

David N.C. Tse

Curriculum Vitae

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Research interests: Wireless communications, information theory, networking.

Education:

- M.S. (1991), Ph.D. (1994) in electrical engineering, Massachusetts Institute of Technology, Cambridge, MA.
- B.A.Sc. (1989) in systems design engineering, University of Waterloo, Canada.

Positions Held:

- Professor, Dept. of EECS, U.C. Berkeley, July, 2002 - present.
- Associate Professor, Dept. of EECS, U.C. Berkeley, July, 2000 - June 2002.
- Assistant Professor, Dept. of EECS, U.C. Berkeley, Nov. 1995 - June 2000.
- Industrial leave, Qualcomm Inc., San Diego, Jan.-May, 1999.
- postdoctoral member of technical staff, A.T. & T. Bell Laboratories, Oct. 1994- Oct. 1995.

Awards:

- 2003 IEEE Information Theory Society Paper Award (for [J27]).
- 2001 IEEE Communications and Information Theory Societies' Joint Paper Award (for [J40]).
- Best Paper Awards in 1998 and 2001 IEEE INFOCOM conferences (for [C79] and [C58]).
- 2000 Erlang Prize from the INFORMS Applied Probability Society for researchers under the age of 35.
- 1998 Early Faculty CAREER Award from National Science Foundation
- Canadian Natural Science and Engineering Research Council 1967 Graduate Fellowship (1989-1993)
- University of Waterloo Alumni Gold Medal for top graduate in engineering school (1989)

Professional Activities:

- Associate Editor, *IEEE Transactions on Information Theory*, 2001-2003.
- Technical program committee co-chair, IEEE International Symposium on Information Theory, 2004.
- Board of Governors, IEEE Information Theory Society, 2003 to 2008.
- Guest editor: *IEEE Transactions on Information Theory* special issue on Multiscale Signal Analysis and its Applications, April 1999; *Automatica* special issue on Control Methods for Communication Networks, December 1999.
- Program committee member: 1999 and 2000 INFOCOM conferences, 2000, 2001, 2002, 2003, 2008 International Symposia on Information Theory.
- Session chair: 1997 INFORMS conference, 1997 Asilomar conference, 1999 Information theory workshops in South Africa and in Greece, 2001 International Symposium on Information Theory.
- Plenary speaker for conferences: WiOpt 2003, SPAWC 2003, 2008, ICASSP 2006, Mobicom 2007, CISS 2008, Communication Theory Workshop 2009, ISIT 2009, Information Theory Workshop 2010.

Teaching:

Taught undergraduate and graduate courses in communication networks, digital communications, information theory, random processes and probability. Developed a new graduate course in wireless communications. Coauthored a textbook, "Fundamental of Wireless Communication", used in over 60 institutions.

Former Ph.D. students and Postdoctoral researchers:

- Pramod Viswanath (Associate Professor, UIUC, USA)
- Lizhong Zheng (Associate Professor, MIT, USA)
- Xia Ye (Assistant Professor, University of Florida, Gainesville, USA)
- Kiran (Qualcomm Inc., USA)
- Ada Poon (Assistant Professor, Stanford University, USA)
- Raul Etkin (Researcher, Hewlett-Packard Labs, USA)
- Vinod Prabhakaran (Postdoctoral researcher, UIUC, USA)
- Amir Salman Avestimehr (Assistant Professor, Cornell University, USA)
- Leonard Gropop (Qualcomm Inc., USA)
- Matthias Grossglauser (Assistant Professor, EPFL, Switzerland)
- Jamie Evans (Associate Professor, University of Melbourne, Australia)
- David Starobinski (Associate Professor, Boston University, USA)
- Massimo Francheschetti (Associate Professor, University of California at San Diego, USA)
- Dana Porrat (Lecturer, Hebrew University, Israel)

Publications

Patents

- [P1] "Methods and apparatus for transmitting information between a basestation and multiple mobile stations" , U.S. Patent #6694147, February 17, 2004.
- [P2] "Transmitter directed, multiple receiver system using path diversity to equitably maximize throughput", U.S. Patent #6449490, September 10, 2002. (patent filed, May 24, 1999.)
- [P3] "Renegotiated bit-rate service system and method", U.S. Patent #5604731, Feb. 18, 1997.
- [P4] "Data segmentation within a renegotiated bit-rate service transmission system", U.S. Patent #5559798, Sept. 24, 1996.

