

**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:**

Professor, Dept. of Electrical and Computer Engineering, UT Austin, Sept. 2012 – present.  
Cullen Trust for Higher Education Endowed Professorship of Engineering (#1), Sept. 2013 – present.

**PREVIOUS ACADEMIC POSITIONS:**

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.  
Research Assistant, Stanford University, Fall 1997 – June 2002

**HONORS AND AWARDS:**

- 2019, IEEE Kiyoo Tomiyasu Award, “for contributions to wireless communication systems”. This is an IEEE-level annual 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, American Society of Engineering Education/Hewlett Packard Terman Award, "bestowed annually upon an outstanding young ECE educator".
- 2015, Co-author of 1<sup>st</sup> annual 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, Named a "Thomson Reuters Highly Cited Researcher" and designated by them as one of "The World's Most Influential Scientific Minds" (also in **2015, 2016, 2017**).
- 2014, Co-Author, Best Student Paper Award, European Wireless Conference.
- 2014, Named a "Top 100 Wireless Technology Expert" by Today's Wireless World, one of just 3 academics.
- 2014, EURASIP Best Paper Award for the EURASIP Journal on Advances in Signal Processing.
- 2013, Recipient of Cullen Trust for Higher Education Endowed Professorship of Engineering #1.
- 2013, Best Paper Award, *IEEE Intl. Conf. on Communications*, Wireless Communications 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, Named 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 (1<sup>st</sup> 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, 1<sup>st</sup> 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 Medal 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 – Present  
Eonsil, Austin, Board of Advisors, July 2010 – 2013  
RCR Wireless News, Technical Advisory Board, Sept. 2011 – Present.  
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 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] R. Jurdi, S. Khosravirad, H. Viswanathan, J. G. Andrews, R. W. Heath "Outage of Periodic Downlink Wireless Networks with Hard Deadlines", submitted to *IEEE Trans. on Communications*, June 2018.
- [J2] M. K. Kulkarni, A. Ghosh, J. G. Andrews, "How Many Hops Can Self-Backhauled Millimeter Wave Cellular Networks Support?", submitted to *IEEE Trans. on Wireless Communications*, Apr. 2018.
- [J3] D. Malak, H. Huang and J. G. Andrews, "Throughput Maximization for Delay-Sensitive Random Access Communication", under revision, *IEEE Trans. on Wireless Communications*, Nov. 2017.

#### **Journal Publications – Accepted/Appeared**

- [J4] A. Alammouri, J. G. Andrews, and F. Baccelli, "A Unified Asymptotic Analysis of Area Spectral Efficiency in Ultradense Cellular Networks", to appear, *IEEE Trans. on Information Theory*.
- [J5] M. Kulkarni, E. Visotsky, and J. G. Andrews, "Correction Factor for Analysis of MIMO Wireless Networks With Highly Directional Beamforming", to appear, *IEEE Wireless Communications Letters*.
- [J6] Y. Li, F. Baccelli, J. G. Andrews, and C. Zhang, "Directional Cell Search Delay Analysis for Cellular Networks with Static Users", to appear, *IEEE Trans. on Communications*.
- [J7] J. Park, J. G. Andrews, and R. W. Heath, "Inter-Operator Base Station Coordination in Spectrum-Shared Millimeter Wave Cellular Networks", to appear, *IEEE Transactions on Cognitive Communications and Networking*.
- [J8] R. Jurdi, A. Gupta, J. G. Andrews, and R. W. Heath, "Modeling Co-location in Multi-Operator mmWave Networks with Spectrum Sharing", to appear, *IEEE Transactions on Cognitive Communications and Networking*.
- [J9] 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.
- [J10] 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.
- [J11] 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.
- [J12] 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.
- [J13] 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.

- [J14] 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.
- [J15] 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.
- [J16] 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.
- [J17] 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.
- [J18] 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.
- [J19] 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.
- [J20] 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.
- [J21] 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.
- [J22] 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.
- [J23] 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.
- [J24] 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.
- [J25] 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.
- [J26] 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.
- [J27] 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.
- [J28] 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.

