. 2015.
- [J73] N. Lee, X. Lin, J. G. Andrews, and R. W. Heath, "Power Control for D2D Underlaid Cellular Networks: Modeling, Algorithms and Analysis", *IEEE Journal on Sel. Areas in Comm.*, special issue on D2D, Vol. 33, No. 1, pp. 1-13, Jan. 2015.
- [J74] J. Andrews, A. Dimakis, L. Dolecek, M. Effros, M. Medard, O. Milenkovic, A. Montanari, S. Vishwanath, and E. Yeh, " A Perspective on Future Research Directions in Information

Theory", Invited Editorial, *IEEE Information Theory Society Newsletter* (also on Arxiv.org), Dec. 2014.

- [J75] Q. Ye, M. Shalash, C. Caramanis, and J. G. Andrews, "Distributed Resource Allocation in Device-to-Device Enhanced Cellular Networks", *IEEE Trans. on Communications*, Vol. 63, No. 2, pp. 441-54, Dec. 2014.
- [J76] X. Lin, J. G. Andrews, and A. Ghosh, "Spectrum Sharing for Device-to-Device Communication in Cellular Networks", *IEEE Trans. On Wireless Communications*, Vol. 13, No. 12, pp. 6727-40, Dec. 2014.
- [J77] A. Gupta, H. S. Dhillon, S. Vishwanath, J. G. Andrews, "Downlink MIMO HetNets with Load Balancing" *IEEE Transactions on Communications*, Vol. 62, No. 11, pp. 4052-67, Nov. 2014.
- [J78] Q. Ye, M. Shalash, C. Caramanis, and J. G. Andrews, "Resource Optimization in Device-to-Device Cellular Systems Using Time-Frequency Hopping", *IEEE Trans. On Wireless Communications*, Vol. 13, No. 10, pp. 5467-80, Oct. 2014.
- [J79] R. Tanbourgi, S. Singh, J. G. Andrews, and F. Jondral, "A Tractable Model for Non-Coherent Joint-Transmission Base Station Cooperation", *IEEE Trans. On Wireless Communications*, Vol. 13, No. 9, pp. 4959-73, Sept. 2014.
- [J80] X. Lin, R. Ratasuk, A. Ghosh, and J. G. Andrews, "Modeling, Analysis and Optimization of Multicast Device-to-Device Transmissions", *IEEE Trans. On Wireless Communications*, Vol. 13, No. 8, pp. 4346-59, Aug. 2014.
- [J81] R. Tanbourgi, H. S. Dhillon, J. G. Andrews, and F. Jondral, "Dual-Branch MRC Receivers under Spatial Interference Correlation and Nakagami Fading", *IEEE Trans. On Communications*, Vol. 62, No. 6, pp. 1830-44, June 2014.
- [J82] R. Tanbourgi, H. S. Dhillon, J. G. Andrews, and F. Jondral, "Effect of Spatial Interference Correlation on the Performance of Maximum Ratio Combining", *IEEE Trans. On Wireless Communications*, Vol. 13, No. 6, pp. 3307-16, June 2014.
- [J83] G. Geraci, H. S. Dhillon, J. G. Andrews, J. Yuan, I. Collings, "Physical Layer Security in Downlink Multi-Antenna Cellular Networks", *IEEE Trans. on Communications*, Vol. 62, No. 6, pp. 2006-21, June 2014.
- [J84] J. G. Andrews, S. Buzzi, W. Choi, S. Hanly, A. Lozano, A. Soong, J. C. Zhang, "What will 5G be?" invited paper, *IEEE Journal on Sel. Areas in Communications*, Vol. 32, No. 6, pp. 1065-82, June 2014.
- [J85] G. Geraci, S. Singh, J. G. Andrews, J. Yuan, I. Collings, "Secrecy Rates in the Broadcast Channel with Confidential Messages and External Eavesdroppers", *IEEE Trans. on Wireless Communications*, Vol. 13, No. 5, pp. 2931-43, May 2014.
- [J86] H. Dhillon, Y. Li, P. Nuggehalli, Z. Pi, and J. G. Andrews, "Fundamentals of Heterogeneous Cellular Networks with Energy Harvesting", *IEEE Trans. on Wireless Communications*, Vol. 13, No. 5, pp. 2782-97, May 2014.
- [J87] J. G. Andrews, S. Singh, Q. Ye, X. Lin, and H. S. Dhillon, "An Overview of Load Balancing in HetNets: Old Myths and Open Problems", *IEEE Wireless Communications Magazine*, Vol. 21, No. 2, pp. 18-25, April 2014.
- [J88] X. Lin, J. G. Andrews, A. Ghosh, and R. Ratasuk, "An Overview on 3GPP Device-to-Device Proximity Services", *IEEE Communications Magazine*, Vol. 52, No. 4, pp. 40-48, Apr. 2014.
- [J89] S. Singh and J. G. Andrews, "Joint Resource Partitioning and Offloading in Heterogeneous Cellular Networks", *IEEE Trans. on Wireless Communications*, Vol. 13, No. 2, pp. 888-901, Feb. 2014.

- [J90] H.S. Dhillon and J. G. Andrews, "Downlink Rate Distribution in Heterogeneous Cellular Networks under Generalized Cell Selection", *IEEE Wireless Communications Letters*, Vol. 3, No. 1, pp. 42-45, Jan. 2014. **Received 2016 IEEE Heinrich Hertz Prize Paper Award.**
- [J91] S. Singh, F. Baccelli, and J. G. Andrews, "On Association Cells in Random Heterogeneous Networks", *IEEE Wireless Communications Letters*, Vol. 3, No. 1, pp. 70-73, Jan. 2014.
- [J92] B. Nosrat-Makouei, R. K. Ganti, J. G. Andrews, and R. W. Heath, "MIMO Interference Alignment in Random Access Networks", *IEEE Trans. on Communications*, Vol. 61, No. 12, pp. 5042-55, Dec. 2013.
- [J93] H. S. Dhillon, M. Kountouris, and J. G. Andrews, "Downlink MIMO HetNets: Modeling, Ordering Results and Performance Analysis", *IEEE Trans. on Wireless Communications*, Vol. 12, No. 10, pp. 5208-22, Oct. 2013.
- [J94] X. Lin, J. G. Andrews, and A. Ghosh, "Modeling, Analysis and Design for Carrier Aggregation in Heterogeneous Cellular Networks", *IEEE Trans. on Communications*, Vol. 61, No. 9, pp. 4002-15, Sep. 2013
- [J95] A. Lozano, R. W. Heath, and J. G. Andrews, "Fundamental Limits of Cooperation", *IEEE Trans. On Information Theory*, Vol. 59, No. 9, pp. 5213-26, Sep. 2013. **Received 2016 IEEE Communications Society & Information Theory Society Joint Paper Award.**
- [J96] P. Xia, C. H. Liu, and J. G. Andrews, "Downlink Coordinated Multi-Point with Overhead Modeling in Heterogeneous Cellular Networks", *IEEE Trans. on Wireless Communications*, Vol. 12, No. 8, pp. 4025-37, Aug. 2013
- [J97] H. Dhillon, R. K. Ganti, and J. G. Andrews, "Non-Uniform UE Distributions in Downlink Cellular Networks", *IEEE Wireless Communication Letters*, Vol. 2, No. 3, 339 – 342, June 2013.
- [J98] T. D. Novlan, H. S. Dhillon, and J. G. Andrews, "Analytical Modeling of Uplink Cellular Networks", *IEEE Trans. on Wireless Communications*, vol. 12, no. 6, pp. 2669-79, June 2013.
- [J99] Q. Ye, B. Rong, Y. Chen, M. Shalash, C. Caramanis, and J. G. Andrews, "User Association for Load Balancing in Heterogeneous Cellular Networks", *IEEE Trans. on Wireless Communications*, vol. 12, no. 6, pp. 2706-16, June 2013.
- [J100] Y. Chen, S. Shakkottai, J. G. Andrews, "On the Role of Mobility for Multi-message Gossip", *IEEE Trans. On Information Theory*, Vol. 59, No. 6, pp. 3953-70, June 2013.
- [J101] S. Singh, H. S. Dhillon, J. G. Andrews, "Offloading in Heterogeneous Networks: Modeling, Analysis and Design Insights", *IEEE Trans. on Wireless Communications*, Vol. 12, No. 5, pp. 2484-97, May 2013.
- [J102] T. D. Novlan and J. G. Andrews, "Analytical Evaluation of Uplink Fractional Frequency Reuse", *IEEE Trans. on Communications*, vol. 61, no. 5, pp. 2098 – 2108, May 2013.
- [J103] H. S. Dhillon, R. K. Ganti, and J. G. Andrews, "Load-Aware Modeling and Analysis of Heterogeneous Cellular Networks", *IEEE Trans. on Wireless Communications*, Vol. 12, No. 4, pp. 1666-77, Apr. 2013.
- [J104] I. Byun, J. G. Andrews, and K. S. Kim, "Delay-Constrained Random Access Transport Capacity", *IEEE Trans. on Wireless Communications*, Vol. 12, No. 4, pp. 1628-39, Apr. 2013.
- [J105] X. Lin, R. K. Ganti, P. Fleming, and J. G. Andrews, "Towards Understanding the Fundamentals of Mobility in Cellular Networks", *IEEE Trans. on Wireless Communications*, Vol. 12, No. 4, pp. 1686-98, Apr. 2013.
- [J106] K. Huang and J. G. Andrews, "An Analytical Framework for Multicell Cooperation via Stochastic Geometry and Large Deviations", *IEEE Trans. On Information Theory*, Vol. 59, No. 4, pp. 2501-2516, Apr. 2013.

- [J107] J. G. Andrews, "Seven Ways that HetNets are a Cellular Paradigm Shift", *IEEE Communications Magazine*, Vol. 51, No. 3, pp. 136-44, Mar. 2013.
- [J108] J. Lee, J. G. Andrews, and D. Hong, "Spectrum-Sharing Transmission Capacity with Interference Cancellation", *IEEE Trans. on Communications*, Vol. 61, No. 1, pp. 76-86, Jan. 2013.
- [J109] H. S. Jo, P. Xia, and J. G. Andrews, "Open, Closed, and Shared Access Femtocells in the Downlink", *EURASIP Journal on Wireless Communications and Networking*, special issue on Femtocells in 4G Systems, Dec. 2012.
- [J110] H. S. Jo, Y. J. Sang, P. Xia, and J. G. Andrews, "Heterogeneous Cellular Networks with Flexible Cell Association: A Comprehensive Downlink SINR Analysis", *IEEE Trans. on Wireless Communications*, Vol. 11, No. 10, pp. 3484-95, Oct. 2012.
- [J111] K. Gulati, R. K. Ganti, J. G. Andrews, B. L. Evans, and S. Srikanteswara, "Characterizing Decentralized Wireless Networks with Temporal Correlation in the Low Outage Regime", *IEEE Trans. on Wireless Communications*, Vol. 11, No. 9, pp. 3112 – 3125, Sep. 2012.
- [J112] S. Singh, J. G. Andrews, and G. de Veciana, "Interference Shaping for Improved Quality of Experience for Real-Time Video Streaming", *IEEE Journal on Selected Areas in Communications*, special issue on QoE-aware Wireless Multimedia Systems, Vol. 30, No. 7, pp. 1259–69, Aug. 2012.
- [J113] M. Kountouris and J.G. Andrews, "Downlink SDMA with Limited Feedback in Interference-Limited Wireless Networks", *IEEE Trans. on Wireless Communications*, Vol. 11, No. 8, pp. 2730–41, Aug. 2012
- [J114] T. D. Novlan, R. K. Ganti, A. Ghosh, and J. G. Andrews, "Analytical Evaluation of Fractional Frequency Reuse for Heterogeneous Cellular Networks", *IEEE Trans. on Communications*, Vol. 60, no. 7, pp. 2029 – 2039, July 2012.
- [J115] Y. Chen and J. G. Andrews, "An Upper Bound on Multi-hop Transmission Capacity with Dynamic Multipath Routing", *IEEE Trans. On Information Theory*, Vol. 58, No. 6, pp. 3751–65, June 2012.
- [J116] C. H. Liu and J. G. Andrews, "Ergodic Transmission Capacity of Wireless Ad Hoc Networks with Interference Management", *IEEE Trans. on Wireless Communications*, Vol. 11, No. 6, pp. 2136–47, June 2012.
- [J117] P. Xia, H. S. Jo, and J. G. Andrews, "Fundamentals of Inter-cell Overhead Signaling in Heterogeneous Cellular Networks", *IEEE Journal on Special Topics in Signal Processing*, special issue on Heterogeneous Networks, Vol. 6, No. 3, pp. 257 – 269, June 2012.
- [J118] A. Ghosh, J. G. Andrews, N. Mangalvedhe, R. Ratasuk, B. Mondal, M. Cudak, E. Visotsky, T. A. Thomas, P. Xia, H. S. Jo, H. S. Dhillon, T. D. Novlan, "Heterogeneous Cellular Networks: From Theory to Practice", *IEEE Communications Magazine*, June 2012.
- [J119] J. Xu, J. G. Andrews, and S. A. Jafar, "Broadcast Channels with Delayed Finite-Rate Feedback: Predict or Observe?", *IEEE Trans. on Wireless Communications*, Vol. 11, No. 4, pp. 1456–67, Apr. 2012.
- [J120] R. K. Ganti, F. Baccelli, and J. G. Andrews, "Series Expansion for Interference in Wireless Networks", *IEEE Trans. On Information Theory*, Vol. 28, no. 4, pp. 2194 – 2205, April 2012.
- [J121] J. G. Andrews, H. Claussen, M. Dohler, S. Rangan, and M. C. Reed, "Femtocells: Past, Present, and Future", invited paper, *IEEE Journal on Selected Areas in Communications*, special issue on Femtocell Networks, Apr. 2012.
- [J122] H. Dhillon, R. K. Ganti, F. Baccelli, and J. G. Andrews, "Modeling and Analysis of K-Tier Downlink Heterogeneous Cellular Networks", *IEEE Journal on Sel. Areas in Comm.*, special issue on Femtocell Networks, Vol. 30, No. 3, pp. 550 – 560, Apr. 2012. **Received 2014 IEEE**

Leonard G. Abraham Prize Paper Award. Also Received 2015 IEEE Communications Society Young Author Best Paper Award.

- [J123] K. Huang, J. G. Andrews, R. W. Heath, Jr., D. Guo, and R. A. Berry, "Spatial Interference Cancellation for Multi-Antenna Mobile Ad Hoc Networks", *IEEE Trans. on Information Theory*, Vol. 58, No. 3, pp. 1660-76, Mar. 2012.
- [J124] B. Nosrat-Makouei, J. G. Andrews, and R. W. Heath, "User Arrival in MIMO Interference Alignment Networks", *IEEE Trans. on Wireless Communications*, Vol. 11, No. 2, pp. 842–851, Feb. 2012.
- [J125] T. Novlan, R. K. Ganti, A. Ghosh, and J. G. Andrews, "Analytical Evaluation of Fractional Frequency Reuse for OFDMA Cellular Networks", *IEEE Trans. on Wireless Communications*, vol. 10, no. 12, pp. 4294-4305, Dec. 2011.
- [J126] I. Sohn, S. H. Lee, and J. G. Andrews, "Belief Propagation for Distributed Downlink Beamforming in Cooperative MIMO Cellular Networks", *IEEE Trans. on Wireless Communications*, vol. 10, no. 12, pp. 4140-49, Dec. 2011.
- [J127] J. Kim, C. B. Chae, J. G. Andrews, "Cooperative Spectral Covariance Sensing under Correlated Shadowing", *IEEE Trans. on Wireless Communications*, Vol. 10, no. 11, pp. 3589-93, Nov. 2011.
- [J128] J. G. Andrews, F. Baccelli, and R. K. Ganti, "A Tractable Approach to Coverage and Rate in Cellular Networks", *IEEE Trans. on Communications*, Vol. 59, no. 11, pp. 3122-34, Nov. 2011. **Received 2014 IEEE Stephen O. Rice Prize Paper Award.**
- [J129] R. Jaber and J. G. Andrews, "A Lower Bound on the Capacity of Wireless Erasure Networks with Random Node Locations", *IEEE Trans. on Information Theory*, Vol. 57, no. 10, pp. 6502-13, Oct. 2011.
- [J130] J. Xu, J. Zhang, J. G. Andrews, "On the Accuracy of the Wyner Model in Cellular Networks", *IEEE Trans. on Wireless Communications*, Vol. 10, No. 9, pp. 3098 - 3109, Sep. 2011.
- [J131] J. Lee, J. G. Andrews and D. Hong, "Spectrum-Sharing Transmission Capacity", *IEEE Trans. on Wireless Communications*, Vol. 10, No. 9, pp. 3053 – 3063, Sep. 2011.
- [J132] X. Zhou, R. K. Ganti, J. G. Andrews, A. Hjørungnes, "The Throughput Cost of Information-Theoretic Security in Decentralized Wireless Networks", *IEEE Trans. on Wireless Communications*. Aug. 2011.
- [J133] B. Nosrat-Makouei, J. G. Andrews, R. W. Heath, "MIMO Interference Alignment Over Correlated Channels with Imperfect CSI", *IEEE Trans. on Signal Processing*, Vol. 59, No. 6, pp. 2783-2794, June 2011.
- [J134] C. H. Liu and J. G. Andrews, "Multicast Outage Probability and Transmission Capacity of Multihop Wireless Networks", *IEEE Trans. On Information Theory*, Vol. 57, No. 7, pp. 4344-4358, July 2011.
- [J135] R. K. Ganti, J. G. Andrews, and M. Haenggi, "High-SIR Transmission Capacity of Wireless Networks with General Fading and Node Distribution", *IEEE Trans. On Information Theory*, special issue on Interference Networks, Vol.57, No. 5, pp. 3100-3116, May 2011.
- [J136] J. Zhang, M. Kountouris, J. G. Andrews, and R. W. Heath, "Multi-mode Transmission for the MIMO Broadcast Channel with Imperfect Channel State Information", *IEEE Trans. on Communications*, Vol. 59, no. 3, pp. 803 – 814, March 2011.
- [J137] J. Lee, H. Wang, J. G. Andrews, and D. Hong, "Outage Probability of Cognitive Relay Networks with Interference Constraints", *IEEE Trans. On Wireless Communications*, vol. 10, no. 2, pp. 390-395, Feb. 2011.