Books

- [B1] D. Tse and P. Viswanath, *Fundamentals of Wireless Communication*, Cambridge University Press, 2005.

Journal (In Review)

- [S1] A. Ozgur, R. Johari, D. Tse and O. Leveque, "Information Theoretic Operating Regimes for Large Wireless Networks", submitted to *IEEE Transactions on Information Theory*, 2008.
- [S2] G. Bresler, A. Parekh and D. Tse, "Approximate Capacity of Many-to-One and One-to-Many Interference Channels", submitted to *IEEE Transactions on Information Theory*, 2008.
- [S3] L. Grokop and D. Tse, " Spectrum Sharing Between Wireless Networks", submitted to *ACM/IEEE Transactions on Networking*, 2008.

Journal (In Print or In Press)

- [J1] L. Grokop and D. Tse, "Diversity-Multiplexing Tradeoff of ISI Channels", to appear in *IEEE Transactions on Information Theory*, 2008.
- [J2] R. Etkin, D. Tse and H. Wang, "Gaussian Interference Channel Capacity to Within One Bit", *IEEE Transactions on Information Theory*, Dec. 2008.

- [J3] G. Bresler and D. Tse, "The Two-User Gaussian Interference Channel: A Deterministic View", vol 19, *European Transactions in Telecommunications*, pp. 333-354, April 2008.
- [J4] A. Ozgur, O. Leveque and D. Tse, "Hierarchical Cooperation Achieves Optimal Capacity Scaling in Ad Hoc Networks", *IEEE Transactions on Information Theory*, vol 53, no. 10, pp. 3549 - 3572, October 2007.
- [J5] J. Tsao, D. Porrat and D. Tse, "Prediction and Modeling for the Time-Evolving Ultra-Wideband Channel" *IEEE Journal of Selected Topics in Signal Processing*, Volume 1, Issue 3, pp. 340-356, Oct. 2007.
- [J6] R. Wilson, D. Tse and R. Scholtz, "Channel Identification: Secret Sharing using Reciprocity in UWB Channels", *IEEE Transactions on Information Forensics and Security*, pp. 364-375, September 2007.
- [J7] A. S. Avestimehr and D. Tse, "Outage capacity of the fading relay channel in the low-SNR regime," *IEEE Trans. Information Theory*, vol. 53, no. 4, pp. 1401-1415, April 2007.
- [J8] R. Etkin, A. Parekh, and D. Tse, "Spectrum sharing for unlicensed bands," *IEEE J. Selected Areas in Communications*, vol. 25, no. 3, pp. 517-528, April 2007.
- [J9] L. Zheng, D. Tse, and M. Medard, "Channel coherence in the low-SNR regime," *IEEE Trans. Information Theory*, vol. 53, no. 3, pp. 976-997, March 2007.
- [J10] M. Franceschetti, O. Dousse, D. Tse, and P. Thiran, "Closing the gap in the capacity of wireless networks via percolation theory," *IEEE Trans. Information Theory*, vol. 53, no. 3, pp. 1009-1018, March 2007.
- [J11] D. Porrat, D. Tse, and S. Nacu, "Channel uncertainty in ultra-wideband communication systems," *IEEE Trans. Information Theory*, vol. 53, no. 1, pp. 194-208, Jan. 2007.
- [J12] Y. Xia and D. Tse, "Inference of link delay in communication networks," *IEEE J. Selected Areas in Communications*, vol. 24, no. 12, pp. 2235-2248, Dec. 2006.
- [J13] M. Chen and D. Tse, "An upper bound on the convergence rate of uplink power control in DS-CDMA systems," *IEEE Communications Letters*, vol. 10, no. 4, pp. 231-233, April 2006.
- [J14] A. Poon, D. Tse and R. Brodersen, "Impact of Scattering on the Capacity, Diversity and Propagation Range of Multiple Antenna Channels", *IEEE Transactions on Information Theory*, vol. 52(2), March 2006.
- [J15] R. Etkin and D. Tse, "Degrees of Freedom in Underspread MIMO Fading Channels", *IEEE Transactions on Information Theory*, vol 52(3) March 2006.