- [J29] 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.
- [J30] 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.
- [J31] 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.
- [J32] 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.
- [J33] 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.**
- [J34] 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.
- [J35] 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.
- [J36] 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.
- [J37] 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.
- [J38] 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.
- [J39] 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.
- [J40] 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.
- [J41] 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.
- [J42] 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.
- [J43] 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.
- [J44] 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.

- [J45] 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.
- [J46] 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.
- [J47] 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.
- [J48] 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.
- [J49] 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.
- [J50] 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.
- [J51] 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.
- [J52] 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.
- [J53] 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.
- [J54] 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.
- [J55] 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.
- [J56] 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.**
- [J57] 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.
- [J58] 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.
- [J59] 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.
- [J60] 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

- [J61] 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.**
- [J62] 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
- [J63] 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.
- [J64] 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.
- [J65] 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.
- [J66] 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.
- [J67] 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.
- [J68] 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.
- [J69] 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.
- [J70] 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.
- [J71] 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.
- [J72] 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.
- [J73] J. G. Andrews, "Seven Ways that HetNets are a Cellular Paradigm Shift", *IEEE Communications Magazine*, Vol. 51, No. 3, pp. 136-44, Mar. 2013.
- [J74] 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.
- [J75] 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.
- [J76] 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.
- [J77] 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.
- [J78] 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. **Selected as a "Distinguished Article" by the IEEE Multimedia Comm. Tech. Committee.**

- [J79] 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
- [J80] 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.
- [J81] 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.
- [J82] 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.
- [J83] 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.
- [J84] 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.
- [J85] 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.
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- [C162] 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.
- [C163] 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.
- [C164] 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.
- [C165] 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.
- [C166] 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.

- [C167] 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.
- [C168] 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.
- [C169] 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.
- [C170] 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.
- [C171] 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.
- [C172] 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.
- [C173] 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.
- [C174] 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.
- [C175] 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.
- [C176] 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.
- [C177] 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.
- [C178] 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 V. Chandrasekhar, "Interference Management And Decentralized Channel Access Schemes In Hotspot-Aided Cellular Networks", Pending US Patent Application 2016/0006527, Filed June 19, 2015, Published Jan. 7, 2016.
- [P2] 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.
- [P3] 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.
- [P4] J. Kim and J. G. Andrews, "Method of Detecting Radio Frequency (RF) Signals using Spectral Covariance", disclosed May 20, 2010, to UT Austin.
- [P5] 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.

- [P6] H. Lee, J. G. Andrews, and E. J. Powers, "Generating Space-time block codes from COIDs", disclosed 2007, patent pending, licensed externally.
- [P7] 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:**

- 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 Emerging Technologies Committee, IEEE Communications Society (appointed by IEEE ComSoc President, oversees/incubates all emerging technical committees and initiatives).
- Chair of the Steering Committee (Founding Chair), for the proposed journal IEEE Journal on Selected Topics in Information Theory, 2017-present
- 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.
- Steering Committee, IEEE Transactions on Wireless Communications, 2017-2020.
- 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**

- 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 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, Curacao, 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] Feb. 12, 2018, "Maximum area spectral efficiency for extremely dense cellular networks", Invited talk, *Information Theory and its Applications Workshop*, San Diego, CA.
- [I2] Jan. 25, 2018, "Looking ahead to 5G", Keynote talk, 13<sup>th</sup> annual Technology Futures Asset Valuation Conference, Austin, TX.
- [I3] June 15, 2017, "Are we approaching the fundamental limits of wireless network densification?", Invited Seminar, University of Auckland, New Zealand.
- [I4] June 14, 2017, "New Results on Data Rate Scaling in Dense Cellular Networks", IEEE Communication Theory Workshop, Fiji.

