

LIST OF PUBLICATIONS
ERIK G. LARSSON

Books:

- [1] T. L. Marzetta, E. G. Larsson, H. Yang and H. Q. Ngo, *Fundamentals of Massive MIMO*, Cambridge, UK: Cambridge University Press, 2016. To appear.
- [2] E. G. Larsson and P. Stoica, *Space-Time Block Coding for Wireless Communications*. Cambridge, UK: Cambridge University Press, May 2003. ISBN 0-521-82456-7. Chinese translation by Xi'an Jiaotong University Press, 2006, ISBN 7-5605-2175-4/TN.

Chapters in Books:

- [1] E. G. Larsson, J. Li, and P. Stoica, "High-resolution nonparametric spectral analysis: theory and applications," in *High-resolution and robust signal processing* (Y. Hua, A. B. Gershman, and Q. Cheng, eds.), New York, NY: Marcel-Dekker, 2003. ISBN 0-8247-4752-6.
- [2] E. G. Larsson and E. Jorswieck, "Game theory," in *Mathematical Foundations for Signal Processing, Communications and Networking* (T. Chen, D. Rajan and E. Serpedin, eds.), CRC Press, 2011. ISBN 978-1-4398-5513-3.

Journal Papers:

- [1] C. Mollén, E. G. Larsson and T. Eriksson, "Waveforms for the massive MIMO downlink: Amplifier efficiency, distortion and performance," *IEEE Transactions on Communications*. To appear.
- [2] T. van Chien, E. Björnson and E. G. Larsson, "Joint power allocation and user association optimization for massive MIMO systems," *IEEE Transactions on Wireless Communications*, vol. 15, pp. 6384–6399, Sept. 2016.
- [3] A. Pitarokoilis, E. Björnson and E. G. Larsson, "Performance of the massive MIMO uplink with OFDM and phase noise," *IEEE Communications Letters*, vol. 20, pp. 1595–1598, Aug. 2016.
- [4] G. Amarasuriya, E. G. Larsson and H. V. Poor, "Wireless information and power transfer in multi-way massive MIMO relay networks," *IEEE Transactions on Wireless Communications*, vol. 15, pp. 3837–3855, June 2016.
- [5] S. Kashyap, E. Björnson and E. G. Larsson, "On the feasibility of wireless energy transfer using massive antenna arrays," *IEEE Transactions on Wireless Communications*, vol. 15, pp. 3466–3480, May 2016.
- [6] E. G. Larsson and H. V. Poor, "Joint beamforming and broadcasting in massive MIMO," *IEEE Transactions on Wireless Communications*, vol. 15, pp. 3058–3070, Apr. 2016.
- [7] V. Savic, E. G. Larsson, J. Ferrer-Coll and P. Stenumgaard, "Kernel methods for accurate UWB-based ranging with reduced complexity," *IEEE Transactions on Wireless Communications*, vol. 15, pp. 1783–1793, Mar. 2016.