- [J138] X. Zhou, R. K. Ganti and J. G. Andrews, "Secure Wireless Network Connectivity with Multi-Antenna Transmission", *IEEE Trans. On Wireless Communications*, Vol. 10, no. 2, pp. 425 – 430, Feb. 2011.
- [J139] N. Jindal, J. G. Andrews, and S. Weber, "Multi-antenna Communication in Ad Hoc Networks: Achieving MIMO Gains with SIMO Transmission", vol. 57, no. 2, *IEEE Trans. On Communications*, Feb. 2011.
- [J140] P. Xia, V. Chandrasekhar, and J. G. Andrews, "Open vs. Closed Access Femtocells in the Uplink", *IEEE Trans. On Wireless Communications*, vol. 9, no. 12, pp. 3798 – 3809, Dec. 2010.
- [J141] I. Sohn and J.G. Andrews, "Approaching Large-System Limits Faster in Multiuser MIMO with Adaptive Channel Feedback Adjustments", *IEEE Communications Letters*, vol. 14, no. 12, pp. 1125-27, Dec. 2010. **2011 Heinrich Hertz Prize Paper Award, IEEE Communications Society**
- [J142] K. Gulati, B. L. Evans, J. G. Andrews, and K. Tinsley, "Statistics of Co-Channel Interference in a Field of Poisson and Poisson-Poisson Clustered Interferers", *IEEE Trans. on Signal Processing*, vol. 58, no.12, pp. 6207–22, Dec. 2010.
- [J143] S. Weber, J. G. Andrews, and N. Jindal, "An overview of the transmission capacity of wireless networks", *IEEE Trans. On Communications*, vol. 56, no. 12, pp. 3593–3604, Dec. 2010.
- [J144] J. G. Andrews, R. K. Ganti, M. Haenggi, N. Jindal, and S. Weber, "A primer on spatial modeling and analysis in wireless networks", invited paper, *IEEE Communications Magazine*, 0163-6804, pp. 1-9, Nov. 2010.
- [J145] J. Zhang and J. G. Andrews, "Adaptive Spatial Intercell Interference Cancellation in Multicell Wireless Networks", *IEEE Journal on Selected Areas in Communications*, vol. 28, no. 9, pp. 1455–68, Oct. 2010.
- [J146] J. Kim and J. G. Andrews, "Sensitive White Space Detection with Spectral Covariance Sensing", *IEEE Trans. On Wireless Communications*, vol. 9, no. 9, pp. 2945 – 2955, Sep. 2010.
- [J147] I. Sohn, J. G. Andrews, and K. B. Lee, "MIMO Broadcast Channels with Spatial Heterogeneity", *IEEE Trans. On Wireless Communications*, Vol. 9, No. 9, pp. 2449-2454, Aug. 2010.
- [J148] J. G. Andrews, S. Weber, M. Kountouris, and M. Haenggi, "Random Access Transport Capacity", *IEEE Trans. On Wireless Communications*, Vol. 9, No. 6, pp. 2101 – 2111, June 2010.
- [J149] K. Bae, J. G. Andrews, and E. J. Powers, "Quantifying Iterative Clipping and Filtering for PAR Reduction in OFDM", *IEEE Trans. On Wireless Communications*, Vol. 9, No. 5, pp. 1558 – 1563, May 2010.
- [J150] K. Bae, J. G. Andrews, and E. J. Powers, "Adaptive Active Constellation Extension Algorithm for Peak-to-Average Ratio Reduction in OFDM", *IEEE Communications Letters*, Vol. 14, No. 1, pp. 39-41, Jan. 2010.
- [J151] T. Kim and J. G. Andrews, "Optimally balancing data and pilot power for adaptive MIMO-OFDM systems", invited paper, *Physical Communication*, special issue on Signal Processing and Coding, Vol. 3, No. 3, pp. 205-215. Sept. 2010.
- [J152] H. Cho and J. G. Andrews, "Upper bound on the capacity of cognitive radio without cooperation", *IEEE Trans. on Wireless Communications*, Vol. 8, No. 9, pp. 4380-85, Sep. 2009.
- [J153] V. Chandrasekhar, M. Kountouris, and J. G. Andrews, "Coverage in Multi-Antenna Two-Tier Networks", *IEEE Trans. On Wireless Communications*, Vol. 8, No. 10, pp. 5314-27, Oct. 2009.

- [J154] V. Chandrasekhar and J. G. Andrews, "Spectrum Allocation in Two-Tier Networks", *IEEE Trans. on Communications*, Vol. 57, No. 10, pp. 3059-3068, Oct. 2009.
- [J155] M. Haenggi, J. G. Andrews, F. Baccelli, O. Dousse, and M. Franceschetti, "Stochastic Geometry and Random Graphs for the Analysis and Design of Wireless Networks", *IEEE Journal on Sel. Areas in Comm*, Vol. 27, No. 7, pp. 1029-1046, Sept. 2009. **2010 Best Tutorial Paper Award, IEEE Communications Society**
- [J156] V. Chandrasekhar, J. G. Andrews, T. Muharemovic, Z. Shen, and A. Gatherer, "Power Control in Two-Tier Femtocell Networks", *IEEE Trans. on Wireless Communications*, vol. 8, no. 8, pp. 4316-28, Aug. 2009.
- [J157] V. Chandrasekhar and J. G. Andrews, "Uplink Capacity and Interference Avoidance for Two-Tier Femtocell Networks," *IEEE Trans. on Wireless Communications*, vol. 8, no 7, pp. 3498-3509, July 2009.
- [J158] J. Zhang, R. W. Heath Jr., M. Kountouris, and J. G. Andrews, "Mode Switching for MIMO Broadcast Channel Based on Delay and Channel Quantization", *EURASIP Special Issue on Multiuser MIMO Transmission with Limited Feedback, Cooperation, and Coordination*, Volume 2009, Article ID 802548, 15 pages, 2009.
- [J159] H. G. Cho and J. G. Andrews, "Resource-Redistributive Opportunistic Scheduling for Wireless Systems," *IEEE Trans. on Wireless Communications*, Vol. 8, No. 7, pp. 3510-3522, July 2009.
- [J160] K. Huang, R. W. Heath, and J. G. Andrews, "Limited Feedback Beamforming Over Temporally-Correlated Channels", *IEEE Trans. on Signal Processing*, Vol. 57, No. 5, pp. 1959-76, May 2009.
- [J161] J. Zhang, R. Chen, J. G. Andrews, A. Ghosh, and R. W. Heath, "Networked MIMO with Clustered Linear Precoding", *IEEE Trans. on Wireless Communications*, vol. 8, no. 4, pp. 1910-21, Apr. 2009.
- [J162] H. Lee, J. G. Andrews, R. W. Heath, and E. J. Powers, "Outage Performance Analysis of Coordinate Interleaved Orthogonal Designs over Nakagami- m Fading Channels," *IEEE Trans. on Communications*, vol. 57, no. 3, pp. 653-664, Mar. 2009.
- [J163] K. Huang, J. G. Andrews, R. W. Heath Jr., "Performance of Orthogonal Beamforming for SDMA with Limited Feedback", *IEEE Transactions on Vehicular Technology*, Vol. 58, No. 1, pp. 152-64, Jan. 2009.
- [J164] N. Jindal, S. P. Weber, and J. G. Andrews, "Fractional Power Control for Decentralized Wireless Networks", *IEEE Trans. on Wireless Communications*, Vol. 7, No. 12, pp. 5482-92, Dec. 2008.
- [J165] N. Jindal, J. G. Andrews, and S. Weber, "Bandwidth Partitioning for Decentralized Wireless Networks", *IEEE Trans. on Wireless Communications*, Vol. 7, No. 12, pp. 5408-19, Dec. 2008.
- [J166] J. G. Andrews, N. Jindal, M. Haenggi, R. Berry, S. Jafar, D. Guo, S. Shakkottai, R. Heath, M. Neely, S. Weber, A. Yener, "Rethinking Information Theory for Mobile Ad Hoc Networks", *IEEE Communications Magazine*, 0163-6804/08, pp. 94-101, Dec. 2008.
- [J167] A. M. Hunter, J. G. Andrews, and S. P. Weber, "Transmission capacity of ad hoc networks with spatial diversity," *IEEE Trans. on Wireless Communications*, Vol. 7, No. 12, pp. 5058-71, Dec. 2008.
- [J168] V. Chandrasekhar, J. G. Andrews, and A. Gatherer, "Femtocell networks: a survey", *IEEE Communications Magazine*, 0163-6804/08, pp. 59-67, Sept. 2008.
- [J169] J. Zhang and J. G. Andrews, "Distributed Antenna Systems with Randomness," *IEEE Trans. on Wireless Communications*, Vol. 7, No. 9, pp. 3636-46, Sept. 2008.

- [J170] R. Chen, Z. Shen, J. G. Andrews, and R. W. Heath, "Multi-mode Transmission for Multiuser MIMO Systems with Block Diagonalization," *IEEE Trans. on Signal Processing*, Vol. 56, No. 7, pp. 3294-3302, July 2008.
- [J171] S. Shim, J. S. Kwak, R. W. Heath, and J. G. Andrews, "Block Diagonalization for Multi-User MIMO with Other-Cell Interference," *IEEE Trans. On Wireless Communications*, Vol. 7, No. 7, pp. 2671 – 2681, July 2008.
- [J172] E. Choi, W. Choi, J. G. Andrews, and B. F. Womack, "Power Loading Using Order Mapping in OFDM Systems With Limited Feedback", *IEEE Signal Processing Letters*, Vol. 15, pp. 545-48, Aug. 2008.
- [J173] K. Huang, R. W. Heath, and J. G. Andrews, "Uplink SDMA with Limited Feedback: Throughput Scaling," *EURASIP Journal on Advances in Signal Processing*, Special Issue on Limited Feedback, vol. 2008, Article ID 479357, 17 pages, doi:10.1155/2008/479357, 2008.
- [J174] H. Lee, J. G. Andrews, and E. J. Powers, "Information Outage Probability and Diversity Order of Symmetric Coordinate Interleaved Orthogonal Designs," *IEEE Trans. on Wireless Communications*, Vol. 7, No. 5, pp. 1501 – 1506, May 2008.
- [J175] W. Choi and J. G. Andrews, "The Capacity Gain from Intercell Scheduling in Multi-antenna Systems," *IEEE Trans. on Wireless Communications*, Vol. 7, No. 1, pp. 714-725, Feb. 2008.
- [J176] J. G. Andrews, S. Weber, and M. Haenggi, "Ad Hoc Networks: To spread or not to spread?," *IEEE Communications Magazine*, Vol. 45, No. 12, pp. 84-91, Dec. 2007.
- [J177] W. Choi, A. Forenza, J. G. Andrews, and R. W. Heath, "Opportunistic Space Division Multiple Access with Beam Selection," *IEEE Trans. on Communications*, Vol. 55, No. 12, pp. 2371-2380, Dec. 2007.
- [J178] J. G. Andrews, W. Choi, and R.W. Heath, "Overcoming interference in spatial multiplexing MIMO wireless networks," *IEEE Wireless Communications Magazine*, Vol. 14, No. 6, pp. 95-104, Dec. 2007.
- [J179] S. Weber, J. G. Andrews, and N. Jindal, "The effect of fading, channel inversion, and threshold scheduling on ad hoc networks," *IEEE Trans. On Information Theory*, Vol. 53, No. 11, pp. 4127-4149 Nov. 2007.
- [J180] C. Shin, J. G. Andrews, and E. Powers, "An Efficient Design of Doubly Selective Channel Estimation for OFDM Systems," *IEEE Trans. on Wireless Communications*, Oct. 2007, Vol. 6, No. 10, pp. 3790-3802.
- [J181] W. Choi and J. G. Andrews, "Improved Performance Analysis for Maximal Ratio Combining in Asynchronous CDMA Channels," *IEEE Trans. On Wireless Communications*, Vol. 6, No. 9, pp. 3297-3305, Sept. 2007.
- [J182] W. Choi, J. G. Andrews, and R. W. Heath, "Multiuser Antenna Partitioning for Cellular MIMO-CDMA Systems," *IEEE Trans. on Vehicular Technology*, Vol. 56, No. 5, pp. 2448-56, Sept. 2007.
- [J183] S. Weber, J. G. Andrews, X. Yang, and G. de Veciana, "Transmission capacity of wireless ad hoc networks with successive interference cancellation," *IEEE Trans. on Information Theory*, vol. 53, no. 8, pp. 2799 – 2814, Aug. 2007.
- [J184] W. Choi and J. G. Andrews, "Spatial Multiplexing in Cellular MIMO-CDMA Systems with Linear Receivers: Outage Probability and Capacity," *IEEE Trans. on Wireless Communications*, Vol. 4, No. 7, pp. 2612-2621, July 2007.
- [J185] R. Chen, J. G. Andrews, R. W. Heath, and A. Ghosh, "Uplink Power Control in Multi-Cell Spatial Multiplexing Wireless Systems," *IEEE Trans. on Wireless Communications*, Vol. 4, No. 7, pp. 2700-2711, July 2007.

- [J186] K. Huang, R. W. Heath, and J. G. Andrews, "Space Division Multiple Access with a Sum Feedback Rate Constraint," *IEEE Trans. on Signal Processing*, Vol. 55 No. 7, pp. 3879 - 3891, July 2007.
- [J187] Z. Shen, R. Chen, J. G. Andrews, R. W. Heath, Jr., and B. L. Evans, "Sum Capacity of Multiuser MIMO Broadcast Channels with Block Diagonalization," *IEEE Trans. on Wireless Communications*, Vol. 6, No. 5, pp. 1-6, May 2007.
- [J188] A. Hasan and J. G. Andrews, "The Guard Zone in Wireless Ad hoc Networks," *IEEE Trans. on Wireless Communications*, Vol. 4, No. 3, pp. 897-906, March 2007.
- [J189] R. Chen, R. W. Heath, Jr., and J. G. Andrews, "Transmit Selection Diversity for Unitary Precoded Multiuser Spatial Multiplexing Systems With Linear Receivers," *IEEE Trans. On Signal Processing*, Vol. 4, No. 3, pp. 1159-1171, March 2007.
- [J190] W. Choi and J. G. Andrews, "Downlink Performance and Capacity of Distributed Antenna Systems in a Multicell Environment," *IEEE Trans. on Wireless Communications*, Vol. 6, No.1, pp 69-73, Jan. 2007.
- [J191] Z. Shen, R. Chen, J. G Andrews, R. W. Heath, Jr., and B. L. Evans, "Low Complexity User Selection Algorithms for Multiuser MIMO Systems With Block Diagonalization," *IEEE Trans. on Signal Processing*, Vol. 54, No. 9, pp. 3658-3663, September 2006.
- [J192] Z. Shen, J. G. Andrews, and B. L. Evans, "Sum Capacity of MIMO Gaussian Broadcast Channels with Channel Energy Constraints," *IEEE Communications Letters*, Vol. 10, No. 6, pp. 471-473, June 2006.
- [J193] T. Kim, J. G. Andrews, J. Kim, and T. S. Rappaport, "Multi-code Multicarrier CDMA: Performance Analysis," *Journal of Communications Software and Systems, special issue on Future Wireless Systems*, Vol. 2, pp. 973-977, June 2006.
- [J194] J. Jeon, J. G. Andrews, and K. Sung, "The Blind Widely Linear Minimum Output Energy Algorithm for DS-CDMA Systems," *IEEE Trans. on Signal Processing*, Vol. 54, No. 5, pp. 1926-1931, May 2006.
- [J195] Z. Shen, R. W. Heath, Jr., J. G. Andrews, and B. L. Evans, "Space-Time Water-Filling for Composite MIMO Fading Channels," *EURASIP Journal on Wireless Communications and Networking, special issue on Radio Resource Management*, pp. 1-8, March 2006.
- [J196] S. Weber, X. Yang, J. G. Andrews, and G. de Veciana, "Transmission Capacity of Wireless Ad Hoc Networks with Outage Constraints," *IEEE Trans. on Information Theory*, Vol. 51, No. 12, pp. 4091-4102, December 2005.
- [J197] Z. Shen, J. G. Andrews, and B.L. Evans, "Adaptive Resource Allocation in Multiuser OFDM Systems with Proportional Rate Constraints," *IEEE Trans. on Wireless Communications*, Vol. 4, No. 6, pp. 2726-2737, November 2005.
- [J198] W. Choi and J. G. Andrews, "Generalized Performance Analysis of a Delay Diversity Receiver in Asynchronous CDMA Channels," *IEEE Trans. On Wireless Communications*, Vol. 4, No. 5, pp. 2057-2063, September 2005.
- [J199] A. Agrawal, J. G. Andrews, J. M. Cioffi, and T. H. Meng, "Iterative Power Control for Imperfect Successive Interference Cancellation," *IEEE Trans. on Wireless Communications*, vol. 4, no. 3, pp. 878- 884, May 2005.
- [J200] J. G. Andrews, "Interference Cancellation for Cellular Systems: A Contemporary Overview," *IEEE Wireless Communications Magazine*, Vol. 12, No. 2, pp 19-29, Apr. 2005.
- [J201] A. Ghosh, J. G. Andrews, R. Chen, and D. R. Wolter, "Broadband wireless access with WiMax/802.16: Current performance benchmarks and future potential," *IEEE Communications Magazine*, Vol. 43, No. 2, pp. 129-136, Feb. 2005.