- [J16] S. Diggavi, M. Grossglauser and D. Tse, " Even One-Dimensional Mobility Increases Adhoc Wireless Capacity" , *IEEE Transactions on Information Theory*, vol 51(11), Nov. 2005.
- [J17] Ada Poon, R. Brodersen and D. Tse, "Degrees of Freedom in Multiple Antenna Channels: A Signal Space Approach", *IEEE Transactions on Information Theory*, vol.51, no.2, February 2005, pp. 523-536.
- [J18] N. Laneman, D. Tse and G. Wornell, " Cooperative Diversity in Wireless Networks: Efficient Protocols and Outage Behavior", *IEEE Transactions on Information Theory*, vol.50, no. 11, November 2004.
- [J19] D. Tse, P. Viswanath and L. Zheng "Diversity-Multiplexing Tradeoff in Multiple Access Channels", *IEEE Transactions on Information Theory*, vol.50, no.9, Sept. 2004, pp.1859-74.
- [J20] A. Poon, D. Tse and R. Brodersen, "An Adaptive Multi-antenna Transceiver for Slowly Flat Fading Channels", *IEEE Transactions on Communications*, vol.51, no.11, Nov. 2003, pp.1820-7.
- [J21] M. Grossglauser and D. Tse, "A Time-Scale Decomposition Approach to Measurement-Based Admission Control", *IEEE/ACM Transactions on Networking*, vol.11, no.4, Aug. 2003, pp.550-63.
- [J22] P. Viswanath and D. Tse, " Sum Capacity of the Multiple Antenna Gaussian Broadcast Channel and Uplink-Downlink Duality" , *IEEE Transactions on Information Theory*, vol 49(8), August, 2003, pp. 1912-1921.
- [J23] L. Zheng and D. Tse, "Diversity and Multiplexing: A Fundamental Tradeoff in Multiple Antenna Channels" *IEEE Transactions on Information Theory*, vol. 49(5), May 2003.
- [J24] M. Grossglauser and D. Tse, "Mobility Increases the Capacity of Adhoc Wireless Networks", *IEEE/ACM Transactions on Networking*, August 2002.
- [J25] P. Viswanath, D. Tse and R. Laroia, "Opportunistic Beamforming using Dumb Antennas", *IEEE Transactions on Information Theory*, vol. 48(6), June, 2002.
- [J26] C. Chuah, D. Tse, J. Kahn and R. Valenzuela, "Capacity Scaling in MIMO Wireless Systems under Correlated Fading", *IEEE Transactions on Information Theory*, vol. 48(3), March 2002, pp. 637-650.
- [J27] L. Zheng and D. Tse, "Communicating on the Grassmann Manifold: A Geometric Approach to Noncoherent Multi-antenna Channels", *IEEE Transactions on Information Theory* , vol. 48(2), February 2002, pp. 359-383.
- [J28] D. Starobinski , Tse D. Probabilistic methods for Web caching. *Performance Evaluation*, vol.46, no.2-3, Oct. 2001, pp.125-37.