- [8] V. Savic, H. Wymeersch and E. G. Larsson, "Target tracking in confined environments with uncertain sensor positions," *IEEE Transactions on Vehicular Technology*, vol. 65, pp. 870–882, Feb. 2016.
- [9] E. Björnson, E. G. Larsson and T. Marzetta, "Massive MIMO: Ten myths and one critical question," *IEEE Communications Magazine*, vol. 54, pp. 114–123, Feb. 2016.
- [10] E. Björnson, E. G. Larsson and M. Debbah, "Massive MIMO for maximal spectral efficiency: How many users and pilots should be allocated?," *IEEE Transactions on Wireless Communications*, vol. 15, pp. 1293–1308, Feb. 2016.
- [11] S. K. Mohammed and E. G. Larsson, "Improving the performance of the zero-forcing multiuser MISO downlink precoder through user grouping," *IEEE Transactions on Wireless Communications*, vol. 15, pp. 811–826, Feb. 2016.
- [12] A. Pitarokoilis, E. Björnson and E. G. Larsson, "ML detection in phase noise impaired SIMO channels with uplink training," *IEEE Transactions on Communications*, vol. 64, pp. 223–235, Jan. 2016.
- [13] X. Gao, O. Edfors, F. Tufvesson and E. G. Larsson, "Massive MIMO in real propagation environments: Do all antennas contribute equally?," *IEEE Transactions on Communications*, vol. 63, pp. 3917–3928, Nov. 2015.
- [14] E. Karipidis, D. Yuan, Q. He and E. G. Larsson, "Max-min power control in wireless networks with successive interference cancellation," *IEEE Transactions on Wireless Communications*, vol. 14, pp. 6269–6282, Nov. 2015.
- [15] A. Pitarokoilis, S. K. Mohammed and E. G. Larsson, "Uplink performance of time-reversal MRC in massive MIMO systems subject to phase noise," *IEEE Transactions on Wireless Communications*, vol. 14, pp. 711–723, Feb. 2015.
- [16] V. Savic, J. Ferrer-Coll, P. Ångskog, J. Chilo, P. Stenumgaard and E. G. Larsson, "Measurement analysis and channel modeling for TOA-based ranging in tunnels," *IEEE Transactions on Wireless Communications*, vol. 14, pp. 456–467, Jan. 2015.
- [17] H. Q. Ngo, M. Matthaiou and E. G. Larsson, "Massive MIMO with optimal power and training duration allocation," *IEEE Wireless Communications Letters*, vol. 3, pp. 605–608, Dec. 2014. (Correction published in vol. 4, p. 225, Apr. 2015.)
- [18] H. Q. Ngo, H. A. Suraweera, M. Matthaiou and E. G. Larsson, "Multipair full-duplex relaying with massive arrays and linear processing," *IEEE Journal on Selected Areas in Communications*, vol. 32, pp. 1721–1737, Sept. 2014.
- [19] R. Moosavi and E. G. Larsson, "Optimized encoding of scheduling assignments using finite blocklength coding bounds," *IEEE Wireless Communications Letters*, vol. 3, pp. 265–268, June 2014.
- [20] M. Čirkić and E. G. Larsson, "SUMIS: Near-optimal soft-in soft-out MIMO detection with low and fixed complexity," *IEEE Transactions on Signal Processing*, vol. 62, pp. 3084–3097, June 2014.