- [I5] Dec. 5, 2016, "The Promise and Perils of Ultradensification", Keynote Talk, IEEE Globecom HetNetS industry workshop.
- [I6] Sept. 30, 2016, "Static or Dynamic TDD in Self-backhauled mmWave Cellular Networks?", Nokia Bell Labs, Arlington Heights, IL.
- [I7] Sept. 9, 2016, "Towards Optimal Content Caching for D2D: Models, Analysis and Algorithms", Huawei, Plano, TX.
- [I8] Sept. 9, 2016, "Initial Access in Millimeter Wave Cellular Networks: Baseline Comparison and Future Extensions", Samsung Research Americas, Richardson, TX.
- [I9] June 23, 2016, "Are we approaching the fundamental limits of wireless network densification?", Google Access, Mountain View, CA.
- [I10] June 22, 2016, "Are we approaching the fundamental limits of wireless network densification?", Intel, Santa Clara, CA.
- [I11] Feb. 1, 2016, "Can Operators Simply Share Millimeter Wave Spectrum Licenses?", invited talk, *Information Theory and its Applications Workshop*, San Diego, CA.
- [I12] Oct. 2, 2015, "Are we approaching the fundamental limits of wireless network densification?", Northwestern University invited seminar, Evanston, IL.
- [I13] Oct. 1, 2015, "Are we approaching the fundamental limits of wireless network densification?", Nokia Innovation Day Distinguished Lecture, Arlington Heights, IL.
- [I14] Aug. 18, 2015, "Are we approaching the fundamental limits of wireless network densification?", Plenary Lecture, 2<sup>nd</sup> African Winter School on Information Theory and Communications, Kruger National Park, South Africa.
- [I15] Aug. 17, 2015, "A perspective on future directions in information theory research", Opening Keynote, 1<sup>st</sup> IEEE Seminar on Future Directions in Information Theory and Communications, Kruger National Park, South Africa.
- [I16] July 15, 2015, "Are we approaching the fundamental limits of wireless network densification?", invited seminar, Huawei R&D European Center, Paris, France.
- [I17] March 6, 2015, "Pondering the fundamental limits of densification", invited seminar, Huawei R&D Center, Plano, TX.
- [I18] March 5, 2015, "Pondering the fundamental limits of densification", invited seminar, Samsung Research Americas, Richardson, TX.
- [I19] 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.
- [I20] 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.
- [I21] Feb. 9, 2014, "Modeling a Dense Millimeter Wave Cellular Network", invited talk, *Information Theory and its Applications Workshop*, San Diego, CA.
- [I22] Jan. 28, 2014, "5G Cellular: How and why it will differ from 4G", Keynote address, 9<sup>th</sup> Annual Technology Futures Asset Valuation Conference, Austin, TX.
- [I23] Jan. 23, 2014, "HD Video Anytime, Anywhere: Is Density All We Need?", Intel/Cisco VAWN Workshop, Santa Clara, CA.
- [I24] Jan. 17, 2014, "5G Cellular Networks: Is Density All We Need?", Invited talk, Kings College, London, UK.
- [I25] 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.
- [I26] August 8, 2013, "Modeling and Optimizing Rate in Heterogeneous Wireless Networks", Cisco Headquarters, Milpitas/San Jose, CA.

