

Gerhard Kramer's Publications, May 30, 2019

Dissertations

1. Doctoral Thesis: Directed Information for Channels with Feedback. Konstanz: Hartung-Gorre Verlag, 1998. ETH Series in Information Processing, Vol. 11, Ed. James L. Massey. ISBN 3-89649-379-5.
2. Post Diploma in Information Technology Thesis: Single-User Channel Estimation with Periodic Pilot Sequences for Mobile Radio. ETH Zürich, Switzerland, 1996.
3. Master of Science Thesis: CPM Receiver Issues: The Matched Filter Bank and Sequential Sequence Estimation. Univ. Manitoba, Canada, 1992.
4. Bachelor of Science Thesis: Continuous Measurement of Cerebral Water Content by Time-Domain Reflectometry. Univ. Manitoba, Canada, 1991.

Monographs & Edited Book

1. *Topics in Multi-User Information Theory*, G. Kramer, Foundations and Trends in Commun. and Inf. Theory, Hanover, MA: now Publishers Inc., vol. 4, no. 4-5, pp. 265-444, 2007.
2. *Cooperative Communications*, G. Kramer, I. Marić, and R. D. Yates, Foundations and Trends in Network. Hanover, MA: now Publishers Inc., vol. 1, no. 3-4, pp. 271-425, 2006.
3. *Advances in Network Information Theory*, P. Gupta, G. Kramer, and A. J. van Wijngaarden, Eds., DIMACS Series in Discrete Math. and Theoret. Comp. Sci., vol. 66, Amer. Math. Soc., 2004.

Articles in Books, Newsletters, or Reviews (10 published, 1 to appear)

1. Y.-H. Kim and G. Kramer, "Information theory for cellular wireless networks," in *Information Theoretic Perspectives on 5G Systems and Beyond*, I. Marić, S. Shamai, O. Simeone, eds., Cambridge Univ. Press, to appear 2019
2. J. Hou, G. Kramer, and M. Bloch, "Effective secrecy: reliability, confusion and stealth," in *Information Theoretic Security and Privacy of Information Systems*, H. Boche, A. Khisti, H. V. Poor, and R. F. Schaefer, eds., pp. 3-20, Cambridge Univ. Press, 2017
3. G. Kramer, "Teaching IT: An identity for the Gelfand-Pinsker converse," *IEEE Inf. Theory Soc. Newsletter*, vol. 61, no. 4, pp. 4-6, Dec 2011
4. G. Kramer, R. A. Berry, A. El Gamal, H. El Gamal, M. Franceschetti, M. Gastpar, and J. N. Laneman, "Introduction to the Special Issue on Models, Theory, and Codes for Relaying and Cooperation in Communication Networks," *IEEE Trans. Inf. Theory*, vol. 53, no. 10, pp. 3297-3301, Oct 2007
5. G. Kramer, "Communication strategies and coding for relaying," *Wireless Communications*, IMA Volumes in Mathematics and its Applications, vol. 143, P. Agrawal, D. M. Andrews, P. J. Fleming, G. Yin, and L. Zhang, eds., pp. 163-175, Springer: New York, 2007
6. G. Kramer and S. A. Savari, "On networks of two-way channels," in *Algebraic Coding Theory and Information Theory, DIMACS Workshop, Dec. 15-18, 2003*, DIMACS Series in Discrete Math. and Theoret. Comp. Sci., vol. 68, A. Ashikhmin and A. Barg, eds., pp. 133-143
7. S. Vishwanath, G. Kramer, S. Shamai (Shitz), S. Jafar, and A. Goldsmith, "Capacity bounds for Gaussian vector broadcast channels," in *Multiantenna Channels: Capacity, Coding and Signal Processing, DIMACS Workshop, Oct. 7-9, 2002*, DIMACS Series in Discrete Math. and Theoret. Comp. Sci., vol. 62, G. J. Foschini and S. Verdú, eds., pp. 107-122
8. G. Kramer, J. E. Mazo, and S. A. Savari, "Eulogy for Claude Elwood Shannon," *ACM SIGMOBILE Mobile Comp. and Commun. Review*, vol. 5, no. 1, p. 1, Jan 2001
9. J. Ruprecht, U. Loher, and G. Krämer, "Code time division multiple access," *COST Action 231: Digital Mobile Radio Towards Future Generation System, Final Report*, Ch. 7, pp. 386-414, 1999.