- [J29] S. Hanly and D. Tse, "Resource Pooling and Effective Bandwidths in CDMA Systems with Multiuser Receivers and Spatial Diversity", *IEEE Transactions on Information Theory*, vol. 47(4), May 2001, pp. 1328-1351.
- [J30] J. Zhang, E. Chong and D. Tse, "Output MAI Distributions of Linear MMSE Multiuser Receivers in CDMA Systems", *IEEE Transactions on Information Theory*, vol. 47(3), March 2001, pp. 1128-1144.
- [J31] P. Viswanath, D. Tse and V. Anantharam, "Asymptotically Optimal Waterfilling in Vector Multiple Access Channels", *IEEE Transactions on Information Theory*, vol. 47(1), January 2001, pp. 241-267.
- [J32] D. Tse and S. Verdú, "Optimum Asymptotic Multiuser Efficiency for Randomly Spread CDMA", *IEEE Transactions on Information Theory*, vol. 46(7), November 2000, pp. 2718-2722.
- [J33] J.S. Evans and D. Tse, "Large System Performance of Linear Multiuser Receivers in Multipath Fading Channels", *IEEE Transactions on Information Theory*, vol. 46(6), Sept 2000, pp. 2059-2078.
- [J34] Kiran and D. Tse, "Effective Bandwidths and Effective Interference for Linear Multiuser Receivers in Asynchronous CDMA Systems", *IEEE Transactions on Information Theory*, vol 46(4), July 2000, pp. 1426-1447.
- [J35] E. Telatar and D. Tse, "Capacity and Mutual Information of Wideband Multipath Fading Channels", *IEEE Transactions on Information Theory*, vol 46(4), July 2000, pp. 1384-1400.
- [J36] D. Tse and O. Zeitouni, "Linear Multiuser Receivers in Random Environments", *IEEE Transactions on Information Theory*, vol 46(1), Jan. , 2000, pp. 171-188.
- [J37] S. Hanly and D. Tse, "Power Control and Capacity of Spread-Spectrum Wireless Networks", *Automatica*, vol.35, (no.12), Dec. 1999. p.1987-2012.
- [J38] M. Grossglauser and D. Tse, "A Framework for Robust Measurement-Based Admission Control", *IEEE/ACM Transactions on Networking*, v. 7, No. 3, June 1999, pp. 293-309.
- [J39] P. Viswanath, V. Anantharam and D. Tse, "Optimal Sequences, Power Control and Capacity of Synchronous CDMA Systems with Linear MMSE Multiuser Receivers", *IEEE Transactions on Information Theory*, v. 45(6), Sept., 1999, pp. 1968-1983.
- [J40] D. Tse and S. Hanly, "Linear Multiuser Receivers: Effective Interference, Effective Bandwidth and User Capacity", *IEEE Transactions on Information Theory*, v.45, No. 2, Mar. 1999, pp. 641-657.
- [J41] D. Tse and S. Hanly, "Multi-Access Fading Channels: Part I: Polymatroid Structure, Optimal Resource Allocation and Throughput Capacities", *IEEE Transactions on Information Theory*, v. 44, No. 7, Nov., 1998, pp. 2796-2815.