- [I27] 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.
- [I28] May 22, 2013, "Modeling and Optimizing Heterogeneous Network Capacity", Broadcom R&D, Sunnyvale, CA.
- [I29] March 26, 2013, "Modeling and Optimizing Heterogeneous Network Capacity", Samsung Dallas Technology Lab, Dallas, TX.
- [I30] March 26, 2013, "Multi-Antenna Transmission Capacity", Huawei R&D, Plano, TX.
- [I31] March 12 2013, "Towards a Comprehensive Understanding of Rate in Heterogeneous Cellular Networks", NYU-Poly.
- [I32] Feb. 12, 2013, "Cell Association and Load Balancing in Heterogeneous Cellular Networks", invited talk, *Information Theory and its Applications Workshop*, San Diego, CA.
- [I33] Feb. 8, 2013, "Towards a Comprehensive Understanding of Rate in Heterogeneous Cellular Networks", Qualcomm Research, San Diego, CA.
- [I34] Dec. 3, 2012, "HetNets: From Theory to Implementation", invited panelist at IEEE HetNets Workshop, Anaheim, CA.
- [I35] 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.
- [I36] Sept. 21, 2012, "Video Streaming over HetNets", Intel/Cisco VAWN Program.
- [I37] Aug. 27, 2012, "The 7 Ways HetNets Will Change Nearly Everything in 5G Cellular (and 4G too)", Huawei University Days, Ottawa Canada.
- [I38] June 6, 2012, "The seven ways small cells are forever changing wireless communications", Keynote Address, *IEEE Small Cells Workshop*, Ottawa, Canada.
- [I39] May 16, 2012, "The seven ways HetNets are changing wireless communications – forever", invited talk, *IEEE Communication Theory Workshop*, Maui, HI, USA.
- [I40] Feb. 6, 2012, "On fundamental limits of cooperation in wireless networks", invited talk, *Information Theory and its Applications Workshop*, San Diego, CA.
- [I41] Sept. 29, 2011, "The Net Benefit of Delayed Finite-Rate Feedback in the MISO Broadcast Channel", Allerton Conference.
- [I42] July 22, 2011, "How Can Cellular Networks Handle 1000x The Data?", Corporate R&D University Seminar, Qualcomm, San Diego, CA.
- [I43] July 15, 2011, "How Can Cellular Networks Handle 1000x The Data?", ISL Seminar, Stanford University.
- [I44] July 14, 2011, "Social Networks meet Wireless Networks", DARPA social networking workshop, Stanford University.
- [I45] June 23, 2011, "The Increasing Relevance of Random Spatial Models for Cellular Networks", AT&T Labs, Austin, TX.
- [I46] June 13, 2011, "Cellular 1000x?", invited lecture, Panasonic Corporate R&D Lab, Yokohama, Japan.
- [I47] 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.
- [I48] May 5, 2011, "Cellular 1000x?", inaugural seminar of the "Wireless Leader" seminar series as The Wireless Institute, University of Notre Dame, South Bend, IN.
- [I49] Mar. 23-25, 2011, "Heterogeneous Cellular Networks: Promise and Challenges", given at Texas Instruments, Samsung R&D, Commscope, and Huawei, in Dallas, TX.