- [21] R. Moosavi and E. G. Larsson, "Fast blind recognition of channel codes," *IEEE Transactions on Communications*, vol. 62, pp. 1393–1405, May 2014.
- [22] T. V. K. Chaitanya and E. G. Larsson, "Adaptive power allocation for HARQ with Chase combining in correlated Rayleigh fading channels," *IEEE Wireless Communications Letters*, vol. 3, pp. 169–172, Apr. 2014.
- [23] D. Persson, T. Eriksson and E. G. Larsson, "Amplifier-aware multiple-input single-output capacity," *IEEE Transactions on Communications*, vol. 62, pp. 913–919, Mar. 2014.
- [24] E. G. Larsson, O. Edfors, F. Tufvesson and T. L. Marzetta, "Massive MIMO for next generation wireless systems," *IEEE Communications Magazine*, vol. 52, pp. 186–195, Feb. 2014.
- [25] K. Huang and E. G. Larsson, "Simultaneous information and power transfer for broadband wireless systems," *IEEE Transactions on Signal Processing*, vol. 61, pp. 5972–5986, Dec. 2013.
- [26] H. Q. Ngo and E. G. Larsson, "Large-scale multipair two-way relay networks with distributed AF beamforming," *IEEE Communications Letters*, vol. 17, pp. 2288–2291, Dec. 2013.
- [27] H. Q. Ngo, M. Matthaiou, T. Q. Duong and E. G. Larsson, "Uplink performance analysis of multicell MU-SIMO systems with ZF receivers," *IEEE Transactions on Vehicular Technology*, vol. 62, pp. 4471–4483, Nov. 2013.
- [28] S. K. Mohammed and E. G. Larsson, "Constant-envelope multiuser precoding for frequency-selective massive MIMO systems," *IEEE Wireless Communications Letters*, vol. 2, pp. 547–550, Oct. 2013.
- [29] J. Lindblom, E. Karipidis and E. G. Larsson, "Efficient computation of Pareto optimal beamforming vectors for the MISO interference channel with successive interference cancellation," *IEEE Transactions on Signal Processing*, vol. 61, pp. 4782–4795, Oct. 2013.
- [30] J. Lindblom, E. Karipidis and E. G. Larsson, "Achievable outage rate regions for the MISO interference channel," *IEEE Wireless Communication Letters*, vol. 2, pp. 439–442, Aug. 2013.
- [31] D. Persson, T. Eriksson and E. G. Larsson, "Amplifier-aware multiple-input multiple-output power allocation," *IEEE Communication Letters*, vol. 17, pp. 1112–1114, June 2013.
- [32] H. Q. Ngo, E. G. Larsson and T. L. Marzetta, "The multicell multiuser MIMO uplink with very large antenna arrays and a finite-dimensional channel," *IEEE Transactions on Communications*, vol. 61, pp. 2350–2361, June 2013.
- [33] T. V. K. Chaitanya and E. G. Larsson, "Optimal power allocation for hybrid ARQ with chase combining in i.i.d. Rayleigh fading channels," *IEEE Transactions on Communications*, vol. 61, pp. 1835–1846, May 2013.
- [34] P. Stenumgaard, D. Persson, E. G. Larsson and K. Wiklund, "An early-warning service for emerging communication problems in security and safety applications," *IEEE Communications Magazine*, vol. 51, pp. 186–192, May 2013.

- [35] H. Q. Ngo, E. G. Larsson and T. L. Marzetta, “Energy and spectral efficiency of very large multiuser MIMO systems,” *IEEE Transactions on Communications*, vol. 61, pp. 1436–1449, April 2013. **Won the 2015 Stephen O. Rice Prize in the Field of Communications Theory.**
- [36] S. K. Mohammed and E. G. Larsson, “Per-antenna constant envelope precoding for large multi-user MIMO systems,” *IEEE Transactions on Communications*, vol. 61, pp. 1059–1071, March 2013.
- [37] D. Yuan, V. Angelakis, L. Chen, E. Karipidis and E. G. Larsson, “On optimal link activation with interference cancellation in wireless networking,” *IEEE Transactions on Vehicular Technology*, vol. 62, pp. 939–945, Feb. 2013.
- [38] C. Studer and E. G. Larsson, “PAR-aware large-scale multi-user MIMO-OFDM downlink,” *IEEE Journal on Selected Areas in Communications*, vol. 31, pp. 303–313, Feb. 2013.
- [39] R. Moosavi and E. G. Larsson, “Reducing physical layer control signaling using mobile-assisted scheduling,” *IEEE Transactions on Wireless Communications*, vol. 12, pp. 368–379, Jan. 2013.
- [40] T. V. K. Chaitanya and E. G. Larsson, “Improving 3GPP-LTE uplink control signaling performance using complex-field coding,” *IEEE Transactions on Vehicular Technology*, vol. 62, pp. 161–171, Jan. 2013.
- [41] F. Rusek, D. Persson, B. K. Lau, E. G. Larsson, T. L. Marzetta, O. Edfors and F. Tufveson, “Scaling up MIMO: Opportunities and challenges with very large arrays,” *IEEE Signal Processing Magazine*, vol. 30, pp. 40–60, Jan. 2013.
- [42] E. A. Gharavol and E. G. Larsson, “The sign-definiteness lemma and its applications to robust transceiver optimization for multiuser MIMO systems,” *IEEE Transactions on Signal Processing*, vol. 61, pp. 238–252, Jan. 2013.
- [43] E. Axell and E. G. Larsson, “Eigenvalue-based spectrum sensing of orthogonal space-time block coded signals,” *IEEE Transactions on Signal Processing*, vol. 60, pp. 6724–6728, Dec. 2012.
- [44] M. Čirkić, D. Persson, J.-Å. Larsson and E. G. Larsson, “Approximating the LLR distribution for a class of soft-output MIMO detectors,” *IEEE Transactions on Signal Processing*, vol. 60, pp. 6421–6434, Dec. 2012.
- [45] D. Persson, E. G. Larsson and M. Skoglund, “Joint source-channel decoding over MIMO channels based on partial marginalization,” *IEEE Transactions on Signal Processing*, vol. 60, pp. 6734–6739, Dec. 2012.
- [46] S. K. Mohammed and E. G. Larsson, “Single-user beamforming in large-scale MISO systems with per-antenna constant-envelope constraints: The doughnut channel,” *IEEE Transactions on Wireless Communications*, vol. 11, pp. 3992–4005, Nov. 2012.
- [47] E. G. Larsson and R. Moosavi, “Piggybacking an additional lonely bit on linearly coded payload data,” *IEEE Wireless Communications Letters*, vol. 1, pp. 292–295, Aug. 2012.