- [J202] J. G. Andrews and T. H. Meng, "Performance of MC-CDMA with Successive Interference Cancellation in a Multipath Fading Channel" *IEEE Trans. on Communications*, vol. 55, no. 2, pp. 811-22, May 2004.
- [J203] J. G. Andrews and T. H. Meng, "Optimum Power Control for Successive Interference Cancellation with Imperfect Channel Estimation," *IEEE Trans. on Wireless Communications*, vol. 2, no. 2, pp. 375-383, March 2003.
- [J204] J. G. Andrews and T. H. Meng, "Successive Interference Cancellation in a Low Earth Orbit Satellite System," invited paper, *International Journal on Satellite Communications and Networking*, vol. 21, no. 1, pp. 65-77, Jan. 2003.

Conference Papers

- [C1] A. Chopra, I. P. Roberts, T. Novlan and J. G. Andrews, "28 GHz Phased Array-Based Self-Interference Measurements for Millimeter Wave Full-Duplex", *IEEE Wireless Communications and Networking Conference*, Austin, TX, April 2022.
- [C2] W. Blount, K. Li, A. Lotlikar, A. Dosh, and J. G. Andrews, "Evaluation of Adaptation Methods for Deep Learning-based Wi-Fi Receivers", *IEEE Wireless Communications and Networking Conference*, Austin, TX, April 2022.
- [C3] I. P. Roberts, H. Jain, S. Vishwanath, and J. G. Andrews, "Millimeter Wave Analog Beamforming Codebooks Robust to Self-Interference", *IEEE Globecom*, Madrid, Spain, Dec. 2021.
- [C4] M. Gupta, R. Dreifuerst, A. Panah, P. Huang, S. Kasturia, and J. G. Andrews, "Load Balancing and Handover Optimization in Multi-band Networks using Deep Reinforcement Learning", *IEEE Globecom*, Madrid, Spain, Dec. 2021.
- [C5] Y. Heng, J. Mo, and J. G. Andrews, "Learning Probing Beams for Fast mmWave Beam Alignment", *IEEE Globecom*, Madrid, Spain, Dec. 2021.
- [C6] E. Kim, I. P. Roberts, P. Iannucci, and J. G. Andrews, "Downlink Analysis of LEO Multi-Beam Satellite Communication in Shadowed Rician Channels", *IEEE Globecom*, Madrid, Spain, Dec. 2021.
- [C7] N. Olson, J. G. Andrews and R. W. Heath, "Coverage in Terahertz Cellular Networks with Imperfect Beam Alignment", *IEEE Globecom*, Madrid, Spain, Dec. 2021.
- [C8] A. Doshi and J. G. Andrews, "Distributed Proximal Policy Optimization for Contention-Based Spectrum Access", *IEEE Asilomar*, Pacific Grove, CA, Nov. 2021.
- [C9] E. Tekgul, T. Novlan, S. Akoum, and J. G. Andrews, "Sample-Efficient Learning of Cellular Antenna Parameter Settings", *IEEE Information Theory Workshop*, Japan, Oct. 2021.
- [C10] A. Graff, W. N. Blount, P. A. Iannucci, and J. G. Andrews, "OFDM Signal Analysis and Design for Ranging and Communications", *ION GNSS*, Sep. 2021.
- [C11] A. AlAmmouri, J. G. Andrews, F. Baccelli, "Scaling Laws of Dense Multi-Antenna Cellular Networks", *IEEE Asilomar*, Pacific Grove, CA, Nov. 2020.
- [C12] R. Amiri, E. Balevi, H. Mehrpouyan, and J. G. Andrews, "Spatial Indexing for System-Level Evaluation of 5G Heterogeneous Cellular Networks", *IEEE Vehicular Tech. Conference*, Victoria, Canada, Oct. 2020.
- [C13] A. Doshi, E. Balevi and J. G. Andrews, "Compressed Representation of High Dimensional Channels using Deep Generative Networks", *IEEE International Workshop on Signal Processing Advances in Wireless Communications (SPAWC)*, Atlanta, GA, Apr. 2020.
- [C14] E. Balevi and J. G. Andrews, "High Rate Communication over One-Bit Quantized Channels via Deep Learning and LDPC Codes", *IEEE International Workshop on Signal Processing Advances in Wireless Communications (SPAWC)*, Atlanta, GA, Apr. 2020.

- [C15] A. Almmouri, J. Mo, B. L. Ng, C. Zhang and J. G. Andrews, "Grip-Aware Analog mmWave Beam Codebook Adaptation for 5G Mobile Handsets", *IEEE Globecom*, Hawaii, USA, Dec. 2019.
- [C16] E. Balevi and J. G. Andrews, "A Novel Deep Reinforcement Learning Algorithm for Online Antenna Tuning", *IEEE Globecom*, Hawaii, USA, Dec. 2019.
- [C17] E. Balevi and J. G. Andrews, "Deep Learning-Based Encoder for One-Bit Quantization", *IEEE Globecom*, Hawaii, USA, Dec. 2019.
- [C18] Y. Heng and J. G. Andrews, "Machine Learning-Assisted Beam Alignment for mmWave Systems", *IEEE Globecom*, Hawaii, USA, Dec. 2019.
- [C19] M. Gupta, A. Rao, E. Visotsky, M. C. Cudak, A. Ghosh and J. G. Andrews, "Learning-based Delay Optimization for Self-Backhauled Millimeter Wave Cellular Networks", *IEEE Asilomar*, Pacific Grove, CA, Nov. 2019.
- [C20] A. K. Saxena, A. Mezghani, R. W. Heath Jr. and J. G. Andrews, "Linear Transmit processing with optimized dithering", *IEEE Asilomar*, Pacific Grove, CA, Nov. 2019.
- [C21] E. Balevi and J. G. Andrews, "Two-Stage Learning for Uplink Channel Estimation in One-Bit Massive MIMO", *IEEE Asilomar*, Pacific Grove, CA, Nov. 2019.
- [C22] A. Alammouri, J. G. Andrews, and F. Baccelli, "Stability of Wireless Random Access Systems", *Allerton*, Oct. 2019.
- [C23] R. Jurdi, J. G. Andrews and R. W. Heath, "On the Violation of Hard Deadlines in Networked Control Systems", *IEEE Intl. Conference on Communications*, Shanghai, China, May 2019.
- [C24] A. Saxena, A. Mezghani, R. Bendlin, S. Nammi, R. W. Heath, J. G. Andrews, A. Chopra, "Asymptotic Performance of Downlink Massive MIMO with 1-bit Quantized Zero-Forcing Precoding" *IEEE International Workshop on Signal Processing Advances in Wireless Communications (SPAWC)*, Cannes, France, July 2019.
- [C25] E. Balevi and J. G. Andrews, "Reliable Low Resolution OFDM Receivers via Deep Learning", *IEEE Asilomar*, Pacific Grove, CA, Nov. 2018.
- [C26] A. Alammouri, J. G. Andrews, F. Baccelli, "Asymptotic Analysis of Area Spectral Efficiency in Dense Cellular Networks", *IEEE Intl. Symposium on Info. Theory*, Vail, Colorado, June 2018.
- [C27] R. Jurdi, A. Gupta, J. G. Andrews, and R. W. Heath, "A Model for Infrastructure Sharing in mmWave Cellular Networks", *IEEE Intl. Conference on Communications*, Kansas City, MO, May 2018.
- [C28] A. Gupta, J. G. Andrews, and R. W. Heath, "Impact of Correlation between Link Blockages on Macro-diversity Gains in Cellular Networks", *IEEE Intl. Conference on Communications*, Kansas City, MO, May 2018.
- [C29] N. Kouzayha, H. ElSawy, Z. Dawy, and J. G. Andrews, "Analysis of an ID-based RF Wake-up Solution for IoT Over Cellular Networks", *IEEE Globecom workshop on Wireless Energy Harvesting Communication Networks*, Singapore, Dec. 2017.
- [C30] A. Alammouri, J. G. Andrews, F. Baccelli, "Analysis of Dense Cellular Networks with Stretched Exponential Path Loss", *IEEE Asilomar*, Pacific Grove, CA, Nov. 2017.
- [C31] R. Jurdi, J. G. Andrews, D. Parsons, R. W. Heath, "Identifying Coverage Holes: Where To Densify?", *IEEE Asilomar*, Pacific Grove, CA, Nov. 2017.
- [C32] D. Malak, M. Shalash, and J. G. Andrews, "A Distributed Auction Policy for User Association in Device-to-Device Caching Networks", *IEEE PIMRC*, Montreal, Canada, Oct. 2017.
- [C33] D. Malak, H. Huang, and J. G. Andrews, "Fundamental Limits of Random Access Communication with Retransmissions", *IEEE Intl. Conference on Communications*, Kuala Lumpur, Malaysia, May 2017.

- [C34] M. Kulkarni, A. O. Kaya, D. Calin and J. G. Andrews, "Impact of Humans on the Design and Performance of Millimeter Wave Cellular Networks in Stadiums", *IEEE Wireless Comm. And Networking Conference*, SF, CA, Mar. 2017.
- [C35] H. ElShaer, M. Kulkarni, F. Boccardi, J. G. Andrews, and M. Dohler, "Downlink and Uplink Cell Association in Sub-6GHz and Millimeter Wave 5G Heterogeneous Networks", Emerging Technologies for 5G Workshop at *IEEE Globecom*, Washington, DC, Dec. 2016.
- [C36] Y. Li, J. G. Andrews, F. Baccelli, T. Novlan, and J. Zhang, "On the Initial Access Design in Millimeter Wave Cellular Networks", Emerging Technologies for 5G Workshop at *IEEE Globecom*, Washington, DC, Dec. 2016.
- [C37] Y. Ren, Y. Li, J. G. Andrews, and Y. Wang, "Guard Region Model for Pilot Reuse Analysis in Uplink Massive MIMO Systems", Emerging Technologies for 5G Workshop at *IEEE Globecom*, Washington, DC, Dec. 2016.
- [C38] N. Kouzayha, Z. Dawy, and J. G. Andrews, "Analysis of a Power Efficient Wake-up Solution for M2M Over Cellular Using Stochastic Geometry", *IEEE Globecom*, Washington, DC, Dec. 2016.
- [C39] A. Gupta, A. Alkhateeb, J. G. Andrews, and R. W. Heath, "Restricted Secondary Licensing for mmWave Cellular: How Much Gain Can be Obtained?", *IEEE Globecom*, Washington, DC, Dec. 2016.
- [C40] Y. Li, J. G. Andrews, F. Baccelli, T. Novlan, and C. Zhang, "Performance analysis of millimeter-wave cellular networks with two-stage beamforming initial access protocols ", invited paper, *IEEE Asilomar*, Pacific Grove, CA, Nov. 2016.
- [C41] D. Malak, M. Al-Shalash, J. G. Andrews, "Optimizing The Spatial Content Caching Distribution for Device-to-Device Communications", *IEEE Intl. Symposium on Info. Theory*, Barcelona, Spain, July 2016.
- [C42] J. Park, N. Lee, J. G. Andrews, R. W. Heath, " A Lower Bound on the Optimum Feedback Rate for Downlink Multi-Antenna Cellular Networks", *IEEE Intl. Symposium on Info. Theory*, Barcelona, Spain, July 2016.
- [C43] A. Gupta, M. Kulkarni, E. Visotsky, F. Vook, A. Ghosh, J. G. Andrews, R. W. Heath, "Rate Analysis and Feasibility of Dynamic TDD in 5G Cellular Systems", *IEEE International Conference on Communications*, Kuala Lumpur, Malaysia, June 2016.
- [C44] D. Malak, H. S. Dhillon, J. G. Andrews, "Modeling Uplink Coverage and Rate with Aggregation in Machine-to-Machine Communication Networks", *IEEE International Conference on Communications*, Kuala Lumpur, Malaysia, June 2016.
- [C45] A. Gupta, J. G. Andrews, and R. W. Heath, "Can Operators Simply Share Millimeter Wave Spectrum Licenses?", Workshop on *Information Theory and its Applications*, San Diego, CA, Feb. 2016.
- [C46] Y. Li, F. Baccelli, T. Novlan, C. Zhang, and J. G. Andrews, "Modeling and Analyzing the Coexistence of Licensed-Assisted Access LTE and Wi-Fi", *IEEE Globecom Workshop on 5G Heterogeneous and Small Cell Networks (HetSNets)*, San Diego, CA, Dec. 2015. **Received Best Paper Award.**
- [C47] N. Garg, S. Singh, and J. G. Andrews, "Impact of Dual Slope Path Loss on User Association in HetNets", *IEEE Globecom Workshop on 5G Heterogeneous and Small Cell Networks (HetSNets)*, San Diego, CA, Dec. 2015.
- [C48] A. Gupta, X. Zhang, and J. G. Andrews, "Potential Throughput in 3D Ultradense Cellular Networks", invited paper, *IEEE Asilomar*, Pacific Grove, CA, Nov. 2015.

- [C49] M. Kulkarni, A. Alkhateeb, J. G. Andrews, "A Tractable Model for Per User Rate in Multiuser Millimeter Wave Cellular Networks", invited paper, *IEEE Asilomar*, Pacific Grove, CA, Nov. 2015. **Best Student Paper Award Finalist.**
- [C50] S. Singh, X. Zhang and J. G. Andrews, "Uplink Rate Distribution in Heterogeneous Cellular Networks with Power Control and Load Balancing, *IEEE Workshop on 5G and Beyond*, at the *International Conference on Communications*, London, UK, June 2015.
- [C51] X. Zhang and J. G. Andrews, "Downlink Cellular Network Analysis with a Dual-slope Path Loss Model", *IEEE International Conference on Communications*, London, UK, June 2015.
- [C52] X. Lin, R. W. Heath Jr., and J. G. Andrews, "Spectral Efficiency of Massive MIMO Systems with D2D Underlay," *IEEE International Conference on Communications*, London, UK, June 2015.
- [C53] M. Kulkarni, S. Singh and J. G. Andrews, "Coverage and Rate Trends in Dense Urban mmWave Cellular Networks *IEEE Globecom*, Austin, TX, Dec. 2014.
- [C54] Y. Li, F. Baccelli, H.S. Dhillon, and J. G. Andrews, "Fitting Determinantal Point Processes to Macro Base Station Deployments", *IEEE Globecom*, Austin, TX, Dec. 2014.
- [C55] A. K. Gupta, H. S. Dhillon, S. Vishwanath, and J. G. Andrews, "Downlink Coverage Probability in MIMO HetNets with Flexible Cell Selection", *IEEE Globecom*, Austin, TX, Dec. 2014.
- [C56] S. Singh, M. Kulkarni, and J. G. Andrews, "A Tractable Model for Rate in Noise Limited mmWave Cellular Networks", invited paper, *IEEE Asilomar*, Pacific Grove, CA, Nov. 2014.
- [C57] Q. Ye, M. Al-Shalash, C. Caramanis, and J. G. Andrews, "A Tractable Model for Optimizing Device-to-Device Communications in Downlink Cellular Networks", *IEEE Intl. Conference on Communications*, Sydney, Australia, June 2014.
- [C58] G. Geraci, H. S. Dhillon, J. G. Andrews, J. Yuan, and I. Collings, "A New Model for Physical Layer Security in Cellular Networks", *IEEE Intl. Conference on Communications*, Sydney, Australia, June 2014.
- [C59] G. Geraci, S. Singh, J. G. Andrews, J. Yuan, and I. Collings, "MIMO Multi-User Secrecy Rate Analysis", *IEEE Intl. Conference on Communications*, Sydney, Australia, June 2014.
- [C60] R. Tanbourgi, S. Singh, J. G. Andrews, and F. K. Jondral, "Analysis of Non-Coherent Joint-Transmission Cooperation in Heterogeneous Cellular Networks", *IEEE Intl. Conference on Communications*, Sydney, Australia, June 2014.
- [C61] R. Tanbourgi, H. S. Dhillon, J. G. Andrews, and F. K. Jondral, "Dual-Branch MRC Receivers in the Downlink under Spatial Interference Correlation", *European Wireless Conference*, Barcelona, Spain, May 2014. **Received Best Student Paper Award.**
- [C62] S. Singh and J. G. Andrews, "Rate Distribution in Heterogeneous Cellular Networks with Resource Partitioning and Offloading", *IEEE Globecom*, Atlanta, GA, Dec. 2013.
- [C63] X. Lin and J. G. Andrews, "Optimal Spectrum Partition and Mode Selection in Device-to-Device Overlaid Cellular Networks", *IEEE Globecom*, Atlanta, GA, Dec. 2013.
- [C64] H. Dhillon, P. Nuggehalli, Y. Li, Z. Pi, and J. G. Andrews, "Fundamentals of Base Station Availability in Cellular Networks with Energy Harvesting", *IEEE Globecom*, Atlanta, GA, Dec. 2013.
- [C65] Q. Ye, M. Shalash, C. Caramanis and J. G. Andrews, "On/Off Macrocells and Load Balancing in Heterogeneous Cellular Networks", *IEEE Globecom*, Atlanta, GA, Dec. 2013.
- [C66] Q. Ye, M. Shalash, C. Caramanis and J. G. Andrews, "Device-to-Device Modeling and Analysis with a Modified Matern Hardcore BS Location Model", *IEEE Globecom*, Atlanta, GA, Dec. 2013.