- [I50] Feb. 7, 2011, "A Tractable Framework for Coverage and Outage in Heterogeneous Cellular Networks", invited talk, *Information Theory and its Applications Workshop*, UCSD.
- [I51] Jan. 13, 2011, "Hot Topics in Wireless Technology and Research", Keynote address, 6<sup>th</sup> Annual Technology Futures Asset Valuation Conference, Austin, TX.
- [I52] Dec. 6, 2010, "Understanding Femtocell Overlaid Cellular Networks", Keynote address, IEEE Femtocell Workshop (in conjunction with IEEE Globecom), Miami, FL.
- [I53] Aug. 27, 2010, "Advanced Heterogeneous Network Design", Huawei, Dallas, TX.
- [I54] April 1, 2010, "Understanding Wireless Networks with Spatial Randomness via Transmission Capacity", Invited Seminar, Princeton University, NJ.
- [I55] March 5, 2010, "Understanding Femtocells", Texas Instruments, Dallas, TX.
- [I56] Feb. 1, 2010, "Should I share my femtocell?", Information Theory and its Applications (ITA) workshop, San Diego, CA.
- [I57] Sept. 21, 2009, "Recommendations to the FCC: 4G for rural wireless broadband", FCC field hearing for FCC Commissioner Meredith Atwell Baker, Austin, TX.
- [I58] May 12, 2009, "Transmission capacity of multiuser MIMO in ad hoc networks", invited lecture, *IEEE Communication Theory Workshop*, Napa, CA.
- [I59] 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.
- [I60] 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.
- [I61] 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.
- [I62] April 4, 2008, "Transmission capacity: Characterizing ad hoc networks with stochastic geometry", University of Texas at Dallas.
- [I63] January 28, 2008, "Non-equilibrium information theory for ad hoc networks", invited presentation, Information Theory and its Applications (ITA) workshop, San Diego, CA.
- [I64] August 21, 2007, "A grand challenge on network information theory", invited lecture (Victor Bahl), Microsoft Research, Redmond, WA.
- [I65] May 25, 2007, "Transmission capacity: Characterizing ad hoc networks with stochastic geometry", Invited Lecture (Wei Yu), University of Toronto, Canada.
- [I66] May 24, 2007, "Non-equilibrium Information Theory", Nortel Distinguished Lecture Series, Nortel, Ottawa, Canada.
- [I67] March 28, 2007, "Meeting DARPA's Grand Challenge: Non-equilibrium Information Theory," Invited Lecture, Freescale Semiconductor, Austin, TX.
- [I68] February 23, 2007, "Transmission capacity: Characterizing ad hoc networks with stochastic geometry," Invited Lecture (Krishna Narayanan), Texas A&M University.
- [I69] December 8, 2006, "Transmission capacity: Characterizing ad hoc networks with stochastic geometry," Bell Labs (Crawford Hill).
- [I70] December 7, 2006, "MIMO and Interference," AT&T Labs, Florham Park, N.J.
- [I71] November 3, 2006, "Transmission capacity: Characterizing ad hoc networks with stochastic geometry," Invited Lecture (Moe Win), Massachusetts Institute of Technology.
- [I72] August 8, 2006, "Wireless Broadband with WiMAX: Hype and Reality," Plenary Lecture, NIWeek RF and Wireless Communications Summit, Austin, TX.
- [I73] June 2, 2006, "System Level Modeling of Broadband Wireless Networks," Plenary Address, WiMAX forum on system level modeling, AT&T Labs, New Jersey.

- [I74] April 7, 2006, "The Transmission Capacity: An Interference-Centric Perspective on Ad Hoc Network Capacity," Invited Lecture, Rice University, Houston, TX.
- [I75] 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.
- [I76] 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.
- [I77] May 16, 2005, "Distributed multiple antenna systems," SOLiD Technologies, Seoul, Korea.
- [I78] 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.
- [I79] March 31, 2005, "To spread or not to spread in wireless ad hoc networks?," Invited Lecture, Hewlett-Packard Labs, Palo Alto, CA.
- [I80] March 18, 2005, "Transmission capacity of wireless ad hoc networks," Invited Seminar (Rohit Nabar), EE Dept., Imperial College of London.
- [I81] February 15, 2005, "The 2005 Edison Lecture: Communications," LBJ Auditorium, The University of Texas at Austin.
- [I82] February 7, 2005, "Transmission capacity of wireless ad hoc networks," Guest Seminar, EECS Dept., Univ. of California, Berkeley.
- [I83] February 4, 2005, "Transmission capacity of wireless ad hoc networks," Guest Seminar (Andrea Goldsmith), Electrical Engineering Dept., Stanford University, California.
- [I84] September 27, 2004, "Wireless Broadband Data Access with 802.16/WiMax: Current Performance and Future Potential," Wireless Communications Group, SBC Laboratories, Austin, TX.
- [I85] August 24, 2004, "Transmission capacity of wireless ad hoc networks," Guest Seminar, Electrical and Computer Engineering Dept., University of Auckland, New Zealand.
- [I86] July 13, 2004, "Transmission capacity of wireless ad hoc networks," Invited Lecture (Alan Gatherer), DSP Solutions R&D Center, Texas Instruments, Dallas, TX.
- [I87] June 4, 2004, "Corporate-Academic Alliances and Affiliate Programs," Panelist, Council for Advancement and Support of Education Conference, San Francisco, CA.
- [I88] June 2, 2004, "Multiple access in multicarrier systems for wireless broadband," Invited Seminar, Intel Labs, Santa Clara, CA.
- [I89] April 9, 2004, "Transmission capacity of wireless ad hoc networks," Invited Lecture (Vahid Tarokh), Harvard University, Cambridge, MA.
- [I90] March 22, 2004, "The Universe of Wireless: What are Future Applications?," Plenary Session, McCombs School of Business PLUS Spring Program, Austin, TX.
- [I91] 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).
- [I92] 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.
- [I93] 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.
- [I94] May 12, 2003, "Successive Interference Cancellation for Uplink CDMA," Invited Lecture (Avneesh Agrawal), QUALCOMM Wideband CDMA System Design Group, Campbell, CA