- [48] A. Pitarokoilis, S. K. Mohammed and E. G. Larsson, "On the optimality of single-carrier transmission in large-scale antenna systems," *IEEE Wireless Communications Letters*, vol. 1, pp. 276–279, Aug. 2012.
- [49] M. Matthaiou, G. C. Alexandropoulos, H. Q. Ngo, and E. G. Larsson, "Analytic framework for the effective rate of MISO fading channels," *IEEE Transactions on Communications*, vol. 60, pp. 1741–1751, June 2012.
- [50] E. Axell, G. Leus, E. G. Larsson and V. Poor, "Spectrum sensing for cognitive radio: State-of-the-art and recent advances," *IEEE Signal Processing Magazine*, vol. 29, pp. 101–116, May 2012.
- [51] D. Persson, J. Kron (Karlsson), M. Skoglund and E. G. Larsson, "Joint source-channel coding for the MIMO broadcast channel," *IEEE Transactions on Signal Processing*, vol. 60, pp. 2085–2090, Apr. 2012.
- [52] M. Čirkić, D. Persson and E. G. Larsson, "Allocation of computational resources for soft MIMO detection," *IEEE Journal on Selected Topics in Signal Processing*, vol. 5, pp. 1451–1461, Dec. 2011.
- [53] H. Q. Ngo and E. G. Larsson, "Linear multihop amplify-and-forward relay channels: Error exponent and optimal number of hops," *IEEE Transactions on Wireless Communications*, vol. 10, pp. 3834–3842, Nov. 2011.
- [54] T. V. K. Chaitanya and E. G. Larsson, "Superposition modulation based symmetric relaying with hybrid ARQ: analysis and optimization," *IEEE Transactions on Vehicular Technology*, vol. 60, pp. 3667–3683, Oct. 2011.
- [55] S. Shi, E. G. Larsson and M. Skoglund, "Codebook design and hybrid digital/analog coding for parallel Rayleigh fading channels," *IEEE Transactions on Signal Processing*, vol. 59, pp. 5091–5096, Oct. 2011.
- [56] J. Kron (Karlsson), D. Persson, M. Skoglund and E. G. Larsson, "Closed-form sum-MSE minimization for the two-user Gaussian MIMO broadcast channel," *IEEE Communication Letters*, vol. 15, pp. 950–952, Sept. 2011.
- [57] J. Du, E. G. Larsson, M. Xiao and M. Skoglund, "Optimal symbol-by-symbol Costa precoding for a relay-aided downlink channel," *IEEE Transactions on Communications*, vol. 59, pp. 2274–2284, Aug. 2011.
- [58] T. V. K. Chaitanya and E. G. Larsson, "Outage-optimal power allocation for hybrid ARQ with incremental redundancy," *IEEE Transactions on Wireless Communications*, vol. 10, pp. 2069–2074, July 2011.
- [59] E. Axell and E. G. Larsson, "Comments on 'Multiple antenna spectrum sensing in cognitive radios'," *IEEE Transactions on Wireless Communications*, vol. 10, pp. 1678–1680, May 2011.
- [60] E. G. Larsson and O. Gustafsson, "The impact of dynamic voltage and frequency scaling on multicore DSP algorithm design," *IEEE Signal Processing Magazine*, pp. 127–131, May 2011.