10. C. Harpes, G. G. Kramer, and J. L. Massey, "A generalization of linear cryptanalysis and the applicability of Matsui's piling-up lemma," *Advances in Cryptology - Eurocrypt '95, Lecture Notes in Comp. Sci. No. 921*, Louis C. Guillou and J.-L. Quisquater, eds., pp. 24-38, Springer, 1995
11. J. Ruprecht, U. Loher, and G. Krämer, "Code time division multiple access," *Mobile and Personal Commun., Proc. 2nd Joint COST 227-231 Workshop on Mobile and Personal Commun., Florence, Italy, April 20-21, 1995*, E. Del Re, ed., pp. 317-325, Elsevier, 1995

Submitted Journal Articles

1. A. Gohari, O. Günlü, and G. Kramer, "Coding for positive rate in the source model key agreement problem," *IEEE Trans. Inf. Theory*, submitted May 2019
2. S. Dierks, G. Kramer, B. Panzner, and W. Zirwas, "Analysis of massive MIMO and base station cooperation in an indoor scenario," *EURASIP J. Wireless Commun. Network.*, submitted Apr 2019
3. E. Sula, M. Gastpar, and G. Kramer, "Sum-rate capacity for symmetric Gaussian multiple access channels with feedback," *IEEE Trans. Inf. Theory*, submitted Nov 2018

Journal Articles (63 in total)

1. O. Günlü, O. İşcan, V. Sidorenko, and G. Kramer, "Code constructions for physical unclonable functions and biometric secrecy systems," *IEEE Trans. Inf. Forensics Security*, to appear
2. M. Thakur and G. Kramer, "Quasi-concavity for Gaussian multicast relay channels," *Entropy*, Special Issue on Information Theory for Data Communications and Processing, vol. 21, no. 2, article 109, Jan 2019
3. O. Günlü and G. Kramer, "Privacy, secrecy, and storage with multiple noisy measurements of identifiers," *IEEE Trans. Inf. Forensics Security*, vol. 13, no. 11, pp. 2872-2883, Nov 2018
4. M. Leinonen, M. Codreanu, M. Juntti, and G. Kramer, "Rate-distortion performance of lossy compressed sensing of sparse sources," *IEEE Trans. Commun.*, vol. 66, no. 10, pp. 4498-4512, Oct 2018
5. G. Kramer, "Autocorrelation function for dispersion-free fiber channels with distributed amplification," *IEEE Trans. Inf. Theory*, vol. 64, no. 7, pp. 5131-5155, Jul 2018
6. O. Günlü, T. Kernetzky, O. İşcan, V. Sidorenko, G. Kramer, and R. F. Schaefer, "Secure and reliable key agreement with physical unclonable functions," *Entropy*, Special Issue on Information Theoretic Security, vol. 20, no. 5, article 340, May 2018
7. J. García, H. Ghazlan, and G. Kramer, "Energy conservation in optical fibers with distributed brick-walls filters," *IEEE/OSA J. Lightw. Technol.*, vol. 36, no. 9, pp. 1626-1633, May 2018
8. S. Saeedi Bidokhti, G. Kramer, and S. Shamai (Shitz), "Capacity bounds on the downlink of symmetric, multi-relay, single receiver C-RAN networks," *Entropy*, vol. 19, no. 11, article 610, Nov 2017
9. H. Ghazlan and G. Kramer, "Models and information rates for multiuser optical fiber channels with nonlinearity and dispersion," *IEEE Trans. Inf. Theory*, vol. 63, no. 10, pp. 6440-6456, Oct 2017
10. Z. Goldfeld, G. Kramer, and H. H. Permuter, "Broadcast channels with privacy leakage constraints," *IEEE Trans. Inf. Theory*, vol. 63, no. 8, pp. 5138-5161, Aug 2017
11. A. Thangaraj, G. Kramer, and G. Böcherer, "Capacity bounds for discrete-time, amplitude-constrained, additive white Gaussian noise channels," *IEEE Trans. Inf. Theory*, vol. 63, no. 7, pp. 4172-4182, Jul 2017
12. H. Ghazlan and G. Kramer, "Models and information rates for Wiener phase noise channels," *IEEE Trans. Inf. Theory*, vol. 63, no. 4, pp. 2376-2393, Apr 2017
13. Z. Goldfeld, G. Kramer, H. H. Permuter, and P. Cuff, "Strong secrecy for cooperative broadcast channels," *IEEE Trans. Inf. Theory*, vol. 63, no. 1, pp. 469-495, Jan 2017
14. S. Saeedi Bidokhti and G. Kramer, "Capacity bounds for diamond networks with an orthogonal broadcast channel," *IEEE Trans. Inf. Theory*, vol. 62, no. 12, pp. 7103-7122, Dec 2016