- [J42] S. Hanly and D. Tse, "Multi-Access Fading Channels: Part II: Delay-Limited Capacities", *IEEE Transactions on Information Theory*, v. 44, No. 7, Nov., 1998, pp. 2816-2831.
- [J43] M. Grossglauser, S. Keshav and D. Tse, "RCBR: A Simple and Efficient Service for Multiple Time-Scale Traffic ", *IEEE/ACM Transactions on Networking*, December 1997, pp. 741-755.
- [J44] A. Elwalid, G. Freundlich, P. Gerhardt, H. Hagirahim, K.G. Ramakrishnan and D. Tse, "An Overview of the Multimedia Communications Exchange (MMCX) and its Performance Characterization", *Bell Laboratories Technical Journal*, vol. 2, no. 2, 1997, pp. 15-30.
- [J45] D. Tse, R.G. Gallager and J.N. Tsitsiklis, "Statistical Multiplexing of Multiple Time-scale Markov Streams", *IEEE Journal on Selected Areas in Communications*, special issue on Advances in the Fundamentals of Networking, vol. 13, no. 6., Aug. 1995, pp. 1028-1039.
- [J46] M.A. Dahleh, E.D. Sontag, D. Tse, J.N. Tsitsiklis, "Worst-Case Identification of Nonlinear Fading Memory Systems", *Automatica*, vol.31, no. 3, Mar. 1995, pp. 503-508.
- [J47] S.R. Kulkarni and D. Tse, "A Paradigm for Class Identification Problems", *IEEE Transactions on Information Theory*, vol.40, no.1, May 1994, pp. 696-705.
- [J48] D. Tse, M.A. Dahleh, J.N. Tsitsiklis, "Optimal Asymptotic Identification Under Bounded Disturbances", *IEEE Transactions on Automatic Control*, vol.38, no.8, Aug. 1993, pp. 1176-90.
- [J49] D. Tse and G.R. Heppler, "Shape Determination for Large Flexible Satellites via Stereo Vision", *AIAA Journal of Spacecraft and Rockets*, vol. 29, no. 1, Jan-Feb. 1992.

Conference

- [C1] Ayfer Ozgur, Ramesh Johari, David Tse, Olivier Leveque, "Information Theoretic Operating Regimes of Large Wireless Networks", IEEE International Symposium on Information Theory, Toronto, Canada, July 2008
- [C2] R. Berry and D.Tse, "Information Theoretic Games on Interference Channels", IEEE International Symposium on Information Theory, Toronto, Canada, July 2008
- [C3] A.S. Avestimehr, S. Diggavi and D. Tse, "Approximate Capacity of Gaussian Relay Channels", IEEE International Symposium on Information Theory, Toronto, Canada, July 2008
- [C4] R.D. Yates, D. Tse and Z. Li, "Secrecy Capacity of Interference Channels", IEEE International Symposium on Information Theory, Toronto, Canada, July 2008

- [C5] A. Poon and D. Tse, "Polarization Degrees of Freedom", IEEE International Symposium on Information Theory, Toronto, Canada, July 2008
- [C6] L. Gropop and D. Tse, "Spectrum Sharing Between Wireless Networks", IEEE Infocom Conference, Phoenix, April 2008.
- [C7] A.S. Avestimehr, S. Diggavi and D. Tse, "Wireless Network Information Flow", Allerton Conference, Sept. 2007.
- [C8] A.S. Avestimehr, S. Diggavi and D. Tse, "A Deterministic Approach to Relay Networks", Allerton Conference, Sept. 2007.
- [C9] V. Prabhakaran, S. Diggavi and D. Tse, "Broadcasting with Common Messages: A Deterministic Approach", Allerton Conference, Sept. 2007.
- [C10] G. Bresler, A. Parekh, D. Tse, "Approximate Capacity of the Many-to-One Interference Channel", Allerton Conference, Sept. 2007.
- [C11] L. Gropop, D. Tse, "Fundamental Constraints of Multicast Capacity Regions", Allerton Conference, Sept. 2007.
- [C12] D. Tse, "A Deterministic Model for Wireless Channels and its Applications", Information Theory Workshop, Lake Tahoe, Sept 2007.
- [C13] A.S. Avestimehr, S. Diggavi and D. Tse, "A Deterministic Model for Wireless Relay Networks and its Applications", Information Theory Workshop, Bergen, Norway, July 2007.
- [C14] S. Jing, D. Tse, J. Soriaga, J. Hou, J. Smee, R. Padovani, "Downlink Macro-Diversity in Cellular Networks", IEEE International Symposium on Information Theory, June 2007.
- [C15] V. Prabhakaran, D. Tse and K. Ramchandran, "Channel coding with strictly-causal colored side-information at transmitter", IEEE International Symposium on Information Theory, June 2007.
- [C16] A. Ozgur, O. Leveque and D. Tse, "Exact Capacity Scaling of Extended Wireless Networks", IEEE International Symposium on Information Theory, June 2007.
- [C17] R. Etkin, D. Tse and H. Wang, "Gaussian Interference Channel Capacity to Within One Bit: the General Case", IEEE International Symposium on Information Theory, June 2007.
- [C18] P. Minero and D. Tse, "A Broadcast Approach to Multiple Access with Random States", IEEE International Symposium on Information Theory, June 2007.
- [C19] E. Telatar and D. Tse, "Bounds on the capacity region of a class of interference channels", IEEE International Symposium on Information Theory, June 2007.
- [C20] Yang, J.; Brodersen, R. W.; Tse, D., "Addressing the Dynamic Range Problem in Cognitive Radios" ICC '07 IEEE International Conference on Communications, 24-28 June 2007 Page(s):5183 - 5188.