- [61] E. Ayanoglu, E. G. Larsson and E. Karipidis, “Computational complexity of decoding orthogonal space-time block codes,” *IEEE Transactions on Communications*, pp. 936–941, April 2011.
- [62] E. Axell and E. G. Larsson, “Optimal and near-optimal spectrum sensing of OFDM signals in known and unknown noise variance,” *IEEE Journal on Selected Areas in Communications*, vol. 29, pp. 290–304, Feb. 2011.
- [63] D. Persson and E. G. Larsson, “Partial marginalization soft MIMO detection with higher order constellations,” *IEEE Transactions on Signal Processing*, vol. 59, pp. 453–458, Jan. 2011.
- [64] R. Moosavi, J. Eriksson, E. G. Larsson, N. Wiberg, P. Frenger and F. Gunnarsson, “Comparison of strategies for signaling of scheduling assignments in wireless OFDMA,” *IEEE Transactions on Vehicular Technology*, vol. 59, pp. 4527–4542, Nov. 2010.
- [65] E. G. Larsson, “Optimal OFDMA downlink scheduling under a control signaling cost constraint,” *IEEE Transactions on Communications*, vol. 58, pp. 2776–2781, Oct. 2010.
- [66] E. Jorswieck and E. G. Larsson, “Monotonic optimization framework for the two-user MISO interference channel,” *IEEE Transactions on Communications*, vol. 58, pp. 2159–2168, July 2010.
- [67] G. Bergqvist and E. G. Larsson, “The higher-order singular value decomposition: Theory and an application,” *IEEE Signal Processing Magazine*, pp. 151–154, May 2010. **Best Column Paper Award 2014.**
- [68] J. Lindblom, E. G. Larsson and E. Jorswieck, “Parameterization of the MISO IFC rate region: The case of partial channel state information,” *IEEE Transactions on Wireless Communications*, vol. 9, pp. 500–504, Feb. 2010.
- [69] E. G. Larsson and D. Danev, “Accuracy comparison of LS and squared-range LS for source localization,” *IEEE Transactions on Signal Processing*, vol. 58, pp. 916–923, Feb. 2010.
- [70] Z. Ma, P. Fan, E. G. Larsson and B. Honary, “Quasi-maximum-likelihood multiple-symbol differential detection for the time-varying Rayleigh fading channel,” *IET Electronic Letters*, vol. 45, pp. 1127–1128, Oct. 2009.
- [71] M. N. Khormuji and E. G. Larsson, “Finite-SNR analysis and optimization of decode-and-forward relaying over slow fading channels,” *IEEE Transactions on Vehicular Technology*, vol. 58, pp. 4292–4305, Oct. 2009.
- [72] J. Lindblom, E. Karipidis and E. G. Larsson, “Selfishness and altruism on the MISO interference channel: The case of partial transmitter CSI,” *IEEE Communication Letters*, vol. 13, pp. 667–669, Sept. 2009.
- [73] E. G. Larsson, E. Jorswieck, J. Lindblom and R. Mochaourab, “Game theory and the flat fading Gaussian interference channel,” *IEEE Signal Processing Magazine*, vol. 26, pp. 18–27, Sept. 2009.
- [74] M. Zheng, B. Honary, P. Fan and E. G. Larsson, “Stopping criterion for complexity reduction of sphere decoding,” *IEEE Communications Letters*, vol. 13, pp. 402–404, June 2009.