- [I95] April 22, 2003, "Code Division Multiple Access for Wireless Communications," Invited Talk (John Molinder), Harvey Mudd College, Claremont, CA.
- [I96] April 21, 2003, "Successive Interference Cancellation for Cellular and Ad Hoc CDMA," Invited Lecture (Keith Chugg), University of Southern California, Los Angeles, CA.
- [I97] January 31, 2003, "Successive Interference Cancellation for Uplink CDMA, and Ongoing Research Projects," Invited Lecture (Behnaam Aazhang), Rice University, Houston, TX.
- [I98] November 16, 2002, "Power Control for Successive Interference Cancellation," Texas Systems Day, The University of Texas, Arlington.
- [I99] October 29, 2002, "Successive Interference Cancellation for 3G CDMA," Invited Lecture (Anand Dabak), DSP Solutions R&D Center, Texas Instruments, Dallas, TX.
- [I100] April 15, 2002, "Successive Interference Cancellation for Uplink CDMA," Faculty Candidate Seminar, The University of Texas, Austin.
- [I101] May 11, 2001, "CDMA and Successive Interference Cancellation," Invited Lecture (Adnan Al-Alaoui), The American University of Beirut, Lebanon.
- [I102] February, 2001, "Power Control for Imperfect Successive Interference Cancellation," Invited Lecture (Bill McFarland), Atheros, Inc., Sunnyvale, CA.

## **PH.D. SUPERVISIONS**

### **A. Completed (reverse chronological order)**

1. Mandar Kulkarni, "System Design Issues in Dense Urban Millimeter Wave Cellular Networks", 2018. Joined Samsung Research Americas, Richardson, TX.
2. Derya Malak, "Modeling and Analyzing Device-to-Device Content Distribution in Cellular Networks", 2017. Joined MIT as a postdoc.
3. Yingzhe Li, "Modeling and Analyzing the Evolution of Cellular Networks using Stochastic Geometry", co-advised by Francois Baccelli, 2017. Joined Samsung Research, Silicon Valley.
4. 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.
5. Qiaoyang Ye, "Small Cell and D2D Offloading in Heterogeneous Cellular Networks", 2015, co-supervised by Constantine Caramanis. Joined Intel, Santa Clara, CA.
6. 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.
7. Xingqin Lin, "Integrated Cellular and Device-to-Device Networks", 2014. Joined Ericsson Research, Silicon Valley.
8. Harpreet Dhillon, "Fundamental Principles of Heterogeneous Cellular Networks", 2013. Joined Virginia Tech as an Assistant Professor.
9. Andrew Hunter, "Capacity of Multi-Antenna Ad Hoc Networks via Stochastic Geometry", 2012. Joined MIT Lincoln Labs, Cambridge, MA.
10. Ping Xia, "Interference Management in Heterogeneous Cellular Networks", 2012. Joined Qualcomm Research, San Diego, CA. Now at Snapchat.
11. Tom Novlan, "Fractional Frequency Reuse for Multi-Tier Cellular Networks", 2012. Joined Samsung Research Americas, now with AT&T Labs, Austin, TX.
12. Behrang Nosrat-Makouei, "Designing MIMO Interference Alignment Networks", joint w/ R. Heath, 2012. Joined Tarana Wireless, Silicon Valley.
13. Chun-Hung Liu, "Distributed Transmission Strategies in Wireless Ad Hoc Networks: A Transmission-Capacity Perspective", 2011. Joined National Chiao Tung University as Assistant Professor.
14. Jaeweon Kim, "Bandwidth and power efficient wireless spectrum sensing networks", 2011. Joined National Instruments, Austin, TX.