- [C21] Ozgur, A.; Leveque, O.; Tse, D., "Hierarchical Cooperation Achieves Linear Capacity Scaling in Ad Hoc Networks", INFOCOM 2007. 26th IEEE International Conference on Computer Communications. IEEE May 2007 Page(s):382 - 390
- [C22] Etkin, R.; Tse, D.N.C.; Hua Wang, Gaussian Interference Channel Capacity to Within One Bit: the Symmetric Case Information Theory Workshop, 2006. ITW '06 Chengdu. IEEE, 22-26 Oct. 2006 Page(s):601 - 605
- [C23] Montanari, A.; Tse, D., Non-Coherent LDPC Decoding on Graphs, Information Theory Workshop, 2006 IEEE, Oct. 2006 Page(s):122 - 126
- [C24] Etkin, R.; Parekh, A.; Tse, D.; Spectrum sharing for unlicensed bands, New Frontiers in Dynamic Spectrum Access Networks, 2005. DySPAN 2005. 2005 First IEEE International Symposium on 8-11 Nov. 2005 Page(s):251 - 258.
- [C25] Avestimehr, A.S.; Tse, D.N.C., Outage-optimal relaying in the low SNR regime, Information Theory, 2005. ISIT 2005. Proceedings. International Symposium on, 4-9 Sept. 2005 Page(s):941 - 945
- [C26] S. N. Diggavi and D. Tse, "Fundamental limits of diversity-embedded codes over fading channels," in Proc. 2005 IEEE Intl. Symp. on Information Theory (ISIT), Piscataway, NJ: IEEE Press, 2005, pp. 510-514.
- [C27] Lizhong Zheng; Tse, D.; Medard, M.; On the costs of channel state information, Information Theory Workshop, 2004. IEEE 24-29 Oct. 2004 Page(s):423 - 427
- [C28] S. Diggavi and D. Tse, "On the Successive Refinement of Diversity", Proc. Allerton Conference, Oct. 2004.
- [C29] V. Prabhakaran, K. Ramchandran and D. Tse, "On the Role of Interaction between Sensors in the CEO Problem", Proc. Allerton Conference, Oct 2004.
- [C30] L. Gropop, D. Tse, "Diversity-Multiplexing tradeoff in ISI channels", IEEE International Symposium on Information Theory, June 2004, p. 97.
- [C31] V. Prabhakaran, D. Tse and K. Ramchandran, "Rate Region of the Quadratic Gaussian CEO Problem", IEEE International Symposium on Information Theory, June 2004, p. 119.
- [C32] L. Zheng, D. Tse and M. Medard "Channel Coherence in the Low SNR Regime", IEEE International Symposium on Information Theory, June 2004, p. 416.
- [C33] M. Franceschetti, O. Dousse, D. Tse, P. Thiran, "Closing the gap in the capacity of random wireless networks", IEEE International Symposium on Information Theory, June 2004, p. 438.
- [C34] A.S.Y. Poon, R.W. Brodersen and D. Tse, "A spatial channel model for multiple-antenna systems", IEEE Antennas and Propagation Society Symposium, Volume: 4, June 20-25, 2004 Pages:3665 - 3668.
- [C35] S. Raj, E. Telatar and D. Tse, "Job Scheduling and Multiple Access", DIMACS Workshop on Information Theory, 2003.