- [75] E. G. Larsson, “MIMO detection methods: How they work,” *IEEE Signal Processing Magazine*, vol. 26, pp. 91–95, May 2009. **Best Column Paper Award 2012.**
- [76] M. N. Khormuji and E. G. Larsson, “Cooperative transmission based on decode-and-forward relaying with partial repetition coding,” *IEEE Transactions on Wireless Communications*, vol. 8, pp. 1716–1725, April 2009.
- [77] E. Axell, E. G. Larsson and D. Danev, “Capacity considerations for uncoordinated communication in geographical spectrum holes,” *Physical Communication* (Elsevier), vol. 2, pp. 3–9, March 2009. Invited paper.
- [78] E. G. Larsson and M. Skoglund, “Cognitive radio in a frequency-planned environment: some basic limits,” *IEEE Transactions on Wireless Communications*, vol. 7, pp. 4800–4806, Dec. 2008.
- [79] M. Skoglund and E. G. Larsson, “Optimal modulation for known interference,” *IEEE Transactions on Communications*, vol. 56, pp. 1892–1899, Nov. 2008.
- [80] E. Jorswieck, E. G. Larsson and D. Danev, “Complete characterization of the Pareto boundary for the MISO interference channel,” *IEEE Transactions on Signal Processing*, vol. 56, pp. 5292–5296, Oct. 2008.
- [81] M. N. Khormuji and E. G. Larsson, “Rate-optimized constellation rearrangement for the relay channel,” *IEEE Communication Letters*, vol. 12, pp. 618–620, Sept. 2008.
- [82] E. G. Larsson and E. Jorswieck, “Competition versus cooperation on the MISO interference channel,” *IEEE Journal on Selected Areas on Communications*, vol. 26, pp. 1059–1069, Sept. 2008.
- [83] E. G. Larsson and J. Jaldén, “Fixed-complexity soft MIMO detection via partial marginalization,” *IEEE Transactions on Signal Processing*, vol. 56, pp. 3397–3407, Aug. 2008.
- [84] T. Kim, M. Bengtsson, E. G. Larsson and M. Skoglund, “Combining long-term and low-rate short-term channel state information over correlated MIMO channels,” *IEEE Transactions on Wireless Communications*, vol. 7, pp. 2409–2414, July 2008.
- [85] Y. Selén and E. G. Larsson, “Empirical Bayes linear regression with unknown model order,” *Digital Signal Processing*, vol. 18, pp. 236–248, March 2008.
- [86] M. Souryal, E. G. Larsson, B. Peric, and B. Vojcic, “Soft-decision metrics for coded orthogonal signaling in symmetric alpha-stable noise,” *IEEE Transactions on Signal Processing*, vol. 56, pp. 266–273, Jan. 2008.
- [87] E. G. Larsson and G. Regnoli, “Primary system detection for cognitive radio: Does small-scale fading help?” *IEEE Communications Letters*, vol. 11, pp. 799–801, Oct. 2007.
- [88] Y. Selén and E. G. Larsson, “RAKE receiver for channels with a sparse impulse response,” *IEEE Transactions on Wireless Communications*, vol. 6, pp. 3175–3180, Sept. 2007.
- [89] M. Mowlér, B. Lindmark, E. G. Larsson and B. Ottersten, “Joint estimation of mutual coupling, element factor, and phase center in antenna arrays,” *EURASIP Journal on Wireless Communications and Networking*, 2007.