15. Z. Goldfeld, H. H. Permuter, and G. Kramer, "Duality of a source coding problem and the semi-deterministic broadcast channel with rate-limited cooperation," *IEEE Trans. Inf. Theory*, vol. 62, no. 5, pp. 2285-2307, May 2016
16. M. Pikus, G. Kramer, and G. Böcherer, "Discrete signaling for non-coherent, single-antenna, Rayleigh block-fading channels," *IEEE Commun. Lett.*, vol. 20, no. 4, pp. 764-767, Apr 2016
17. J. Hou and G. Kramer, "Short message noisy network coding with a decode-forward option," *IEEE Trans. Inf. Theory*, vol. 62, no. 1, pp. 89-107, Jan 2016
18. G. Kramer, "Information networks with in-block memory," *IEEE Trans. Inf. Theory*, vol. 60, no. 4, pp. 2105-2120, Apr 2014
19. T. Koch and G. Kramer, "On noncoherent fading relay channels at high signal-to-noise ratio," *IEEE Trans. Inf. Theory*, vol. 59, no. 4, pp. 2221-2241, Apr 2013
20. R. Timo, A. Grant, and G. Kramer, "Lossy broadcasting with complementary side information," *IEEE Trans. Inf. Theory*, vol. 59, no. 1, pp. 104-131, Jan. 2013
21. J. Karout, G. Kramer, F. R. Kschischang, and E. Agrell, "A two-dimensional signal space for intensity-modulated channels," *IEEE Commun. Lett.*, vol. 16, no. 9, pp. 1361-1364, Sep 2012
22. G. Kramer and S. M. S. Tabatabaei Yazdi, "Network coding for line networks with broadcast channels," *Entropy*, vol. 14, no. 10, pp. 1813-1828, Sep 2012
23. G. Zeitler, A. C. Singer, and G. Kramer, "Low-precision A/D conversion for maximum information rate in channels with memory," *IEEE Trans. Commun.*, vol. 60, no. 9, pp. 2511-2521, Sep 2012
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26. B. Goebel, R.-J. Essiambre, G. Kramer, P. J. Winzer, and N. Hanik, "Calculation of mutual information for partially coherent Gaussian channels with applications to fiber optics," *IEEE Trans. Inf. Theory*, vol. 57, no. 9, pp. 5720-5736, Sep 2011
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31. X. Shang, B. Chen, G. Kramer, and H. V. Poor, "Noisy-interference sum-rate capacity of parallel Gaussian interference channels," *IEEE Trans. Inf. Theory*, vol. 57, no. 1, pp. 210-226, Jan 2011
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36. R.-J. Essiambre, G. J. Foschini, G. Kramer, and P. J. Winzer, "Capacity limits of information transmission in optically-routed fiber networks," *Bell Labs Techn. J.*, vol. 14, no. 4, pp. 149-162, Winter 2010
37. Y. Liang, G. Kramer, H. V. Poor, and S. Shamai (Shitz), "Compound wiretap channels," *EURASIP J. Wireless Commun. Network.*, vol. 2009, Article ID 142374, DOI: 10.1155/2009/142374 (Awarded a 2014 EURASIP Best Paper Award)
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40. X. Shang, G. Kramer, and B. Chen, "A new outer bound and the noisy-interference sum-rate capacity for Gaussian interference channels," *IEEE Trans. Inf. Theory*, vol. 55, no. 2, pp. 689-699, Feb 2009
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42. A. Sanderovich, S. Shamai (Shitz), Y. Steinberg, and G. Kramer, "Communication via decentralized processing," *IEEE Trans. Inf. Theory*, vol. 54, no. 7, pp. 3008-3023, Jul 2008
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44. O. Simeone, O. Somekh, G. Kramer, H. V. Poor, and S. Shamai (Shitz), "Throughput of cellular systems with conferencing mobiles and cooperative base-stations," *EURASIP J. Wireless Commun. Network., Theory and Applic. in Multiuser/Multiterminal Commun.*, vol. 2008, Article ID 652325, 14 pages, DOI: 10.1155/2008/652325
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52. G. Kramer and S. A. Savari, "Edge-cut bounds on network coding rates," *J. Network and Sys. Management*, vol. 14, no. 1, pp. 49-67, Mar 2006 (Invited Paper)
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55. S. ten Brink, G. Kramer, and A. Ashikhmin, "Design of low-density parity-check codes for modulation and detection," *IEEE Trans. Commun.*, vol. 52, no. 4, pp. 670-678, Apr 2004
(Awarded the 2005 IEEE Communications Society Stephen O. Rice Prize)
56. G. Kramer, "Outer bounds on the capacity of Gaussian interference channels," *IEEE Trans. Inf. Theory*, vol. 50, no. 3, pp. 581-586, Mar 2004
57. S. ten Brink and G. Kramer, "Design of repeat-accumulate codes for iterative detection and decoding," *IEEE Trans. Signal Proc.*, vol. 51, no. 11, pp. 2764-2772, Nov 2003
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60. G. Kramer, "Capacity results for the discrete memoryless network," *IEEE Trans. Inf. Theory*, vol. 49, no. 1, pp. 4-21, Jan 2003
61. G. Kramer, "Feedback strategies for white Gaussian interference networks," *IEEE Trans. Inf. Theory*, vol. 48, no. 6, pp. 1423-1438, June 2002. See also "Correction to "Feedback strategies for white Gaussian interference networks," and a capacity theorem for Gaussian interference channels with feedback," *IEEE Trans. Inf. Theory*, vol. 50, no. 6, pp. 1373-1374, Jun 2004.
62. G. Kramer, "Feedback strategies for a class of two-user multiple-access channels," *IEEE Trans. Inf. Theory*, vol. 45, no. 6, pp. 2054-2059, Sep 1999
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Conference Papers (118 in total, papers since 2015 are listed)