- [C67] X. Lin and J. G. Andrews, "A Unified Approach to SINR-based Performance Metrics with Application to D2D and Carrier Aggregation", Invited paper, *IEEE Asilomar*, Pacific Grove, CA, Nov. 2013.
- [C68] S. Singh, H. S. Dhillon, and J. G. Andrews, "Downlink Rate Distribution in Multi-RAT Heterogeneous Networks," *IEEE Intl. Conference on Communications*, Budapest, Hungary, June 2013. **Received "Best Paper Award" in Wireless Communications Symposium.**
- [C69] X. Lin, J. G. Andrews, R. Ratasuk, B. Mondal, and A. Ghosh, "Carrier Aggregation in Heterogeneous Cellular Networks" *IEEE Intl. Conference on Communications*, Budapest, Hungary, June 2013.
- [C70] D. Taylor, H. S. Dhillon, T. D. Novlan and J. G Andrews, "Pairwise Interaction Processes for Modeling Cellular Network Topology", *IEEE Globecom*, Anaheim, CA, Dec. 2012.
- [C71] X. Lin, R. K. Ganti, P. Fleming, and J. G Andrews, "Fundamentals of Mobility in Cellular Networks: Modeling and Analysis", *IEEE Globecom*, Anaheim, CA, Dec. 2012.
- [C72] H. S. Dhillon, T. D. Novlan, and J. G Andrews, "Coverage Probability of Uplink Cellular Networks", *IEEE Globecom*, Anaheim, CA, Dec. 2012.
- [C73] H. S. Dhillon and J. G Andrews, "Load-Aware Heterogeneous Cellular Networks: Modeling and SIR Distribution", *IEEE Globecom*, Anaheim, CA, Dec. 2012.
- [C74] Q. Ye, B. Rong, Y. Chen, C. Caramanis, and J. G Andrews, "Towards an Optimal User Association in Heterogeneous Cellular Networks", *IEEE Globecom*, Anaheim, CA, Dec. 2012.
- [C75] H. S. Dhillon, M. Kountouris, and J. G. Andrews, "Downlink Outage Probability in MIMO HetNets", *IEEE Asilomar*, Pacific Grove, CA, Nov. 2012.
- [C76] A. Lozano, R. W. Heath, J. G. Andrews, "Spectral Efficiency Limits in Pilot-Assisted Cooperative Communications", *IEEE Intl. Symposium on Information Theory*, Cambridge, MA, July 2012.
- [C77] K. Huang and J. G. Andrews, "Characterizing Multi-Cell Cooperation via the Outage Probability Exponent", *IEEE Intl. Conf. on Communications*, Ottawa, Canada, June 2012.
- [C78] P. A. Dmochowski, P. J. Smith, M. Shafi, J. G. Andrews, R. Mehta, "Interference models for heterogeneous sources", *IEEE Intl. Conf. on Communications*, Ottawa, Canada, June 2012.
- [C79] S. Singh, O. Oyman, A. Papathanassiou, D. Chatterjee, and J. G. Andrews, "Video Capacity and QoE Enhancements over LTE", Workshop on Video Optimized Wireless Networks, *IEEE Intl. Conf. on Communications*, Ottawa, Canada, June 2012.
- [C80] A. Lozano, J. G. Andrews, and R. W. Heath, "On the limitations of cooperation in wireless networks", Workshop on *Information Theory and its Applications*, San Diego, CA, Feb. 2012.
- [C81] K. Huang and J. G. Andrews, "A Stochastic-Geometry Approach to Coverage in Cellular Networks with Multi-Cell Cooperation", *IEEE Globecom*, Houston, TX, Dec. 2011.
- [C82] J. Zhang, J. G. Andrews, and K. B. Letaief, "Optimizing Training and Feedback for Spatial Intercell Interference Cancellation", *IEEE Globecom*, Houston, TX, Dec. 2011.
- [C83] H. S. Jo, Y. J. Sang, P. Xia, and J. G. Andrews, "Outage Probability for Heterogeneous Cellular Networks with Biased Cell Association", *IEEE Globecom*, Houston, TX, Dec. 2011.
- [C84] T. Novlan, R. K. Ganti, A. Ghosh, and J. G. Andrews, "A New Model for Coverage with Fractional Frequency Reuse in OFDMA Cellular Networks", *IEEE Globecom*, Houston, TX, Dec. 2011.
- [C85] T. Novlan, R. K. Ganti, A. Ghosh, and J. G. Andrews, "Coverage in Two-tier Cellular Networks with Fractional Frequency Reuse", *IEEE Globecom*, Houston, TX, Dec. 2011.
- [C86] B. Nosrat-Mekouei, J. G. Andrews, and R. W. Heath, "MIMO Interference Alignment in Random Access Networks", invited paper, *IEEE Asilomar*, Pacific Grove, CA, Nov. 2011.
- [C87] J. Xu, S. A. Jafar, J. G. Andrews, "The Net Benefit of Delayed Finite-Rate Feedback in the MISO Broadcast Channel", invited paper, *Allerton*, Monticello, IL, Sep. 2011.

- [C88] H. Dhillon, R. K. Ganti, F. Baccelli, and J. G. Andrews, "Average Rate Achievable in K-Tier Downlink Heterogeneous Cellular Networks", *Allerton*, Sept. 2011.
- [C89] X. Zhou, R. K. Ganti, J. G. Andrews, A. Hjørungnes, "Secrecy Transmission Capacity of Decentralized Wireless Networks", *Allerton*, Sept. 2011.
- [C90] J. Xu, J. Zhang and J. G. Andrews, "On the Accuracy of the Wyner Model in Downlink Cellular Networks", *IEEE Intl. Conference on Communications*, Kyoto, Japan, June 2011.
- [C91] J. Lee, J. G. Andrews, and D. Hong, "The Effect of Interference Cancellation on Spectrum-Sharing Transmission Capacity", *IEEE Intl. Conference on Communications*, Kyoto, Japan, June 2011.
- [C92] R. K. Ganti, F. Baccelli, and J. G. Andrews, "A New Way of Computing Average Throughput in Cellular Networks", *IEEE Intl. Conference on Communications*, Kyoto, Japan, June 2011.
- [C93] H. S. Jo, P. Xia, and J. G. Andrews, "Downlink Femtocell Networks: Open or Closed?", *IEEE Intl. Conference on Communications*, Kyoto, Japan, June 2011.
- [C94] M. Kountouris and J. G. Andrews, "Multiuser Zero-Forcing Beamforming with Limited Feedback in Wireless Ad Hoc Networks", *IEEE Intl. Conference on Communications*, Kyoto, Japan, June 2011.
- [C95] C. H. Liu and J. G. Andrews, "Ergodic Spatial Throughput of Wireless Ad Hoc Networks with Markovian Fading Channels", *Workshop on Spatial Stochastic Models for Wireless Networks*, Princeton, NJ, May 2011.
- [C96] Y. Chen, S. Shakkottai, and J. G. Andrews, "Sharing Multiple Messages over Mobile Networks" to appear, *IEEE Infocom*, Shanghai, China, Apr. 2011. (full length, acceptance rate 15%).
- [C97] B. Nosrat-Makouei, J. G. Andrews, R. W. Heath, "User Admission in MIMO Interference Alignment Networks", invited paper, *IEEE ICASSP*, Prague, May 2011.
- [C98] H. Dhillon, R. K. Ganti, and J. G. Andrews, "A Tractable Framework for Coverage and Outage in Heterogeneous Cellular Networks", invited paper, *Information Theory and its Applications Workshop*, University of San Diego, 6 pages, Feb. 2011.
- [C99] P. Xia, V. Chandrasekhar, and J. G. Andrews, "CDMA Uplink Capacity for Open and Closed Access Two-tier Femtocell Networks", *IEEE FemNet*, Miami, FL, Dec. 2010.
- [C100] J. Xu, J. Zhang, J. G. Andrews, "When Does the Wyner Model Accurately Describe an Uplink Cellular Network?", *IEEE Globecom*, 5 pages Miami, FL, Dec. 2010.
- [C101] I. Sohn, S. H. Lee, and J.G. Andrews, "A Graphical Model Approach to Downlink Cooperative MIMO Systems", *IEEE Globecom*, 5 pages, Miami, FL, Dec. 2010.
- [C102] K. Hassan, T. S. Rappaport, and J.G. Andrews, "Analog Equalization for Low Power 60 GHz Receivers in Realistic Multipath Channels", 5 pages *IEEE Globecom*, Miami, FL, Dec. 2010.
- [C103] T. Novlan, J. G. Andrews, I. Sohn, R. K. Ganti, A. Ghosh, "Comparison of Fractional Frequency Reuse Approaches in the OFDMA Cellular Downlink", 5 pages, *IEEE Globecom*, Miami, FL, Dec. 2010.
- [C104] P. Xia, V. Chandrasekhar, and J. G. Andrews, "Femtocell Access Control in TDMA/OFDMA Uplink", *IEEE Globecom*, Miami, FL, Dec. 2010.
- [C105] R. Ganti and J. G. Andrews, "Correlation of Link Outages in Low-mobility Wireless Networks", invited paper, *IEEE Asilomar*, pp. 312-316, Pacific Grove, CA, Nov. 2010.
- [C106] A. Hunter, R. Ganti and J. G. Andrews, "Transmission Capacity of Multi-antenna Ad Hoc Networks with CSMA", invited paper, *IEEE Asilomar*, pp. 1577-1581, Pacific Grove, CA, Nov. 2010.
- [C107] J. G. Andrews, F. Baccelli, and R. K. Ganti, "A New Tractable Model for Cellular Coverage", invited paper, *Allerton*, pp. 1204-1211, Monticello, IL, Sep. 2010.

- [C108] C. H. Liu and J. G. Andrews, "Multicast Capacity Scaling of Wireless Networks with Multicast Outage", *IEEE Intl. Symposium on Information Theory*, pp. 2323-2327, Austin, TX, June 2010.
- [C109] I. Sohn, J. G. Andrews, and K. B. Lee, "Capacity Scaling of MIMO Broadcast Channels with Random User Distribution", *IEEE Intl. Symposium on Information Theory*, pp. 2133-2137, Austin, TX, June 2010.
- [C110] R. K. Ganti and J. G. Andrews, "A New Method for Computing the Transmission Capacity of non-Poisson Wireless Networks", *IEEE Intl. Symposium on Information Theory*, pp. 1693-1697, Austin, TX, June 2010.
- [C111] Y. Chen and J. G. Andrews, "An Upper Bound on Multi-hop Transmission Capacity with Dynamic Routing Selection", *IEEE Intl. Symposium on Information Theory*, pp. 1718-1722, Austin, TX, June 2010.
- [C112] B. Nosrat-Mekouei, J. G. Andrews, and R. W. Heath, "A Simple SINR Characterization for Linear Interference Alignment over Uncertain MIMO Channels", *IEEE Intl. Symposium on Information Theory*, Austin, TX, June 2010.
- [C113] J. Lee, S. Lim, J. G. Andrews, and D. Hong, "Achievable Transmission Capacity of Secondary System in Cognitive Radio Networks", *IEEE Intl. Conf. on Communications*, pp. 1-5, Capetown, South Africa, May 2010.
- [C114] J. Kim and J. G. Andrews, "Spectral Covariance for Spectrum Sensing, with Application to IEEE 802.22", *IEEE International Conference on Acoustics, Speech, and Signal Processing*, pp. 3102-3105, Dallas, TX, March 2010.
- [C115] J. Zhang, J. G. Andrews, and R. W. Heath Jr., "Block Diagonalization in the MIMO Broadcast Channel with Delayed CSIT", *IEEE Globecom*, Honolulu, HI, November 2009.
- [C116] V. Chandrasekhar, J. G. Andrews, Z. Shen, T. Muharemovic and A. Gatherer, "Distributed Power Control in Femtocell-Underlay Cellular Networks", *IEEE Globecom*, pp. 1-6, Honolulu, HI, November 2009.
- [C117] H. Wang, J. G. Andrews and V. Iversen, "Uplink Capacity of 802.16j Mobile Multihop Relay Networks with Transparent Relays", *IEEE Globecom*, pp. 1-6, Honolulu, HI, November 2009.
- [C118] V. Chandrasekhar, M. Kountouris and J.G. Andrews, "Coverage in Tiered Cellular Networks with Spatial Diversity", *IEEE Globecom*, pp. 1-6, Honolulu, HI, November 2009. **Received Best Paper award in the Communication Theory Symposium.**
- [C119] M. Kountouris and J. G. Andrews, "Transmission Capacity Scaling of SDMA in Wireless Ad Hoc Networks", *IEEE Information Theory Workshop*, pp. 534-538, Taormina, Italy, 2009, Oct. 2009.
- [C120] K. Hassan and J. G. Andrews, "In-vivo Communication using Blood Vessels as the Transport Channel", *IEEE Asilomar*, pp. 55-59, Pacific Grove, CA, Oct. 2009.
- [C121] M. Kountouris and J. G. Andrews, "Exploiting Multiple Antennas in Overlaid Wireless Spatial Networks", invited paper, *IEEE Asilomar*, Pacific Grove, CA, Oct. 2009.
- [C122] J. G. Andrews, M. Haenggi, M. Kountouris, and S. Weber, "A Simple Upper Bound on Random Access Transport Capacity", invited paper, *Allerton*, pp. 849-856, Monticello, IL, Sept. 2009.
- [C123] C. H. Liu and J. G. Andrews, "Diversity-Multiplexing Tradeoff of Network Coding with Bidirectional Random Relaying", *Allerton*, pp. 899-905, Monticello, IL, Sept. 2009.
- [C124] R. Jaber and J. G. Andrews, "A Lower Bound on the Capacity of Wireless Erasure Networks with Random Node Locations", *IEEE International Symposium on Information Theory*, pp. 268-272, Seoul, Korea, June 2009.

- [C125] J. Zhang, M. Kountouris, J. G. Andrews, and R. W. Heath Jr., "Achievable Throughput of Multi-mode Multiuser MIMO with Imperfect CSI Constraints", *IEEE International Symposium on Information Theory*, pp. 2659-2663, Seoul, Korea, June 2009.
- [C126] N. Jindal, J. G. Andrews and S. Weber, "Rethinking MIMO for Wireless Networks: Linear Throughput Increases with Multiple Receive Antennas", *IEEE Intl. Conf. on Communications*, pp.1-6, Dresden, Germany, June 2009.
- [C127] M. Kountouris and J. G. Andrews, "Throughput Scaling Laws for Wireless Ad Hoc Networks with Relay Selection," invited paper, *IEEE Vehicular Technology Conf.*, pp. 1-5, Barcelona, Spain, April 2009.
- [C128] K. Huang, J. G. Andrews, R. Heath, D. Guo, R. Berry, "Spatial Interference Cancellation for Mobile Ad Hoc Networks: Perfect CSI", *IEEE Globecom*, pp. 1-5, New Orleans, LA, Dec. 2008.
- [C129] A. Hasan and J. G. Andrews, "Interference cancelation vs. interference suppression in ad hoc networks", *IEEE Milcom*, Los Angeles, CA, pp. 1-6, Nov. 2008.
- [C130] H. Ganapathy, C. Caramanis, and J. G. Andrews, "Inter-cell Relay Cooperation In Heterogeneous Cellular Uplink Systems", *IEEE Asilomar*, pp. 1443-1447, Pacific Grove, CA, Oct. 2008.
- [C131] V. Chandrasekhar and J. G. Andrews, "Spectrum Allocation in Two-Tier Networks", *IEEE Asilomar*, pp. 1583-1587, Pacific Grove, CA, Oct. 2008. **Received Best Student Paper award in the Communications Area, Runner up in the conference.**
- [C132] K. Huang, J. G. Andrews, R. Heath, D. Guo, R. Berry, "Spatial Interference Cancellation for Mobile Ad Hoc Networks: Imperfect CSI", invited paper, *IEEE Asilomar*, pp. 131-135, Pacific Grove, CA, Oct. 2008.
- [C133] J. Zhang, J. G. Andrews, and R. W. Heath, "Single-user MIMO vs. Multiuser MIMO in the Broadcast Channel with CSIT Constraints", *Allerton*, pp. 309-314, Urbana-Champaign, IL, Sept. 2008.
- [C134] A. M. Hunter and J. G. Andrews. "On Adaptive Rate Control over Multiple Spatial Channels in Ad Hoc Networks", *Workshop on Spatial Stochastic Models for Wireless Networks*, pp. 469-474, Berlin, Germany, April 2008.
- [C135] S. Shim, J. S. Kwak, R. W. Heath, Jr., and J. G. Andrews, "Downlink MIMO Block Diagonalization in the Presence of Other-Cell Interference," *IEEE Globecom*, pp. 4354-4358, Washington, D.C., December 2007.
- [C136] J. Zhang and J. G. Andrews, "Cellular Communication with Randomly Placed Distributed Antennas," *IEEE Globecom*, pp. 1400-1404, Washington, D.C., December 2007.
- [C137] V. Chandrasekhar and J. G. Andrews, "Uplink Capacity and Interference Avoidance for Two-Tier Cellular Networks," *IEEE Globecom*, pp. 3322-3326, Washington, D.C., December 2007.
- [C138] R. Chen, J. G. Andrews, and R. W. Heath, Jr., "Efficient Transmit Antenna Selection for Multiuser MIMO Systems with Block Diagonalization," *IEEE Globecom*, pp. 3499-3503, Washington, DC, December 2007.
- [C139] N. Jindal, S. P. Weber, and J. G. Andrews, "Energy-Limited vs. Interference-Limited Ad Hoc Network Capacity", *IEEE Asilomar*, pp. 148-152, Pacific Grove, CA, Nov. 2007.
- [C140] K. Huang, J. G. Andrews, and R. W. Heath, "Throughput Scaling of Uplink SDMA with Limited Feedback", *IEEE Asilomar*, pp. 292-296, Pacific Grove, CA, Nov. 2007.
- [C141] J. Zhang, R. Chen, J. G. Andrews, and R. W. Heath, "Coordinated Multi-cell MIMO Systems with Cellular Block Diagonalization", *IEEE Asilomar*, pp. 1669-1673, Pacific Grove, CA, Nov. 2007.