- [C36] A.S.Y. Poon, R.W. Brodersen and D. Tse, "The signal dimensions in multiple-antenna channels", IEEE Global Telecommunications Conference (GLOBECOM), Volume: 3, 1-5 Dec. 2003 Pages:1247 - 1251.
- [C37] D. Porrat and D. Tse, "Bandwidth Scaling in Ultra Wideband Communications," Allerton Conference on Communication, Control, and Computing, October 2003.
- [C38] D. Tse and P. Viswanath, "On the capacity region of the vector gaussian broadcast channel", IEEE International Symposium on Information Theory, 29 June-4 July 2003, Pages:342 - 342
- [C39] D. Tse, P. Viswanath and L. Zheng, "Diversity-multiplexing tradeoff for multiaccess channels", IEEE International Symposium on Information Theory, 29 June-4 July 2003
- [C40] R. Etkin and D. Tse, "Degrees of freedom in underspread mimo fading channels", IEEE International Symposium on Information Theory, 29 June-4 July 2003 Pages:323 - 323
- [C41] D. Tse, "Diversity and freedom: a fundamental tradeoff in wireless systems", 4th IEEE Workshop on Signal Processing Advances in Wireless Communications - SPAWC 2003. (plenary talk)
- [C42] D. Tse and P. Viswanath, "On the capacity of the multiple antenna broadcast channel", Multiantenna Channels: Capacity, Coding and Signal Processing. DIMACS Workshop. American Math. Soc. 2003, pp.87-105.
- [C43] Xia Ye and D. Tse, "Analysis on packet resequencing for reliable network protocols". IEEE INFOCOM 2003. Twenty-second Annual Joint Conference of the IEEE Computer and Communications Societies vol.2, 2003, pp.990-1000.
- [C44] , D. Tse, "Mobilize", Symposium on Modeling and Optimization in Mobile, Ad Hoc, and Wireless Networks, Sophia-Antipolis, France, March 2003. (plenary talk)
- [C45] D. Tse, P. Viswanath and L. Zheng "Multiple Antennas: A Network View" DIMACS Workshop on Signal Processing for Wireless Communications, Oct. 2002.
- [C46] A.S.Y. Poon, D. Tse and R.W. Brodersen, "Multiple-antenna channels from a combined physical and networking perspective", IEEE Thirty-Sixth Conference on Signals, Systems and Computers, Part vol.2, 2002, pp.1528-32.
- [C47] L. Zheng and D. Tse, The Diversity-Multiplexing Tradeoff for Non-coherent Multiple Antenna Channels, Proc. Allerton Conference, 2002
- [C48] P. Viswanath, D. Tse and R. Laroia, "Opportunistic beamforming using dumb antennas", IEEE International Symposium on Information Theory. IEEE. 2002, pp.449.
- [C49] D. Tse and P. Viswanath, "Uplink-Downlink Duality and Effective Bandwidths", IEEE International Symposium on Information Theory, 2002.
- [C50] P. Viswanath and D. Tse, "Sum Capacity of the Multiple Antenna Broadcast Channel", IEEE International Symposium on Information Theory, 2002.