- [90] E. G. Larsson, "Model-averaged interference rejection combining," *IEEE Transactions on Communications*, vol. 55, pp. 271–274, Feb. 2007.
- [91] E. G. Larsson and Y. Selén, "Linear regression with a sparse parameter vector," *IEEE Transactions on Signal Processing*, vol. 55, pp. 451–460, Feb. 2007.
- [92] N. Zhang, B. Vojcic, M. Souryal, and E. G. Larsson, "Exploiting multiuser diversity in reservation random access," *IEEE Transactions on Wireless Communications*, vol. 5, pp. 2548–2554, Sept. 2006.
- [93] E. G. Larsson and B. Vojcic, "Cooperative transmit diversity based on superposition modulation," *IEEE Communications Letters*, vol. 9, pp. 778–780, Sept. 2005.
- [94] M. Doroslovački and E. G. Larsson, "Nonuniform linear antenna arrays minimizing Cramér-Rao bounds for joint estimation of single source range and direction-of-arrival," *IEEE Proceedings on Radar, Sonar and Navigation*, vol. 152, pp. 225–231, Aug. 2005.
- [95] E. G. Larsson and Y. Cao, "Collaborative transmit diversity with adaptive radio resource and power allocation," *IEEE Communications Letters*, vol. 9, pp. 511–513, June 2005.
- [96] S. Alty, A. Jakobsson, and E. G. Larsson, "Efficient implementation of the time-recursive Capon and APES spectral estimators," *IEEE Transactions on Circuits and Systems*, vol. 52, pp. 516–521, Mar. 2005.
- [97] E. G. Larsson, Y. Selén, and P. Stoica, "Adaptive equalization for frequency-selective channels of unknown length," *IEEE Transactions on Vehicular Technology*, vol. 54, pp. 568–579, Mar. 2005.
- [98] E. G. Larsson, "Multiuser detection with an unknown number of users," *IEEE Transactions on Signal Processing*, pp. 724–727, Feb. 2005.
- [99] D. Erdogmus, R. Yan, E. G. Larsson, J. C. Principe, and J. R. Fitzsimmons, "Image construction methods for phased array magnetic resonance imaging," *Journal of Magnetic Resonance Imaging*, vol. 20, pp. 306–314, Aug. 2004.
- [100] E. G. Larsson, "Improving the frame-error-rate of spatial multiplexing in block fading by randomly rotating the signal constellation," *IEEE Communications Letters*, vol. 8, Aug. 2004.
- [101] E. G. Larsson, "On the combination of spatial diversity and multiuser diversity," *IEEE Communications Letters*, vol. 8, Aug. 2004.
- [102] D. Erdogmus, E. G. Larsson, R. Yan, J. C. Principe, and J. R. Fitzsimmons, "Measuring the signal-to-noise-ratio in magnetic resonance imaging: A caveat," *Signal Processing*, vol. 84, pp. 1035–1040, May 2004.
- [103] D. Erdogmus, E. G. Larsson, R. Yan, J. C. Principe, and J. R. Fitzsimmons, "Asymptotic SNR-performance of some image combination techniques for phased-array MRI," *Signal Processing*, vol. 84, pp. 997–1003, May 2004.
- [104] E. G. Larsson and W.-H. Wong, "Nonuniform space-time codes for layered source coding," *IEEE Transactions on Wireless Communications*, vol. 3, pp. 958–965, May 2004.