- [C142] N. Jindal, S. P. Weber, and J. G. Andrews, "Fractional power control in ad hoc wireless networks", *Allerton*, Monticello, IL, Sept. 2007.
- [C143] N. Jindal, J. G. Andrews, and S. P. Weber, "Bandwidth-SINR Tradeoffs in Spatial Networks," *IEEE International Symposium on Information Theory*, Nice, France, June 2007.
- [C144] A. M. Hunter, J. G. Andrews, and S. P. Weber, "Capacity Scaling of Ad Hoc Networks with Spatial Diversity," *IEEE International Symposium on Information Theory*, Nice, France, June 2007.
- [C145] K. Huang, R. W. Heath, Jr., and J. G. Andrews, "Multiuser Limited Feedback for Wireless Multi-Antenna Communication," *IEEE International Symposium on Information Theory*, Nice, France, June 2007.
- [C146] J. S. Kwak, J. G. Andrews, and A. Lozano, "MIMO Capacity in Correlated Interference-Limited Channels," *IEEE International Symposium on Information Theory*, Nice, France, June 2007.
- [C147] K. Huang, J. G. Andrews, and R. W. Heath, Jr., "Orthogonal Beamforming for SDMA Downlink with Limited Feedback," *International Conference on Acoustics, Speech, and Signal Processing*, Honolulu, HI, pp. 97-100, May 2007.
- [C148] R. Chen, Z. Shen, J. G. Andrews, and R. W. Heath, Jr., "Low-Complexity User and Antenna Selection for Multiuser MIMO Systems with Block Diagonalization," *IEEE International Conference on Acoustics, Speech, and Signal Processing*, Honolulu, HI, pp. 613-616, May 2007.
- [C149] K. Huang, R. W. Heath, Jr., and J. G. Andrews, "SDMA with a Sum Feedback Rate Constraint," *IEEE International Conference on Acoustics, Speech, and Signal Processing*, Honolulu, HI, pp. 101-104, May 2007.
- [C150] N. Jindal, J. G. Andrews, and S. P. Weber, "Optimizing the SINR operating point of spatial networks," invited paper, *Information Theory and its Applications Workshop*, University of San Diego, 7 pages, January 2007.
- [C151] W. Choi, A. Forenza, J. G. Andrews, and R. W. Heath, Jr., "Capacity of Opportunistic Space Division Multiple Access with Beam Selection," *IEEE Globecom*, San Francisco, CA, December 2006.
- [C152] T. Kim and J. G. Andrews, "Balancing pilot and data power for adaptive MIMO-OFDM systems," *IEEE Globecom*, San Francisco, CA, December 2006.
- [C153] H. Cho and J. G. Andrews, "Greedy-Coordinated Scheduling with Resource-Sharing Constraints in Wireless Networks," *IEEE Globecom*, San Francisco, CA, December 2006.
- [C154] S. P. Weber and J. G. Andrews, "Bounds on the SIR distribution for a class of channel models in ad hoc networks," *IEEE Globecom*, San Francisco, CA, December 2006.
- [C155] R. Chen, J. G. Andrews, R. W. Heath, Jr., and A. Ghosh, "Power Control for Cellular MIMO Systems," *IEEE Globecom*, San Francisco, CA, December 2006.
- [C156] K. Huang, B. Mondal, R. W. Heath, Jr., and J. G. Andrews, "Effect of Feedback Delay on Multi-Antenna Limited Feedback for Temporally-Correlated Channels," *IEEE Globecom*, San Francisco, CA, December 2006.
- [C157] K. Huang, B. Mondal, R. W. Heath, Jr., and J. G. Andrews, "Multi-Antenna Limited Feedback for Temporally-Correlated Channels: Feedback Compression," *IEEE Globecom*, San Francisco, CA, December 2006. **Received Best Student Paper award in "Communication Systems"**.
- [C158] S. Weber and J. G. Andrews, "Transmission capacity of wireless ad hoc networks with channel variations," *IEEE Asilomar*, Pacific Grove, CA, pp. 13-17, November 2006.
- [C159] S. Weber, J. G. Andrews, and N. Jindal, "Throughput and transmission capacity of ad hoc networks with channel state information," *Allerton*, Monticello, IL, September 2006.

- [C160] W. Choi and J. G. Andrews, "The Capacity Gain from Base Station Cooperative Scheduling in a MIMO DPC Cellular System," *IEEE International Symposium on Information Theory*, Seattle, WA, pp. 1224-1228, July 2006.
- [C161] Z. Shen, R. Chen, J. G. Andrews, R. W. Heath, Jr., and B. L. Evans, "Sum Capacity of Multiuser MIMO Broadcast Channels with Block Diagonalization," *IEEE International Symposium on Information Theory*, Seattle, WA, pp. 886-890, July 2006.
- [C162] A. Hasan and J. G. Andrews, "Scheduling Using Near-optimal Guard Zones for CDMA Ad Hoc Networks," *IEEE Intl. Conference on Communications*, Istanbul, Turkey, pp. 4002-4007, June 2006.
- [C163] G. Gho and J. G. Andrews, "Improved Bit-Error Analysis for Time-Hopping Spread-Spectrum Impulse Radio Systems," *IEEE Intl. Conference on Communications*, Istanbul, Turkey, pp. 4763-4767, June 2006.
- [C164] K. Huang, B. Mondal, R. W. Heath, Jr., and J. G. Andrews, "Markov Models for Limited Feedback MIMO Systems," *IEEE International Conference on Acoustics, Speech, and Signal Processing*, Toulouse, France, pp. IV-IV, May 2006.
- [C165] S. Weber and J. G. Andrews, "A stochastic geometry approach to wideband ad hoc networks with channel variations," *Workshop on Spatial Stochastic Models for Wireless Networks*, Boston, MA, April 2006.
- [C166] W. Choi and J. G. Andrews, "Base Station Cooperative Scheduled Transmission in a Cellular MIMO TDMA System," *Conference on Information Sciences and Systems*, Princeton, NJ, pp. 105-110, March 2006.
- [C167] W. Choi, J. G. Andrews, and R. W. Heath, Jr., "Antenna Partitioning for Multiuser MIMO-CDMA," *IEEE Globecom*, St. Louis, MO, pp. 1535-1539, December 2005.
- [C168] Z. Shen, J. G. Andrews, and B. L. Evans, "Upper Bounds on MIMO Channel Capacity with Channel Frobenius Norm Constraints," *IEEE Globecom*, St. Louis, MO, pp. 1505-1509, December 2005.
- [C169] K. Huang and J. G. Andrews, "Unified Linear Precoding for Minimum SER," *IEEE Globecom*, St. Louis, MO, pp. 1495-1499, December 2005.
- [C170] T. Kim and J. G. Andrews, "Optimal pilot-to-data power ratio for MIMO-OFDM," *IEEE Globecom*, St. Louis, MO, pp. 1481-1485, December 2005.
- [C171] Z. Shen, R. Chen, J. G. Andrews, R. W. Heath, Jr., and B. L. Evans, "Low Complexity User Selection Algorithms for Multiuser MIMO Systems with Block Diagonalization," *IEEE Asilomar*, Pacific Grove, CA, pp. 628-632, November 2005.
- [C172] S. Weber, J. G. Andrews, X. Yang, and G. de Veciana, "Wireless Ad Hoc Networks with Successive Interference Cancellation," *Allerton Conference*, Monticello, IL, September 2005.
- [C173] J. Jeon, J. Lim, J. G. Andrews, K. Sung, "RLS adaptation of Widely Linear Minimum Output Energy Algorithm for DS-CDMA Systems," *IEEE Advanced Industrial Conference on Telecommunications*, Lisbon, Portugal, pp. 98-102, July 2005.
- [C174] W. Choi, J. G. Andrews, and C. Yi, "The Capacity of Multicellular Distributed Antenna Networks," *IEEE Wirellesscom*, Information Theory Symposium, Honolulu, HI, pp. 1337-1342, June 2005.
- [C175] J. Kim and J. G. Andrews, "An Energy Efficient Source Coding and Modulation Scheme for Wireless Sensor Networks," *IEEE Signal Processing Advances in Wireless Communications*, New York, NY, pp. 710-714, June 2005.
- [C176] W. Choi and J. G. Andrews, "On Spatial Multiplexing in Cellular MIMO-CDMA Systems with Linear Receivers," *IEEE International Conference on Communications*, Seoul, Korea, pp. 2277-2281, May 2005.

- [C177] J. Jeon, J. G. Andrews, and K. Sung, "Adaptive Widely Linear Minimum Output Energy Algorithm for DS-CDMA Systems," *IEEE International Conference on Communications*, Seoul, Korea, pp. 2117-2121, May 2005.
- [C178] X. Yang, A. Hasan, G. de Veciana, and J. G. Andrews, "Designing MAC Protocols for Spread Spectrum Ad Hoc Networks: Thinning versus Spatial State-Dependent Packing," *Conference on Information Sciences and Systems*, Baltimore, MD, March 2005.
- [C179] S. Weber, J. G. Andrews, G. de Veciana, and X. Yang, "Transmission capacity of CDMA ad hoc networks employing successive interference cancellation," *IEEE Globecom*, Dallas, TX, pp. 2838-2842, December 2004.
- [C180] W. Choi and J. G. Andrews, "Improved Bit Error Probability Analysis for Maximal Ratio Combining in Asynchronous CDMA Channels," *IEEE Globecom*, Dallas, TX, pp. 484-488, December 2004.
- [C181] W. Choi and J. G. Andrews, "Performance of the Delay Diversity Receiver in Asynchronous CDMA Channels," *IEEE Globecom*, Dallas, TX, pp. 2649-2653, December 2004.
- [C182] R. Chen, J. G. Andrews, and R. W. Heath, Jr., "Transmit Selection Diversity for Multiuser Spatial Multiplexing Systems," *IEEE Globecom*, Dallas, TX, pp. 2625-2629, December 2004.
- [C183] Z. Shen, R. W. Heath, Jr., J. G. Andrews, and B. L. Evans, "Comparison of Space-Time Water-filling and Spatial Water-filling for MIMO Fading Channels," *IEEE Globecom*, Dallas, TX, pp. 431-435, December 2004.
- [C184] A. Hasan and J. G. Andrews, "The Critical Radius in CDMA Ad hoc Networks," *IEEE Globecom*, Dallas, TX, pp. 3568-3572, December 2004.
- [C185] I. Wong, Z. Shen, B. L. Evans and J. G. Andrews, "A Low Complexity Algorithm for Proportional Resource Allocation in OFDMA Systems," *IEEE Signal Processing Systems*, Austin, TX, pp. 1-6, October 2004.
- [C186] S. Weber, X. Yang, G. de Veciana, and J. G. Andrews, "Transmission capacity of CDMA ad hoc networks," *IEEE International Symposium on Spread Spectrum Techniques and Applications*, Sydney, Australia, pp. 245-249, September 2004.
- [C187] W. Choi and J. G. Andrews, "Outage Probability for Maximal Ratio Combining Receivers in Asynchronous CDMA Channels," *IEEE International Symposium on Spread Spectrum Techniques and Applications*, Sydney, Australia, pp. 779-783, September 2004.
- [C188] A. Hasan and J. G. Andrews, "Cancellation Error Statistics in a Power-Controlled CDMA System Using Successive Interference Cancellation," *IEEE International Symposium on Spread Spectrum Techniques and Applications*, Sydney, Australia, pp. 419-423, September 2004.
- [C189] E. H. Choi, W. Choi, and J. G. Andrews, "Throughput of the 1x EV-DO System with Various Scheduling Algorithms," *IEEE International Symposium on Spread Spectrum Techniques and Applications*, Sydney, Australia, pp. 359-363, September 2004.
- [C190] T. Kim, J. Kim, J. G. Andrews, and T. S. Rappaport, "Multi-code Multicarrier CDMA: Performance Analysis," *IEEE International Conference on Communications*, Paris, France, pp. 973-977, June 2004.
- [C191] R. Chen, J. G. Andrews, and R. W. Heath, "Multiuser Space-Time Block Coded MIMO System with Downlink Precoding," *IEEE International Conference on Communications*, Paris, France, pp. 2689-2693, June 2004.
- [C192] Z. Shen, J. G. Andrews, and B. L. Evans, "Optimal Power Allocation in Multiuser OFDM Systems," *IEEE Globecom*, San Francisco, CA, Vol. 1, pp. 337-341, December 2003.
- [C193] Z. Shen, J. G. Andrews, and B. L. Evans, "Short Range Wireless Channel Prediction Using Local Information," *IEEE Asilomar*, Pacific Grove, CA, pp. 1147-1151, November 2003.

- [C194] A. Hasan and J. G. Andrews, "Cancellation Error Statistics in a CDMA System Using Successive Interference Cancellation," *Allerton*, Monticello, IL, pp. 1797-1806, October 2003.
- [C195] A. Hasan, K. Yang, and J. G. Andrews, "Clustered CDMA Ad Hoc Networks Without Closed-Loop Power Control," *IEEE Milcom*, Boston, MA, pp. 1030-1035, October 2003.
- [C196] M. Park, J. G. Andrews, and S. Nettles, "Wireless Channel-Aware Ad Hoc Cross-Layer Protocol with Multi-Route Path Selection Diversity," *IEEE Vehicular Technology Conference*, Orlando, FL, pp. 2197-2201, October 2003.
- [C197] J. G. Andrews and T. H. Meng, "Performance of Multicarrier CDMA with Successive Interference Cancellation with Estimation Error in a Multipath Fading Channel," *IEEE International Symposium on Spread Spectrum Techniques and Applications*, Prague, Czech Republic, pp. 150-154, Sep. 2002.
- [C198] J. G. Andrews, A. Agrawal, T. H. Meng, and J. Cioffi, "A Simple Iterative Power Control Scheme for Successive Interference Cancellation," *IEEE International Symposium on Spread Spectrum Techniques and Applications*, Prague, Czech Republic, pp. 761-765, September 2002.
- [C199] A. Agrawal, J. G. Andrews, J. Cioffi, and T. H. Meng, "Power Control for Successive Interference Cancellation with Imperfect Cancellation," *IEEE International Conference on Communications*, pp. 356-360, NY, NY, April 2002.
- [C200] J. G. Andrews and T. H. Meng, "Transmit Power and Other-Cell Interference Reduction via Successive Interference Cancellation with Imperfect Channel Estimation," *IEEE International Conference on Communications*, Helsinki, Finland, pp. 1940-1944, June 2001.
- [C201] J. G. Andrews and T. H. Meng, "Multiple Access Interference Cancellation in Fading Multipath Channels: Progress and Limitations," *IEEE Vehicular Technology Conference*, Rhodes, Greece, pp. 614-618, May 2001.
- [C202] J. G. Andrews and T. H. Meng, "Amplitude and Phase Estimation Considerations for Asynchronous CDMA with Successive Interference Cancellation," *IEEE Vehicular Technology Conference*, Boston, MA, pp. 1211-1215, September 2000.
- [C203] J. G. Andrews and T. H. Meng, "Power Reduction in Wireless Receivers Through Multistage Digital Filtering and Quantization," *IEEE Signal Processing Systems*, Taipei, Taiwan, pp. 523-531, Nov. 1999.