1. M. Kobayashi, H. Hamad, G. Kramer, and G. Caire, "Joint state sensing and communication over memoryless multiple access channels," *IEEE Int. Symp. Inf. Theory*, Paris, France, Jul 7-12, 2019
2. F. Steiner and G. Kramer, "Optimization of bit mapping and quantized decoding for off-the-shelf protograph LDPC codes with application to IEEE 802.3ca," *Int. Symp. Turbo Codes & Iterative Inf. Proc.*, Hong Kong, pp. 1-5, Dec 3-7, 2018
3. A. Gohari, O. Günlü, and G. Kramer, "On achieving a positive rate in the source model key agreement problem," *IEEE Int. Symp. Inf. Theory*, Vail, CO, pp. 2659-2663, Jun 17-22, 2018
4. M. Kobayashi, G. Caire, and G. Kramer, "Joint state sensing and communication with receiver state information," *IEEE Int. Symp. Inf. Theory*, Vail, CO, pp. 111-115, Jun 17-22, 2018
5. E. Sula, M. Gastpar, and G. Kramer, "Sum-rate capacity for the Gaussian multiple access channel with feedback," *IEEE Int. Symp. Inf. Theory*, Vail, CO, pp. 306-310, Jun 17-22, 2018
6. A. Nedelcu, F. Steiner, G. Kramer, M. Staudacher, P. Baracca, W. Zirwas, R. S. Ganesan and S. Wesemann, "Quantized precoding for MIMO downlink channels with MAGIQ," *ITG Workshop on Smart Antennas*, Bochum, Germany, pp. 1-8, Mar 14-16, 2018
7. F. Steiner, F. Da Ros, M. P. Yankov, G. Böcherer, P. Schulte, S. Forchhammer, and G. Kramer, "Experimental verification of rate flexibility and probabilistic shaping by 4D signaling," *Optical Fiber Commun. (OFC) Conf.*, San Diego, CA, pp. 1-3, Mar 11-15, 2018
8. S. Saeedi Bidokhti, G. Kramer, and S. Shamai (Shitz), "Capacity bounds on the downlink of symmetric, multi-relay, single receiver C-RAN networks," *IEEE Int. Symp. Inf. Theory*, Aachen, Germany, pp. 2058-2062, Jun 25-30, 2017