15. Jun Zhang, "Adapting MIMO Networks to Manage Interference", 2009.
16. Vikram Chandrasekhar, "Coexistence in Femtocell-aided Cellular Architectures", 2009.
17. Kaibin Huang, "MIMO Networking with Imperfect Channel State Information", co-supervised by Robert Heath, 2008.
18. Runhua Chen, "Multiuser MIMO Systems in Single-cell and Multi-Cell Wireless Communication", co-supervised by Robert Heath, 2007.
19. Wan Choi, "Multiple Antenna Communications in an Interference- Limited Environment", 2006
20. Taeyoon Kim, "Rate-Robustness Tradeoffs in Multicarrier Wireless Communications", 2006
21. Aamir Hasan, "Interference Suppression in Ad Hoc Networks", 2006
22. Zukang Shen, "Multiuser Resource Allocation in Multichannel Wireless Communications", co-supervised by Brian Evans, 2006

**B. Current Ph.D. Candidates**

**C. Current Post-M.S. Students**

- Rebal Al-Jurdi (co-advised by Robert Heath)
- Ahmad Alammouri (co-advised by Francois Baccelli)

**M.S. SUPERVISIONS**

**A. Completed**

1. Rebal Al-Jurdi, 2017. (co-advised by Robert Heath)
2. Mandar Kulkarni, 2015.
3. Arthur Ishiguro 2014.
4. Andrew Kerns (co-advised by Todd Humphreys, No-Thesis/No-Report) 2014.
5. Sarabjot Singh, No-Thesis/No-Report, 2012
6. Qiaoyang Ye (co-advised by Constantine Caramanis), No-Thesis/No-Report, 2012
7. Jiaming Xu, No-Thesis/No-Report, 2011
8. Rahul Mehta, No-Thesis/No-Report, 2010
9. Ping Xia, No-Thesis/No-Report, 2010
10. Yuxin Chen, No-Thesis/No-Report, 2010
11. Tom Novlan, No-Thesis/No-Report, 2009
12. Rayyan Jaber, No-Thesis/No-Report, 2008
13. Steven Peters, *Thesis*: Iterative Decoding of Product Codes for Software Radio, 2007
14. Norberto Degara, *Report*: Resource Allocation in Multiuser Multicarrier Uplink Cellular Wireless Systems, co-supervised by Constantine Caramanis, 2007
15. Andrew Hunter, No-Thesis/ No-Report, 2006
16. Paul Yang, No-Thesis/ No-Report, 2005
17. Ahmet Toker, No-Thesis/ No-Report, 2005
18. Nils Bagge, No-Thesis/ No-Report, 2005
19. Vikrant Venkateshwar, *Report*: Co-channel Interference Cancellation for OFDM Systems Using the Expectation Maximization Algorithm, 2004
20. Harshal Ingole, *Thesis*: A Medium Access Control Protocol for CDMA-Based Ad Hoc Networks, 2004
21. Srivatsan Srinivasan, No-Thesis/ No-Report, 2004
22. Zukang Shen, No-Thesis/ No-Report, co-supervised by Brian Evans, 2003

**B. In Progress**

- Manan Gupta
- Ethan Heng

**POSTDOCTORAL FELLOWS**

1. Eren Balevi (2018 – ), PhD Middle East Technical University.

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 Intrinsity 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).