D. Patents and IP Disclosures

- [P1] J. G. Andrews and E. Balevi, "Autoencoder-Based Error Correction Coding For Low-Resolution Communication", U.S. Provisional Patent Application No. 62/891,747, filed Aug. 26, 2019.
- [P2] J. G. Andrews and V. Chandrasekhar, "Interference Management And Decentralized Channel Access Schemes In Hotspot-Aided Cellular Networks", US Patent 10,171,194, issued Jan. 1, 2019, filed June 19, 2015, Published Jan. 7, 2016. (Continuation of the '138 patent below)
- [P3] V. Chandrasekhar and J. G. Andrews, "Interference Management And Decentralized Channel Access Schemes In Hotspot-Aided Cellular Networks", US Patent 9,078,138, disclosed Nov. 2008, provisional filed Nov. 2008, issued July 7, 2015, held by UT Austin.
- [P4] In-Soo Hwang, Jong-Hyung Kwun, Jeff Andrews, Jin-Sam Kwak, Seijoon Shim, and Robert Heath, Jr., "Apparatus and method for interference cancellation in multi-antenna system", US Patent 8,135,349 B2, Filed March 14, 2008, issued March 13, 2012, licensed by Samsung.
- [P5] J. Kim and J. G. Andrews, "Method of Detecting Radio Frequency (RF) Signals using Spectral Covariance", disclosed May 20, 2010, to UT Austin.
- [P6] K. Huang, J. G. Andrews, R. W. Heath, "SDMA with a sum feedback rate constraint." disclosed Dec. 2006, provisional filed Dec. 2007, held by UT Austin.

- [P7] H. Lee, J. G. Andrews, and E. J. Powers, "Generating Space-time block codes from COIDs", disclosed 2007, licensed externally.
- [P8] T. Kim, J. Kim, J. G. Andrews, T. S. Rappaport, "Multi-code Multicarrier CDMA systems," disclosed Nov. 2003, US 2005/0249298 A1, licensed externally, then abandoned.

E. Other Major Publications

- [S1] J. Andrews, "Successive Interference Cancellation for Uplink CDMA," Ph.D. Dissertation, Stanford University, June 2002.

UNIVERSITY COMMITTEE ASSIGNMENTS AND LEADERSHIP:

- Co-Chair of ECE Junior Faculty Search Committee, 2019-20. (recruited 5+ new Asst Profs)
- Co-Chair of ECE Junior Faculty Search Committee, 2018-19 (recruited 5 new Asst Profs)
- Member of ECE Peer Evaluation Committee, 2017-18.
- Member of ECE Junior Faculty Search Committee, 2017-18.
- Member of ECE Senior (FII) Faculty Search Committee, 2015-17.
- Chair of ECE Planning Committee for the new EERC building, CSE, 2012-2017.
- Member of ECE Department Chair Search Committee, CSE, 2009-10
- Faculty recruiting committee for CommNetS, ECE, 2009
- Chair of ECE undergraduate communications course reform committee, ECE, 2007.
- Member of Edison Lecture Committee, ECE, 2005 – 2006
- Member of ECE Tech Area Admissions Committee, 2002 – present
- Member of ECE Appeals Committee, 2003 – 2008

PROFESSIONAL SOCIETY AND MAJOR GOVERNMENTAL SERVICE:

Editor-in-Chief

- IEEE Transactions on Wireless Communications, Jan. 1, 2014 – Jan. 1, 2017.

IEEE Leadership Activities

- Chair of Communication Theory Technical Committee, IEEE Communications Society (elected by members of the TC), 2021-22
- Director of Technical Committees, IEEE Communications Society (appointed by ComSoc VP of TEAC), 2021
- Chair of Emerging Technologies Committee, IEEE Communications Society (appointed by IEEE ComSoc President, oversees/incubates all emerging technical committees and initiatives), 2017-2019.
- Chair of the Steering Committee (Founding Chair), for the IEEE Journal on Selected Topics in Information Theory, 2017-2022
- Chair of Steering Committee, IEEE Transactions on Wireless Communications, 2019-2020.
- Steering Committee, IEEE Transactions on Wireless Communications, 2017-2020.
- Board of Governors, IEEE Information Theory Society, 2013-18 (two 3 year terms, elected and re-elected by members of the society).
- Chair of the Steering Committee (Founding Chair), IEEE Communication Theory Workshop, 2011-2018.
- IEEE Information Theory Society, Future Research Directions Committee, Chair, 2013-15.
- IEEE Information Theory Society, New Publications Committee, Co-Chair, 2016-2018.
- IEEE Communication Society, Appointed Member, Emerging Technologies Committee, 2012-15.

Award Committees

- Chair, Awards Committee, IEEE International Conference on Communications, 2021
- IEEE Alexander Graham Bell Medal, 2016 – 2018

Journal Editorial Board

- Editor, IEEE Trans. on Wireless Communications, July 2004 – Sept. 2008.

Guest Journal Editor

- IEEE Journal on Selected Areas in Communications, guest editor of special issue on "5G Wireless Communication Systems". June 2014 publication.
- IEEE Journal on Selected Areas in Communications, lead guest editor of special issue on "Femtocell Networks". April 2012 publication.
- Journal of Communications and Networks, guest editor of special issue on "Heterogeneous Networks".
- IEEE Journal on Selected Areas in Communications, special issue on "Stochastic Geometry and Random Graphs for Wireless Networks". Sept. 2009 publication.

Conference General Chair

- Co-Chair, Texas Wireless Summit (WNCG 15 Year Anniversary), Austin, TX, Oct. 2017.
- Co-Chair, Texas Wireless Summit (5G), Austin, TX, Oct. 2015.
- Co-Chair, Simons Workshop on Stochastic Geometry and Networks, Austin, TX, May 2015.
- Chair, IEEE Communication Theory Workshop, Cancun, Mexico, May 2010.
- Co-Chair (w/ Prof. Martin Haenggi, Notre Dame), IEEE Workshop on Spatial Stochastic Models for Wireless Networks (Spaswin), in conjunction with WiOpt, Seoul, Korea, July 2009.
- Chair, Texas Wireless Symposium, Austin, TX, October 2005

Technical Program Chair

- Technical Program Chair, IEEE Wireless Communications and Networking Conference (WCNC), Austin, Texas 2022.
- Technical Program Co-Chair (w/ R.W. Heath, UT), IEEE Globecom, Austin, TX, Nov. 2014.
- Technical Program Co-Chair (w/ Prof. W. Yu, Univ. of Toronto, Prof. M. Haenggi, Univ. of Notre Dame, Prof. Min Chen, Seoul National University), Communication Theory Symposium, IEEE International Conference on Communications, Ottawa, Canada, June 2012.
- Technical Area Co-chair (w/ Prof. R. Heath, UT), DSP for Wireless Applications, IEEE Vehicular Tech. Conf. (VTC), Fall 2005, Dallas, TX

Conference Organizing Committees

- Advisory Committee, IEEE Communication Theory Workshop, Fiji, May 2017.
- Advisory Committee, IEEE Communication Theory Workshop, Greece, May 2016.
- Advisory Committee, IEEE Communication Theory Workshop, Dana Point, CA, May 2015.
- Advisory Committee, IEEE Communication Theory Workshop, Curucao, June 2014.
- Advisory Committee, IEEE Communication Theory Workshop, Thailand, June 2013.
- Advisory Committee, IEEE Communication Theory Workshop, Hawaii, May 2012.
- Steering Committee, IEEE Workshop on Multicell Cooperation, Houston, TX, Dec. 2011.
- Steering Committee, IEEE ICC Workshop on Heterogeneous Networks, Kyoto, Japan, June 2011.
- Local Arrangements Co-Chair (w/ Prof. S. Vishwanath, UT), IEEE International Symposium on Information Theory, Austin, TX, July 2010.

- Fundraising Chair, IEEE Communication Theory Workshop, May 2008, US Virgin Islands
- Publicity Chair, IEEE Communication Theory Workshop, May 2006, Puerto Rico

INVITED TALKS

- [I1] Dec. 13, 2021, “High Dimensional 6G Networks via Site-Specific Deep Learning”, IEEE Wireless Communications Technical Committee Seminar.
- [I2] Dec. 2, 2021, “Learning Site-Specific Probing Beams for Fast mmWave Beam Alignment”, National Institute of Standards and Technology (NIST). [virtual]
- [I3] Nov. 19, 2021, “High Dimensional 6G Networks via Site-Specific Deep Learning”, Keynote, IEEE Latin-American Conference on Communications, Dominican Republic.
- [I4] Oct. 1, 2021, “A vision of 6G”, Invited seminar, Nokia Bell Labs (virtual).
 - a. Many different versions of this talk given during seminars, inc. for Ericsson, VMWare, Interdigital, Tektronix, Nvidia, etc.
- [I5] Feb. 4, 2020, “Unsupervised Deep Learning with a GAN for High Dimensional Wireless Communication”, Invited talk, *Information Theory and its Applications Workshop*, San Diego, CA.
- [I6] Dec. 14, 2019, “Machine Learning for Wireless Communications”, IEEE Globecom, Workshop on Machine Learning for Communications, Plenary Panel presentation.
- [I7] Aug. 8, 2019, “Reinforcement Learning in Cellular Networks: Antenna Tuning”, Futurewei University Days Workshop, Rolling Meadows, IL.
- [I8] Aug. 7, 2019, “Reinforcement Learning in Cellular Networks”, Nokia Bell Labs, Naperville, IL.
- [I9] Feb. 12, 2018, “Maximum area spectral efficiency for extremely dense cellular networks”, Invited talk, *Information Theory and its Applications Workshop*, San Diego, CA.
- [I10] Jan. 25, 2018, “Looking ahead to 5G”, Keynote talk, 13th annual Technology Futures Asset Valuation Conference, Austin, TX.
- [I11] June 15, 2017, “Are we approaching the fundamental limits of wireless network densification?”, Invited Seminar, University of Auckland, New Zealand.
- [I12] June 14, 2017, “New Results on Data Rate Scaling in Dense Cellular Networks”, IEEE Communication Theory Workshop, Fiji.
- [I13] Dec. 5, 2016, “The Promise and Perils of Ultradensification”, Keynote Talk, IEEE Globecom HetNetS industry workshop.
- [I14] Sept. 30, 2016, “Static or Dynamic TDD in Self-backhauled mmWave Cellular Networks?”, Nokia Bell Labs, Arlington Heights, IL.
- [I15] Sept. 9, 2016, "Towards Optimal Content Caching for D2D: Models, Analysis and Algorithms", Huawei, Plano, TX.
- [I16] Sept. 9, 2016, "Initial Access in Millimeter Wave Cellular Networks: Baseline Comparison and Future Extensions", Samsung Research Americas, Richardson, TX.
- [I17] June 23, 2016, “Are we approaching the fundamental limits of wireless network densification?”, Google Access, Mountain View, CA.
- [I18] June 22, 2016, “Are we approaching the fundamental limits of wireless network densification?”, Intel, Santa Clara, CA.
- [I19] Feb. 1, 2016, “Can Operators Simply Share Millimeter Wave Spectrum Licenses?”, invited talk, *Information Theory and its Applications Workshop*, San Diego, CA.
- [I20] Oct. 2, 2015, “Are we approaching the fundamental limits of wireless network densification?”, Northwestern University invited seminar, Evanston, IL.

- [I21] Oct. 1, 2015, "Are we approaching the fundamental limits of wireless network densification?", Nokia Innovation Day Distinguished Lecture, Arlington Heights, IL.
- [I22] Aug. 18, 2015, "Are we approaching the fundamental limits of wireless network densification?", Plenary Lecture, 2nd African Winter School on Information Theory and Communications, Kruger National Park, South Africa.
- [I23] Aug. 17, 2015, "A perspective on future directions in information theory research", Opening Keynote, 1st IEEE Seminar on Future Directions in Information Theory and Communications, Kruger National Park, South Africa.
- [I24] July 15, 2015, "Are we approaching the fundamental limits of wireless network densification?", invited seminar, Huawei R&D European Center, Paris, France.
- [I25] March 6, 2015, "Pondering the fundamental limits of densification", invited seminar, Huawei R&D Center, Plano, TX.
- [I26] March 5, 2015, "Pondering the fundamental limits of densification", invited seminar, Samsung Research Americas, Richardson, TX.
- [I27] Feb. 2, 2015, "Multi-slope path loss models for wireless communications: SINR and asymptotics", invited talk, *Information Theory and its Applications Workshop*, San Diego, CA.
- [I28] June 10, 2014, "Densifying Small Cell Networks: Microwave vs. Millimeter Wave", Opening Keynote, IEEE Small Cell and 5G Networks Workshop at ICC 2014, Sydney, Australia.
- [I29] Feb. 9, 2014, "Modeling a Dense Millimeter Wave Cellular Network", invited talk, *Information Theory and its Applications Workshop*, San Diego, CA.
- [I30] Jan. 28, 2014, "5G Cellular: How and why it will differ from 4G", Keynote address, 9th Annual Technology Futures Asset Valuation Conference, Austin, TX.
- [I31] Jan. 23, 2014, "HD Video Anytime, Anywhere: Is Density All We Need?", Intel/Cisco VAWN Workshop, Santa Clara, CA.
- [I32] Jan. 17, 2014, "5G Cellular Networks: Is Density All We Need?", Invited talk, Kings College, London, UK.
- [I33] Dec. 13, 2013, "Beyond 4G Cellular Networks: Is Density All We Need?", Opening Keynote, IEEE International Workshop on Emerging Technologies for LTE-Advanced and Beyond @ IEEE Globecom 2013, Atlanta, GA.
- [I34] August 8, 2013, "Modeling and Optimizing Rate in Heterogeneous Wireless Networks", Cisco Headquarters, Milpitas/San Jose, CA.
- [I35] June 24, 2013, "The Dark Art of Load Balancing in Heterogenous Networks", IEEE Communication Theory Workshop, session on "Self Organized Networks" organized by Andrea Goldsmith, Thailand.
- [I36] May 22, 2013, "Modeling and Optimizing Heterogeneous Network Capacity", Broadcom R&D, Sunnyvale, CA.
- [I37] March 26, 2013, "Modeling and Optimizing Heterogeneous Network Capacity", Samsung Dallas Technology Lab, Dallas, TX.
- [I38] March 26, 2013, "Multi-Antenna Transmission Capacity", Huawei R&D, Plano, TX.
- [I39] March 12 2013, "Towards a Comprehensive Understanding of Rate in Heterogeneous Cellular Networks", NYU-Poly.
- [I40] Feb. 12, 2013, "Cell Association and Load Balancing in Heterogeneous Cellular Networks", invited talk, *Information Theory and its Applications Workshop*, San Diego, CA.
- [I41] Feb. 8, 2013, "Towards a Comprehensive Understanding of Rate in Heterogeneous Cellular Networks", Qualcomm Research, San Diego, CA.

- [I42] Dec. 3, 2012, "HetNets: From Theory to Implementation", invited panelist at IEEE HetNets Workshop, Anaheim, CA.
- [I43] Oct. 22, 2012, "Video Offloading: The Key to 66x", Intel/Cisco VAWN Workshop, Santa Clara, CA. Winner of "**Best Technical Talk**" Award, given by Intel, Cisco and Verizon.
- [I44] Sept. 21, 2012, "Video Streaming over HetNets", Intel/Cisco VAWN Program.
- [I45] Aug. 27, 2012, "The 7 Ways HetNets Will Change Nearly Everything in 5G Cellular (and 4G too)", Huawei University Days, Ottawa Canada.
- [I46] June 6, 2012, "The seven ways small cells are forever changing wireless communications", Keynote Address, *IEEE Small Cells Workshop*, Ottawa, Canada.
- [I47] May 16, 2012, "The seven ways HetNets are changing wireless communications – forever", invited talk, *IEEE Communication Theory Workshop*, Maui, HI, USA.
- [I48] Feb. 6, 2012, "On fundamental limits of cooperation in wireless networks", invited talk, *Information Theory and its Applications Workshop*, San Diego, CA.
- [I49] Sept. 29, 2011, "The Net Benefit of Delayed Finite-Rate Feedback in the MISO Broadcast Channel", Allerton Conference.
- [I50] July 22, 2011, "How Can Cellular Networks Handle 1000x The Data?", Corporate R&D University Seminar, Qualcomm, San Diego, CA.
- [I51] July 15, 2011, "How Can Cellular Networks Handle 1000x The Data?", ISL Seminar, Stanford University.
- [I52] July 14, 2011, "Social Networks meet Wireless Networks", DARPA social networking workshop, Stanford University.
- [I53] June 23, 2011, "The Increasing Relevance of Random Spatial Models for Cellular Networks", AT&T Labs, Austin, TX.
- [I54] June 13, 2011, "Cellular 1000x?", invited lecture, Panasonic Corporate R&D Lab, Yokohama, Japan.
- [I55] May 9, 2011, "Cellular Network Trends and the Increasing Relevance of Random Spatial Models", Keynote address, *Workshop on Spatial Stochastic Models for Wireless Networks*, Princeton, NJ.
- [I56] May 5, 2011, "Cellular 1000x?", inaugural seminar of the "Wireless Leader" seminar series as The Wireless Institute, University of Notre Dame, South Bend, IN.
- [I57] Mar. 23-25, 2011, "Heterogeneous Cellular Networks: Promise and Challenges", given at Texas Instruments, Samsung R&D, Commscope, and Huawei, in Dallas, TX.
- [I58] Feb. 7, 2011, "A Tractable Framework for Coverage and Outage in Heterogeneous Cellular Networks", invited talk, *Information Theory and its Applications Workshop*, UCSD.
- [I59] Jan. 13, 2011, "Hot Topics in Wireless Technology and Research", Keynote address, 6th Annual Technology Futures Asset Valuation Conference, Austin, TX.
- [I60] Dec. 6, 2010, "Understanding Femtocell Overlaid Cellular Networks", Keynote address, IEEE Femtocell Workshop (in conjunction with IEEE Globecom), Miami, FL.
- [I61] Aug. 27, 2010, "Advanced Heterogeneous Network Design", Huawei, Dallas, TX.
- [I62] April 1, 2010, "Understanding Wireless Networks with Spatial Randomness via Transmission Capacity", Invited Seminar, Princeton University, NJ.
- [I63] March 5, 2010, "Understanding Femtocells", Texas Instruments, Dallas, TX.
- [I64] Feb. 1, 2010, "Should I share my femtocell?", Information Theory and its Applications (ITA) workshop, San Diego, CA.
- [I65] Sept. 21, 2009, "Recommendations to the FCC: 4G for rural wireless broadband", FCC field hearing for FCC Commissioner Meredith Atwell Baker, Austin, TX.