9. M. Staudacher, G. Kramer, W. Zirwas, B. Panzner, and R. S. Ganesan, "Optimized combination of conventional and constrained massive MIMO arrays," *ITG Workshop on Smart Antennas*, Berlin, Germany, pp. 45-48, Mar 15-17, 2017
10. O. Günlü, O. İşcan, V. Sidorenko, and G. Kramer, "Reliable secret-key binding for physical unclonable functions with transform coding," *IEEE GlobalSIP Symp. Inf. Theoretic Approaches to Security and Privacy*, Washington, D.C., pp. 986-991, Dec 7-9, 2016
11. M. Leinonen, M. Codreanu, M. Juntti, and G. Kramer, "Rate-distortion lower bound for compressed sensing via conditional remote source coding," *IEEE Inf. Theory Workshop*, Cambridge, UK, pp. 275-279, Sep 11-14, 2016
12. M. Hiller, M. Pehl, G. Kramer, and G. Sigl, "Algebraic security analysis of key generation with physical unclonable functions," *PROOFS: Security Proofs for Embedded Systems*, Santa Barbara, CA, pp. 1-15, Aug 20, 2016
13. S. Saeedi Bidokhti and G. Kramer, "Capacity of two-relay diamond networks with rate-limited links to the relays and a binary adder multiple access channel," *IEEE Int. Symp. Inf. Theory*, Barcelona, Spain, pp. 1665-1669, Jul 10-15, 2016
14. A. Nedelcu and G. Kramer, "Sensitivity of information rates of matching circuits for antenna arrays," *ITG Workshop on Smart Antennas*, Munich, Germany, pp. 1-6, Mar 9-11, 2016
15. Z. Goldfeld, G. Kramer, H. H. Permuter, and P. Cuff, "Strong secrecy for cooperative broadcast channels," *Int. Zürich Seminar*, Zürich, Switzerland, pp. 74-78, Mar 2-4, 2016
16. O. Günlü, O. İşcan, and G. Kramer, "Reliable secret key generation from physical unclonable functions under varying environmental conditions," *IEEE Int. Workshop Inf. Forensics and Security*, Rome, Italy, pp. 1-6, Nov 16-19, 2015
17. O. Günlü, G. Kramer, and M. Skórski, "Privacy and secrecy with multiple measurements of physical and biometric identifiers," *IEEE Conf. Commun. and Network Security*, Florence, Italy, pp. 89-94, Sep 28-30, 2015
18. M. I. Yousefi, G. Kramer, and F. R. Kschischang, "Upper bound on the capacity of the single-user nonlinear Schrödinger channel," *Can. Workshop Inf. Theory*, St. John's, NL, Canada, pp. 22-26, Jul 6-9, 2015
19. L. Barletta and G. Kramer, "Lower bound on the capacity of continuous-time Wiener phase noise channels," *IEEE Int. Symp. Inf. Theory*, Hong Kong, pp. 2326-2330, Jun 14-19, 2015
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21. R. A. Amjad and G. Kramer, "Channel resolvability codes based on concatenation and sparse linear coding," *IEEE Int. Symp. Inf. Theory*, Hong Kong, pp. 2111-2115, Jun 14-19, 2015
22. M. Thakur and G. Kramer, "Quasi-concavity for Gaussian multicast relay channels," *IEEE Int. Symp. Inf. Theory*, Hong Kong, pp. 2867-2869, Jun 14-19, 2015
23. A. Thangaraj, G. Kramer, and G. Böcherer, "Capacity upper bounds for discrete-time amplitude-constrained AWGN channels," *IEEE Int. Symp. Inf. Theory*, Hong Kong, pp. 2321-2325, Jun 14-19, 2015
24. L. Barletta and G. Kramer, "Upper bound on the capacity of discrete-time Wiener phase noise channels," *IEEE Inf. Theory Workshop*, Jerusalem, Israel, pp. 1-5, April 26 - May 1, 2015
25. Z. Goldfeld, H. H. Permuter, and G. Kramer, "Broadcast channels with cooperation: capacity and duality for the semi-deterministic case," *IEEE Inf. Theory Workshop*, Jerusalem, Israel, pp. 1-5, April 26 - May 1, 2015