- [C51] L. Zheng and D. Tse, “Optimal Diversity-multiplexing tradeoff and Error Exponents”, IEEE International Symposium on Information Theory 2002.
- [C52] S. Diggavi, M. Grossglauser and D. Tse, “Even One-Dimensional Mobility Increases Ad-hoc capacity”, IEEE International Symposium on Information Theory 2002.
- [C53] L. Zheng and D. Tse, “Optimal Diversity-Multiplexing Tradeoff in Multi-Antenna Channels”, Allerton Conference, Oct 2001.
- [C54] N. Laneman, D. Tse and G. Wornell, “An Efficient Protocol for Realizing Cooperative Diversity in Wireless Networks”, ISIT 2001.
- [C55] L. Zheng and D. Tse, “The Noncoherent Block Fading Channel: A Degree of Freedom View”, ISIT 2001.
- [C56] D. Tse, “Multiuser Diversity Through Proportional Fair Scheduling”, Communication Theory Workshop, May 2001.
- [C57] P. Viswanath, D. Tse and R. Laroia, “Opportunistic Beamforming Using Dumb Antennas”, Communication Theory Workshop, May 2001.
- [C58] M. Grossglauser and D. Tse, “Mobility Increases the Capacity of Wireless Adhoc Networks”, Infocom 2001. (This work won the Best Paper Award at the conference.)
- [C59] L. Zheng and D. Tse, “Communicating on the Grassman Manifold: A Geometric Approach to Multi-antenna Fading Channels”, *International Symposium on Information Theory*, Sorrento, Italy, June 2000.
- [C60] P. Viswanath, D. Tse and V. Anantharam, “Asymptotically Optimal Waterfilling in Multiple Antenna Multiple Access Channels”, *International Symposium on Information Theory*, Sorrento, Italy, June 2000.
- [C61] S.V. Hanly and D. Tse, “A Resource Pooling Result for a CDMA Antenna Array”, *International Symposium on Information Theory*, Sorrento, Italy, June 2000.
- [C62] J. Zhang, E. Chong and D. Tse, “Distributions of the Output MAI of Linear MMSE Multiuser Receivers in CDMA Systems”, *International Symposium on Information Theory*, Sorrento, Italy, June 2000.
- [C63] L. Zheng and D. Tse, “Packing Spheres into the Grassman Manifold: A Geometric Approach to Multi-antenna Fading Channels”, *Proc. of Allerton Conference*, Monticello, IL, Sept 1999.
- [C64] D. Tse, “Multiuser Receivers, Random Matrices and Free Probability”, *Proc. of Allerton Conference*, Monticello, IL, Sept 1999.
- [C65] P. Ho, D. Tse and J. Walrand, “Stability of Multilane Input-Buffered Switches with Markov Modulated Arrival Processes”, *Proc. of Allerton Conference*, Monticello, IL, Sept 1999.
- [C66] S. Hanly and D. Tse, “Resource pooling and effective bandwidths for a CDMA link with spatial diversity” *Proc. of Allerton Conference*, Monticello, IL, Sept 1999.

- [C67] N. Zhang, A. Poon, R. Brodersen, D. Tse and S. Verdú, “Trade-offs of Performance and Single-Chip Implementation of Indoor Wireless Multi-access receivers, “ *Proc. of WCNC*, New Orleans, Sept. 1999.
- [C68] J. Evans and D. Tse, “Linear Multiuser Receivers for Multipath Fading Channels”, *Proc. of Information Theory Workshop*, Kruger National Park, South Africa, June 1999.
- [C69] D. Tse and O. Zeitonui, “Performance of Linear Multiuser Receivers in Random Environments”, *Proc. of Communication Theory Mini-Conference*, ICC, Vancouver, Canada, June 1999.
- [C70] M. Grossglauser and D. Tse, ”A Time-Scale Decomposition Approach to Measurement-Based Admission Control”, *Proceedings of Infocom*, New York City, March 1999.
- [C71] D. Tse and S. Verdú, “Optimum Multiuser Asymptotic Efficiency of CDMA with Random Spreading,” *Proc. 1999 IEEE Information Theory Workshop on Detection, Estimation, Classification and Imaging*, p. 28, Feb. 24-26, 1999, Santa Fe, NM.
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