- [I66] May 12, 2009, "Transmission capacity of multiuser MIMO in ad hoc networks", invited lecture, *IEEE Communication Theory Workshop*, Napa, CA.
- [I67] Feb. 10, 2009, "Getting a handle on decentralized network capacity through stochastic geometry, with lessons for ad hoc, mesh, Wi-Fi, and femtocell networks", Qualcomm Research Center, San Diego, CA.
- [I68] Feb. 9, 2009, "A closed-form order-optimal approach to multihop ad hoc network capacity", Information Theory and its Applications (ITA) workshop, San Diego, CA.
- [I69] July 23, 2008, "Getting a handle on decentralized network capacity through stochastic geometry, with lessons for ad hoc, mesh, Wi-Fi, and femtocell networks", Intel, Santa Clara.
- [I70] April 4, 2008, "Transmission capacity: Characterizing ad hoc networks with stochastic geometry", University of Texas at Dallas.
- [I71] January 28, 2008, "Non-equilibrium information theory for ad hoc networks", invited presentation, Information Theory and its Applications (ITA) workshop, San Diego, CA.
- [I72] August 21, 2007, "A grand challenge on network information theory", invited lecture (Victor Bahl), Microsoft Research, Redmond, WA.
- [I73] May 25, 2007, "Transmission capacity: Characterizing ad hoc networks with stochastic geometry", Invited Lecture (Wei Yu), University of Toronto, Canada.
- [I74] May 24, 2007, "Non-equilibrium Information Theory", Nortel Distinguished Lecture Series, Nortel, Ottawa, Canada.
- [I75] March 28, 2007, "Meeting DARPA's Grand Challenge: Non-equilibrium Information Theory," Invited Lecture, Freescale Semiconductor, Austin, TX.
- [I76] February 23, 2007, "Transmission capacity: Characterizing ad hoc networks with stochastic geometry," Invited Lecture (Krishna Narayanan), Texas A&M University.
- [I77] December 8, 2006, "Transmission capacity: Characterizing ad hoc networks with stochastic geometry," Bell Labs (Crawford Hill).
- [I78] December 7, 2006, "MIMO and Interference," AT&T Labs, Florham Park, N.J.
- [I79] November 3, 2006, "Transmission capacity: Characterizing ad hoc networks with stochastic geometry," Invited Lecture (Moe Win), Massachusetts Institute of Technology.
- [I80] August 8, 2006, "Wireless Broadband with WiMAX: Hype and Reality," Plenary Lecture, NIWeek RF and Wireless Communications Summit, Austin, TX.
- [I81] June 2, 2006, "System Level Modeling of Broadband Wireless Networks, "Plenary Address, WiMAX forum on system level modeling, AT&T Labs, New Jersey.
- [I82] April 7, 2006, "The Transmission Capacity: An Interference-Centric Perspective on Ad Hoc Network Capacity," Invited Lecture, Rice University, Houston, TX.
- [I83] June 10, 2005, "To spread or not to spread in wireless ad hoc networks?," Invited Lecture (Piyush Gupta), Bell Labs, Lucent Technologies, Murray Hill, NJ.
- [I84] May 19, 2005, "To spread or not to spread in wireless ad hoc networks?," Special KAIST-UT Austin workshop on wireless networking, Korea Advanced Institute of Science and Technology (KAIST), Daejeon, Korea.
- [I85] May 16, 2005, "Distributed multiple antenna systems," SOLiD Technologies, Seoul, Korea.
- [I86] April 21, 2005, "Wireless Broadband Data Access with 802.16/WiMax: Current Performance and Future Potential," Invited Lecture, IEEE Communications Society of Central Texas, Austin, TX.
- [I87] March 31, 2005, "To spread or not to spread in wireless ad hoc networks?," Invited Lecture, Hewlett-Packard Labs, Palo Alto, CA.

- [I88] March 18, 2005, "Transmission capacity of wireless ad hoc networks," Invited Seminar (Rohit Nabar), EE Dept., Imperial College of London.
- [I89] February 15, 2005, "The 2005 Edison Lecture: Communications," LBJ Auditorium, The University of Texas at Austin.
- [I90] February 7, 2005, "Transmission capacity of wireless ad hoc networks," Guest Seminar, EECS Dept., Univ. of California, Berkeley.
- [I91] February 4, 2005, "Transmission capacity of wireless ad hoc networks," Guest Seminar (Andrea Goldsmith), Electrical Engineering Dept., Stanford University, California.
- [I92] September 27, 2004, "Wireless Broadband Data Access with 802.16/WiMax: Current Performance and Future Potential," Wireless Communications Group, SBC Laboratories, Austin, TX.
- [I93] August 24, 2004, "Transmission capacity of wireless ad hoc networks," Guest Seminar, Electrical and Computer Engineering Dept., University of Auckland, New Zealand.
- [I94] July 13, 2004, "Transmission capacity of wireless ad hoc networks," Invited Lecture (Alan Gatherer), DSP Solutions R&D Center, Texas Instruments, Dallas, TX.
- [I95] June 4, 2004, "Corporate-Academic Alliances and Affiliate Programs," Panelist, Council for Advancement and Support of Education Conference, San Francisco, CA.
- [I96] June 2, 2004, "Multiple access in multicarrier systems for wireless broadband," Invited Seminar, Intel Labs, Santa Clara, CA.
- [I97] April 9, 2004, "Transmission capacity of wireless ad hoc networks," Invited Lecture (Vahid Tarokh), Harvard University, Cambridge, MA.
- [I98] March 22, 2004, "The Universe of Wireless: What are Future Applications?," Plenary Session, McCombs School of Business PLUS Spring Program, Austin, TX.
- [I99] March 8, 2004, "Tutorial: RF/Wireless Network Basics," Invited Tutorial, The Industrial Wireless Applications Summit, San Diego, California. Co-presented with Dr. Mihir Ravel (National Instruments) and Eric Reifsneider (Wireless Valley, Inc).
- [I100] February 24, 2004, "Recent results on successive interference cancellation for CDMA cellular and ad hoc networks," Invited Lecture (Phil Schniter), The Ohio State University, Columbus, OH.
- [I101] December 8, 2003, "Recent results on successive interference cancellation for CDMA cellular and ad hoc networks," Invited Lecture (Maya Gupta), University of Washington, Seattle, WA.
- [I102] May 12, 2003, "Successive Interference Cancellation for Uplink CDMA," Invited Lecture (Avneesh Agrawal), QUALCOMM Wideband CDMA System Design Group, Campbell, CA
- [I103] April 22, 2003, "Code Division Multiple Access for Wireless Communications," Invited Talk (John Molinder), Harvey Mudd College, Claremont, CA.
- [I104] April 21, 2003, "Successive Interference Cancellation for Cellular and Ad Hoc CDMA," Invited Lecture (Keith Chugg), University of Southern California, Los Angeles, CA.
- [I105] January 31, 2003, "Successive Interference Cancellation for Uplink CDMA, and Ongoing Research Projects," Invited Lecture (Behnaam Aazhang), Rice University, Houston, TX.
- [I106] November 16, 2002, "Power Control for Successive Interference Cancellation," Texas Systems Day, The University of Texas, Arlington.
- [I107] October 29, 2002, "Successive Interference Cancellation for 3G CDMA," Invited Lecture (Anand Dabak), DSP Solutions R&D Center, Texas Instruments, Dallas, TX.
- [I108] April 15, 2002, "Successive Interference Cancellation for Uplink CDMA," Faculty Candidate Seminar, The University of Texas, Austin.

- [I109] May 11, 2001, "CDMA and Successive Interference Cancellation," Invited Lecture (Adnan Al-Alaoui), The American University of Beirut, Lebanon.
- [I110] February, 2001, "Power Control for Imperfect Successive Interference Cancellation," Invited Lecture (Bill McFarland), Atheros, Inc., Sunnyvale, CA.

GRANTS AND CONTRACTS

All the below are as sole Principal Investigator (PI) unless otherwise noted. Does not include WNCG annual distributions from the Industrial Affiliates program.

- [G1] Lincoln Labs, "Theoretical Foundations and Optimization of Millimeter Wave Ad Hoc Networks", \$92,000 contract, Sept. 2021-Aug. 2022, PI.
- [G2] Qualcomm Innovation Fellowship, awarded to my students Akash Doshi and Manan Gupta, resulting in \$100,000 gift to my account, Sept. 2021.
- [G3] Nvidia, "Deep Reinforcement Learning for Spectrum Access in 6G", \$60,000 gift, May 2021-May 2022.
- [G4] Facebook, "Automated user association and load balancing for multiband cellular networks", \$60,000 gift, Jan. 1, 2021-Dec. 31, 2021.
- [G5] Qualcomm Faculty Award, \$75,000, July 2020.
- [G6] Lincoln Labs, "Theoretical Foundations and Optimization of Millimeter Wave Ad Hoc Networks", \$100,000 contract, Sept. 2020-Aug. 2021, PI. Co-PI: Robert Heath.
- [G7] National Science Foundation, "CIF: Small: Deep Generative Models for Ultra High-Dimensional Communication", \$165,000 grant, July 2021, PI. Co-PI: Alex Dimakis, Co-I: Eren Balevi.
- [G8] AT&T, "Base Station Antenna Tuning using Deep Reinforcement Learning", \$100,000 gift, Jan. 1, 2020 to Dec. 31, 2021.
- [G9] Samsung, "Beam Management in 5G", \$120,000 gift, Aug. 15, 2019-Sept. 2021, PI.
- [G10] Intel, "Channel Estimation for 5G receivers using Deep Learning", \$75,000 gift, Jan. 1, 2019-May 30, 2020.
- [G11] Huawei, "Full stack machine learning for 5G networks", \$300,000 gift, my share \$60K. PI: Joydeep Ghosh. Ends Sept. 2019.
- [G12] AT&T, "End-to-End Link-Level Verification of Low-Resolution Transceivers in mmWave Systems with Practical Impairments", \$100,000 contract, Jan. 1, 2018-Dec. 30, 2019, co-PI. PI: R. Heath.
- [G13] Samsung, "Learning New Layer 0 and Layer 1 Communication Theory with Low-Resolution Receivers for 6G Multi-Gbps Communication", \$120,000 gift, Aug. 15, 2018-2019, PI.
- [G14] Nokia, "Learning Routes and Link Schedules in mmWave IAB Deployments via Reinforcement Learning", Aug. 2019-present, \$120,000 gift.
- [G15] Samsung, "Exploratory Research for Beyond 5G systems" 2017-18, \$50,000 gift (WNCG Level 2), PI. Co-PI: F. Baccelli.
- [G16] Nokia, "Millimeter Self-Backhauling Networks", \$60,000 gift, Sept. 2017-Aug. 2018.
- [G17] Samsung, "Initial access in millimeter wave cellular systems", \$40,000 gift (WNCG Level 2), PI. Co-PI: F. Baccelli. Jan. 1 – Dec. 31, 2016.
- [G18] AT&T, "Millimeter Wave Spectrum License Sharing", \$40,000 gift (WNCG Level 2), PI, Co-PI: R. W. Heath, Jan. 1, 2016-Dec. 31, 2016.
- [G19] Crown Castle, "How Much Network Densification Will Be Needed by 2025?",\$90,000 gift (WNCG Level 2), PI. Co-PI: R. W. Heath. Sept. 1, 2015 – Aug. 30, 2017.
- [G20] Nokia, "Millimeter Wave Cellular: System Level Modeling, Analysis, and Optimization (Phase 4)", \$60,000 gift, Sept. 2016-Aug. 2017.

- [G21] National Science Foundation, "CIF: Medium: Fundamental Properties of Millimeter Wave Networks: Signal, Interference, and Connectivity", \$1,000,000, PI. co-PIs: R. Heath and F. Baccelli, July 2015-June 2019.
- [G22] Samsung, "Interference modeling in dense millimeter wave cellular networks", \$40,000 gift, PI. Co-PI: F. Baccelli. Jan. 1 – Dec. 31, 2015.
- [G23] Nokia, "Millimeter Wave Cellular: System Level Modeling, Analysis, and Optimization (Phase 3)", \$60,000 gift, Sept. 2015-Aug. 2016.
- [G24] Huawei, "Caching in D2D Networks", \$120,000 gift, Sept. 1, 2014-Aug. 31, 2016.
- [G25] Texas Department of Transportation, MegaProject 0-6838, "Bringing smart transport to Texans: Ensuring the benefits of a connected and autonomous transport system in Texas", \$698,423 (my share approx. \$25,000), Co-PI. PI: Kara Kockleman. Jan. 16, 2015 – Jun. 30, 2016.
- [G26] Texas Department of Transportation, Project 0-6845, "Connected Vehicle Problems, Challenges, and Major Technologies", \$335,000 (my share approx. \$100,000), Co-PI. PI: Chandra Bhat. Jan. 1, 2015-Dec. 31, 2016.
- [G27] Nokia Solutions and Networks, "Millimeter Wave Cellular: System Level Modeling, Analysis, and Optimization (Phase 2)", \$60,000 gift, Sept. 2014-Aug. 2015.
- [G28] Broadcom Foundation, "Wireless Communications Research", \$50,000 gift, (\$25K each year in 2014 and 2015).
- [G29] Nokia Solutions and Networks, "Models and Methods for "On/Off" 5G Cellular Systems", \$60,000 gift, Sept. 2013-Aug. 2014.
- [G30] Huawei, "Optimizing LTE-A and Beyond Cellular Networks for MBB Services", \$56,000 gift.
- [G31] Huawei, "D2D Network Optimization", co-PI Constantine Caramanis, \$70,000 gift.
- [G32] Nokia Siemens Networks, "Theory of Device-to-Device Communication", \$60,000 gift, Sept. 2012-Aug. 2013.
- [G33] Huawei, "Heterogeneous Network Optimization", \$63,000 gift, Dec. 2011-Dec. 2012. Co-PI: Constantine Caramanis.
- [G34] Nokia Siemens Networks, "Carrier Aggregation in Heterogeneous Networks", \$65,000 gift, Sept. 2011-Aug. 2012.
- [G35] National Science Foundation, "Heterogeneous Wireless Network Connectivity and Capacity", \$424,524 grant (co-PI: Radha K. Ganti, my share 100%), Oct. 2010-Sept. 2013.
- [G36] Motorola, "Managing Femtocell Networks", \$65,000 gift, Sept. 2010-Aug. 2011.
- [G37] Intel and Cisco, "Perceptual Optimization of Wireless Video Networks", \$900,000 gift (my share \$180,000), Sept. 2010-Aug. 2013. PI: Robert W. Heath.
- [G38] AT&T Labs, "Intercell interference coordination", \$80,000 gift, Sep. 2009 – Aug 2011.
- [G39] USFON, "Universal open broadband access", \$15,000 gift, Jan. 2008 – Jan. 2009.
- [G40] AT&T Labs, "Advanced Techniques for Multiuser MIMO", \$40,000 gift, Jan. 2008 – Jan 2009. Co-PI: Robert Heath.
Texas Instruments, "Femtocell Networks", \$41,200 gift, Jan. 2008-Jan. 2009.
- [G41] Cisco, "The capacity of network coding in ad hoc networks", \$92,000 gift (Sept. 2007 – Aug. 2008), Co-PI: Gustavo de Veciana.
- [G42] Freescale, "Coordinated Uplink Multicell Scheduling," \$60,000 gift, (January 2007 – May 2008), Co-PI: Constantine Caramanis.
- [G43] AT&T Laboratories, "Coordinated Multicell MIMO in WiMAX," \$36,335 contract, \$12,700 gift, (January 2007 - January 2008), Co-PI: Robert Heath.
- [G44] National Science Foundation, "CAREER: The Transmission Capacity of Hierarchical Ad Hoc Networks," \$400,000 grant, (February 2007 - February 2012).