Invited Conference & Workshop Papers (41 in total, papers since 2015 are listed)

1. G. Kramer, "Information theory for dispersion-free fiber channels with distributed amplification," *CLEO Pacific Rim Conf.*, Singapore, Jul 31 - Aug 4, 2017

2. S. Dierks, W. Zirwas, M. Jäger, B. Panzner, and G. Kramer, "MIMO and massive MIMO: analysis for a local area scenario," *Eur. Sig. Proc. Conf. (EUSIPCO)*, Nice, France, pp. 2451-2455, Aug 31 - Sep 4, 2015
3. G. Kramer, "Capacity of deterministic, half-duplex, line networks with two sources," *IEEE Inf. Theory Workshop*, Jerusalem, Israel, pp. 1-2, Apr 26 - May 1, 2015
4. G. Kramer, M. I. Yousefi, and F. R. Kschischang, "Upper bound on the capacity of a cascade of nonlinear and noisy channels," *IEEE Inf. Theory Workshop*, Jerusalem, Israel, pp. 1-4, Apr 26 - May 1, 2015

Patents (15 in total, selected patents listed)

1. G. Kramer, "Distributed transmission involving cooperation between a transmitter and a relay," U.S. Patent 9,025,641, issued May 5, 2015
2. G. Kramer and C. Nuzman, "Simultaneous estimation of multiple channel coefficients using a common probing sequence," U.S. patent 8,218,419, issued Jul 10, 2012
(Awarded a 2012 Thomas Alva Edison Patent Award)
3. G. Kramer, "Network relay having dynamically selectable receive and transmit channel intervals and method of operating the same," U.S. patent 8,089,880, issued Jan 3, 2012
4. G. Kramer, P. Whiting, and M. Živković, "Determining a channel matrix by measuring interference," U.S. patent 7,843,990, issued Nov 30, 2010
5. A. Ashikhmin, G. Kramer, and S. ten Brink, "MIMO systems having a channel decoder matched to a MIMO detector," U.S. patent 7,013,116, issued March 14, 2006