- [G45] Defense Advanced Research Projects Agency, "Rethinking MANETs: Non- equilibrium Information Theory," IT-MANET program, \$6,541,201 (my share about \$1,100,000), (September 2006 – March 2012).
- [G46] National Science Foundation, "Collaborative Research: Cognitive Ad Hoc Networks: Capacity Optimization Through Local Adaptation," \$350,000 grant, (my share \$115,000), (September 2006 - December 2009).
- [G47] Texas Instruments, "Multiple antenna (MIMO) mesh networks for broadband backhaul," \$47,450 gift, (January 2006 – January 2008).
- [G48] AT&T Laboratories, "MIMO in WiMAX: Achieving high throughput in a high interference environment," \$36,335 contract, \$12,700 gift, (January 2006 - January 2007), Co-PI: Robert Heath.
- [G49] National Instruments, "Multiple Antenna Wireless Ad Hoc Networks," \$30,000 gift, (November 2005 - December 2006).
- [G50] Army Research Laboratory, "Massively Broadband Wireless Ad Hoc Nodes," Grant W911NF-05-2-0044, \$909,487, (Co-PI, my share \$151,581), (July 2005 –September 2006). PI: Ted Rappaport. Other Co-PIs: Shakkottai, Heath, Nettles, de Veciana.
- [G51] SBC Laboratories, "Multi-antenna Multiuser Enhancements for 802.16d/e," \$36,500 contract, \$12,000 gift, (January 2005 - January 2006), Co-PI: Robert Heath.
- [G52] Freescale Semiconductor, "Reducing PA output back off through multi-layer PAR reduction and Predistortion," \$80,000 gift, (\$20K each for 6 months in January 2005, September 2005, January 2006 and September 2006), Co-PI: Ed Powers.
- [G53] Freescale Semiconductor, "Crosstechnology Optimization for IEEE 802.16d/e," \$60,000 gift, (January 2005 - September 2006). Co-PI: Robert Heath.
- [G54] Solid Technologies, "Distributed MIMO systems for future cellular networks," \$48,000 gift, (January 2005 - January 2006).
- [G55] Freescale Semiconductor, "MIMO-CDMA for increased voice capacity in cellular networks," \$40,000 gift, (January 2005 – January 2006), Co-PI: Robert Heath.
- [G56] Intel, "Multiuser wireless communications and technologies for wireless broadband data access," \$36,990 unrestricted top end equipment grant (8 notebooks, 3 dual-processor workstations, 8 desktops, 1 printer), October 2004.
- [G57] National Science Foundation, "Exploiting Flexible PHYs in Networks: Prototype and Algorithms," CNS-0435307, \$600,000 grant, (Co-PI, my share \$100,000), (September 2004 - September 2006), PI: Scott Nettles.
- [G58] Bandspeed, "Correction for nonlinearities in OFDM power amplifiers," \$36,500 gift in semester increments, August 2004 – January 2006.
- [G59] Texas Instruments, "Advanced Multicarrier Techniques for Fourth Generation (4G) Cellular," \$42,000 gift, (July 2004 - September 2005).
- [G60] National Instruments, "Degrees of Freedom in Multicarrier Modulation: Theory and Practice using LabVIEW," \$29,000 gift, (August 2004 - September 2005).
- [G61] National Instruments, "MIMO Ad Hoc Battlefield Networks in Dense Urban Environments," Co-PI with R. Heath (PI), S. Nettles, and K. Dandekar, \$70,000 gift (my share \$17,500 total), May 2004.
- [G62] SBC Labs, "Wireless Broadband Access for the Last Mile," \$31,300 gift, \$17,124 research contract, (January 2004 - January 2005).
- [G63] Intrinsity, "OFDM research and prototyping," \$8,600 gift, \$7,000 in equipment (FastMATH evaluation board), August 2003.

- [G64] Intel Corporation, "Multiuser Wireless Communications," \$24,500 in hardware (9 high-end Dell workstations), May 2003.
- [G65] National Instruments, "Third Generation (3G) Code Division Multiple Access (CDMA) Research in LabView," \$26,000 gift, January 2003 (to January 2004).
- [G66] University of Texas, Summer Research Advancement (SRA), "High Capacity Ad Hoc Networks Using Successive Interference Cancellation," \$16,444 in summer 2003 funding, January 2003.

PH.D. SUPERVISIONS

A. Completed (reverse chronological order)

1. Ahmad Alammouri, "Analysis of Cellular Networks: Densification and Data Traffic Dynamics", (co-advised by Francois Baccelli), Dec. 2020. Joined Samsung Research Americas, Richardson, TX.
2. Rebal Al-Jurdi, "Scheduling Observers and Agents over a Shared Medium with Hard Delivery Deadlines" (co-advised by Robert Heath), 2019. Joined Samsung Research Americas, Richardson, TX.
3. Mandar Kulkarni, "System Design Issues in Dense Urban Millimeter Wave Cellular Networks", 2018. Joined Samsung Research Americas, Richardson, TX.
4. Derya Malak, "Modeling and Analyzing Device-to-Device Content Distribution in Cellular Networks", 2017. Joined MIT as a postdoc. Now faculty at Eurecom.
5. Yingzhe Li, "Modeling and Analyzing the Evolution of Cellular Networks using Stochastic Geometry", co-advised by Francois Baccelli, 2017. Joined Samsung Research, Silicon Valley.
6. Abhishek Gupta, "Association and Spectrum Sharing in Cellular Networks", co-advised by Robert Heath, 2016. Joined Samsung Research Americas, Richardson, TX for a year before joining IIT Kanpur as an Assistant Professor.
7. Qiaoyang Ye, "Small Cell and D2D Offloading in Heterogeneous Cellular Networks", 2015, co-supervised by Constantine Caramanis. Joined Intel, Santa Clara, CA.
8. Sarabjot Singh, "Modeling and Analysis of Offloading in Heterogeneous Networks", 2014. Joined Nokia Research, then Intel Labs, now is at a stealth-mode Silicon Valley startup.
9. Xingqin Lin, "Integrated Cellular and Device-to-Device Networks", 2014. Joined Ericsson Research, Silicon Valley.
10. Harpreet Dhillon, "Fundamental Principles of Heterogeneous Cellular Networks", 2013. Joined Virginia Tech as faculty.
11. Andrew Hunter, "Capacity of Multi-Antenna Ad Hoc Networks via Stochastic Geometry", 2012. Joined MIT Lincoln Labs, Cambridge, MA.
12. Ping Xia, "Interference Management in Heterogeneous Cellular Networks", 2012. Joined Qualcomm Research, San Diego, then Snapchat.
13. Tom Novlan, "Fractional Frequency Reuse for Multi-Tier Cellular Networks", 2012. Joined Samsung Research Americas, now with AT&T Labs, Austin, TX.
14. Behrang Nosrat-Makouei, "Designing MIMO Interference Alignment Networks", joint w/ R. Heath, 2012. Joined Tarana Wireless, Silicon Valley.
15. Chun-Hung Liu, "Distributed Transmission Strategies in Wireless Ad Hoc Networks: A Transmission-Capacity Perspective", 2011. Joined National Chiao Tung University as Assistant Professor.
16. Jaeweon Kim, "Bandwidth and power efficient wireless spectrum sensing networks", 2011. Joined National Instruments, Austin, TX.
17. Jun Zhang, "Adapting MIMO Networks to Manage Interference", 2009.
18. Vikram Chandrasekhar, "Coexistence in Femtocell-aided Cellular Architectures", 2009.
19. Kaibin Huang, "MIMO Networking with Imperfect Channel State Information", co-supervised by Robert Heath, 2008.

20. Runhua Chen, "Multiuser MIMO Systems in Single-cell and Multi-Cell Wireless Communication", co-supervised by Robert Heath, 2007.
21. Wan Choi, "Multiple Antenna Communications in an Interference- Limited Environment", 2006.
22. Taeyoon Kim, "Rate-Robustness Tradeoffs in Multicarrier Wireless Communications", 2006
23. Aamir Hasan, "Interference Suppression in Ad Hoc Networks", 2006
24. Zukang Shen, "Multiuser Resource Allocation in Multichannel Wireless Communications", co-supervised by Brian Evans, 2006

B. Current Ph.D. Candidates

- Akash Doshi
- Ian Roberts (co-advised by Sriram Vishwanath)
- Manan Gupta
- Yuqiang Ethan Heng

C. Current Post-M.S. Students

- Eun Sun Kim
- Ezgi Tugul
- Nicholas Olson (co-advised by Robert Heath)

M.S. SUPERVISIONS

A. Completed

1. Akash Doshi, 2020
2. Yuqiang Ethan Heng, 2019
3. Ezgi Tekgul, 2019
4. Manan Gupta, 2019
5. Jacob Winick, 2019 (co-advised with Sriram Vishwanath)
6. Rebal Al-Jurdi, 2017. (co-advised by Robert Heath)
7. Mandar Kulkarni, 2015.
8. Arthur Ishiguro 2014.
9. Andrew Kerns (co-advised by Todd Humphreys, No-Thesis/No-Report) 2014.
10. Sarabjot Singh, No-Thesis/No-Report, 2012
11. Qiaoyang Ye (co-advised by Constantine Caramanis), No-Thesis/No-Report, 2012
12. Jiaming Xu, No-Thesis/No-Report, 2011
13. Rahul Mehta, No-Thesis/No-Report, 2010
14. Ping Xia, No-Thesis/No-Report, 2010
15. Yuxin Chen, No-Thesis/No-Report, 2010
16. Tom Novlan, No-Thesis/No-Report, 2009
17. Rayyan Jaber, No-Thesis/No-Report, 2008
18. Steven Peters, *Thesis*: Iterative Decoding of Product Codes for Software Radio, 2007
19. Norberto Degara, *Report*: Resource Allocation in Multiuser Multicarrier Uplink Cellular Wireless Systems, co-supervised by Constantine Caramanis, 2007
20. Andrew Hunter, No-Thesis/ No-Report, 2006
21. Paul Yang, No-Thesis/ No-Report, 2005
22. Ahmet Toker, No-Thesis/ No-Report, 2005
23. Nils Bagge, No-Thesis/ No-Report, 2005
24. Vikrant Venkateshwar, *Report*: Co-channel Interference Cancellation for OFDM Systems Using the Expectation Maximization Algorithm, 2004
25. Harshal Ingole, *Thesis*: A Medium Access Control Protocol for CDMA-Based Ad Hoc Networks, 2004
26. Srivatsan Srinivasan, No-Thesis/ No-Report, 2004

27. Zukang Shen, No-Thesis/ No-Report, co-supervised by Brian Evans, 2003

B. In Progress

– William Blount (co-advised by Todd Humphreys)

POSTDOCTORAL FELLOWS

1. Eren Balevi (2018 – 2021), PhD Middle East Technical University. Now at Qualcomm, San Diego.
2. Xincheng Zhang (2013–2014), PhD University of Notre Dame. Simons Chair Postdoc, Co-advised by Robert Heath. Now at Qualcomm, San Diego.
3. Kyoung Jae Lee (2011-12), PhD Korea University. Now Asst. Professor at Hanbat National University, South Korea.
4. Beiyu Rong (2010-11), PhD University of Maryland. Now at Marvell, Silicon Valley.
5. Radha Krishna Ganti (2009-11), PhD University of Notre Dame. Now Asst. Professor at IIT Madras.
6. Han Shin Jo (2009-11), PhD Yonsei University. Now Asst. Professor at Hanbat National University, South Korea.
7. Illsoo Sohn (2009-10), PhD Seoul National University. Now Asst. Professor at Gachon University, South Korea.
8. Marios Kountouris (2008-9), PhD ENST (Eurocomm), France. Now Assistant Professor at the Supelec, Paris.
9. Han Gyu Cho (2005-7), PhD Yonsei University. Now at Samsung, South Korea.
10. Jin Sam Kwak (2005-6), PhD Seoul National University. Now at LG Electronics, South Korea.

VISITING RESEARCHERS HOSTED:

1. Nour Kouzayha (American Univ. of Beirut, student of Z. Dawy), Jan. 2016-June 2016.
2. Yuwei Ren (Beijing Univ. of Posts and Telecom & Datang Mobile), Sept. 2015-Mar. 2017.
3. Yifei Huang (Australia National Univ, student of X. Zhou), Oct. 2015- Feb. 2015.
4. Howard Yang (Singapore Univ. of Technology and Design, student of T. Quek), Aug. 2015-April 2016.
5. Yeqing Hu (Monash University, Australia, student of J. Evans), Aug. 2015-Dec. 2015.
6. Hisham El Shaer (Vodafone and Kings College, UK, 2015, student of M. Dohler).
7. Yingxiao (Jessie) Zhang (Chinese University of Hong Kong, 2014-15, student of A. Zhang)
8. Giovanni Geraci (University of New South Wales, Australia, 2013, student of J. Yuan)
9. Ralph Tanbourgi (Karlsruhe Technical Institute, Germany, 2013, Student of F. Jondral)
10. Prof. Kwang Soon Kim (Yonsei University, Korea, 2010-11)
11. Young Jin Sang (Yonsei University, Korea, 2010-11, student of Prof. KS Kim)
12. Ilmu Byun (Yonsei University, Korea, 2010-11, student of Prof. KS Kim)
13. Flavio Fabbri (University of Bologna, 2010, student of Prof. R. Verdone)
14. Jemin Lee (Yonsei University, Korea, 2008-9, student of Prof. D. Hong)
15. Hua Wang (Technical University of Denmark, 2008, student of Prof. V. Iversen)
16. Viet Nguyen (Ecole National Superior, France, 2008, student of Prof. F. Baccelli)
17. Jae-Jin Jeon (Seoul National University, 2003-2004, student of Prof. K. Sung)

UNDERGRADUATE STUDENTS ADVISED (Excludes routine Senior Project Advising):

1. Ahmet Budak, 2017 on caching Netflix videos in wireless networks
2. Nikhil Garg, 2014-15 (Won an NSF Graduate Fellowship, joined EE PhD program at Stanford)
3. David Taylor, Blake Byerly, Steven Eckhoff, and Nathan Hu, "Cellular network spatial modeling", 2011-12. (David published a Globecom paper on his contributions).
4. Chris Slaughter, "Wireless ad hoc network routing protocols", 2008-9. (Chris joined Sriram Vishwanath's group for a PhD).

5. Tom Novlan and David Battershell, "Wireless sensor network and network driven robot project," Honors Senior Design Project, Spring 2007. (Tom completed a PhD under my supervision).
6. Robert Newsome, Fall 2004, Joydeep Basak and Nathan Drexler, "A real-time MP3 player using Intrinsicity FastMATH processor," Honors Senior Design Project, Fall 2003. (Robert joined MIT for a PhD).
7. Saad Godil, "Turbo Codes for LabVIEW Communications Toolkit," Summer 2003.
8. Kevin Yang, "Ad hoc network power control", Fall 2002 – Spring 2003. (Kevin published an IEEE Milcom paper).

CONSULTING:

Alston Bird/Corning, Sep. 2020 – present.
 Quinn Emanuel and Norton Rose Fulbright / Qualcomm, Jan. 2017 – present.
 McGuire Woods / Sprint, Dec. 2016 – Aug. 2021
 AT&T, Sprint, Verizon, Nokia, and Ericsson, Fall 2019 – April 2020.
 Quinn Emanuel/Nokia, T-Mobile, Sprint, Sept. 2018 – May 2019.
 Gibson, Dunn & Crutcher / AT&T Mobility, Jan. 2015 – Aug. 2015.
 Gibson, Dunn & Crutcher / AT&T Mobility and Cricket Communications, Jan. 2015 – Dec. 2016.
 Quinn Emanuel / Kyocera, Oct. 2014 – March 2016.
 Wilmer Hale / Apple, April 2015 – Dec. 2015.
 Mavrakakis/Apple, Aug. 2014 – March 2015.
 Wilmer Hale & Quinn Emanuel / Verizon, AT&T, Alcatel-Lucent, Sprint, Oct. 2012 – July 2016.
 Nixon Peabody *et al*/Sierra Wireless *et al* (joint defense), Aug. 2012 – Mar. 2013
 Quinn Emanuel / Mediatek, Aug. 2012 – Sept. 2012.
 Kirkland Ellis / Samsung, June 2012 – Nov. 2013.
 Wilmer Hale / Ford, Jan. 2012 – July 2012.
 Kirkland Ellis / Apple, Oct. 2011 – June 2012.
 Hudson River Trading Company, Nov. 2011 – Mar. 2012
 Wilmer Hale / Intel, July 2011 – June 2013.
 Wilmer Hale / Apple, Mar. 2010 – June 2011
 Jones Day/Sprint and Sidley Austin/US Cellular, July 2010 – Feb. 2011
 Quinn Emanuel / Clearwire, Jan. 2008 – Jan. 2010
 Townsend / CSIRO, Spring 2005 – Summer 2009
 Stream Processors, Inc., December 2007 – March 2008
 Fish and Richardson / XM Radio, Spring 2007 – Fall 2008
 WiMAX Forum, Spring 2006 - Fall 2006
 ADC, Fall 2005 - Spring 2006, Fall 2007 – Spring 2009
 Dynavox Technologies, Fall 2005 - Spring 2005
 Space Data Corporation, Summer 2004 - Fall 2004
 WSGR / Palm, Fall 2003 - Summer 2004
 New West Ventures, Fall 2002