- [105] G. Ganesan, P. Stoica, and E. G. Larsson, "Orthogonal space-time block codes with feedback," *Wireless Personal Communications*, vol. 28, pp. 287–312, Mar. 2004.
- [106] E. G. Larsson, "Cramér-Rao bound analysis of distributed positioning in sensor networks," *IEEE Signal Processing Letters*, vol. 11, pp. 334–337, Mar. 2004.
- [107] E. G. Larsson, "Diversity and channel estimation errors," *IEEE Transactions on Communications*, vol. 52, pp. 205–208, Feb. 2004.
- [108] E. K. Larsson and E. G. Larsson, "The CRB for parameter estimation in irregularly sampled continuous-time ARMA systems," *IEEE Signal Processing Letters*, vol. 11, pp. 197–200, Feb. 2004.
- [109] E. G. Larsson and P. Stoica, "Mean square error optimality of orthogonal space-time block codes," *IEEE Signal Processing Letters*, vol. 10, pp. 327–330, Nov. 2003.
- [110] E. G. Larsson and J. Li, "Spectral analysis of periodically gapped data," *IEEE Transactions on Aerospace and Electronic Systems*, vol. 39, pp. 1089–1097, July 2003.
- [111] E. G. Larsson, D. Erdogmus, R. Yan, J. C. Principe, and J. R. Fitzsimmons, "SNR-optimality of sum-of-squares reconstruction for phased-array magnetic resonance imaging," *Journal of Magnetic Resonance*, vol. 163, pp. 121–123, July 2003.
- [112] W.-H. Wong and E. G. Larsson, "Orthogonal space-time block coding with antenna selection and power allocation," *IET Electronic Letters*, vol. 39, pp. 379–381, Feb. 2003.
- [113] E. G. Larsson, P. Stoica, and J. Li, "Orthogonal space-time block codes: Maximum-likelihood detection for unknown channels and unstructured interference," *IEEE Transactions on Signal Processing*, vol. 51, pp. 362–372, Feb. 2003.
- [114] E. G. Larsson, "Unitary nonuniform space-time constellations for the broadcast channel," *IEEE Communications Letters*, vol. 7, pp. 21–23, Jan. 2003.
- [115] E. G. Larsson and E. K. Larsson, "The Cramér-Rao bound for continuous-time autoregressive parameter estimation with irregular sampling," *Circuits, Systems and Signal Processing*, vol. 21, no. 6, pp. 581–601, 2002.
- [116] E. G. Larsson, P. Stoica, and J. Li, "Spectral estimation via adaptive filterbank methods: A unified analysis and a new algorithm," *Signal Processing*, vol. 82, pp. 1991–2001, Dec. 2002.
- [117] E. G. Larsson, G. Ganesan, P. Stoica, and W.-H. Wong, "On the performance of orthogonal space-time block coding with quantized feedback," *IEEE Communications Letters*, vol. 6, pp. 487–489, Nov. 2002.
- [118] E. G. Larsson, P. Stoica, and J. Li, "On a decoupled approach to adaptive signal separation using an antenna array," *IEEE Transactions on Vehicular Technology*, vol. 51, pp. 1681–1685, Nov. 2002.
- [119] E. G. Larsson, P. Stoica, and J. Li, "Amplitude spectrum estimation for two-dimensional gapped data," *IEEE Transactions on Signal Processing*, vol. 50, pp. 1343–1354, June 2002.

- [120] E. G. Larsson, P. Stoica, and J. Li, "On maximum-likelihood detection and decoding for space-time coding systems," *IEEE Transactions on Signal Processing*, vol. 50, pp. 937–944, Apr. 2002.
- [121] J. Liu, J. Li, and E. G. Larsson, "Differential space-time block code modulation for DS-CDMA systems," *EURASIP Journal on Applied Signal Processing*, pp. 289–296, Mar. 2002.
- [122] A. B. Gershman, P. Stoica, M. Pesavento, and E. G. Larsson, "Stochastic Cramér-Rao bounds for direction estimation in unknown noise fields," *IEE Proceedings on Radar, Sonar and Navigation*, vol. 149, pp. 2–8, Feb. 2002.
- [123] X. Li, E. G. Larsson, J. Li, and M. Sheplak, "Phase-shift based time-delay estimators for proximity acoustic sensors," *IEEE Journal of Oceanic Engineering*, vol. 27, pp. 47–56, Jan. 2002.
- [124] E. G. Larsson and P. Stoica, "Fast implementation of two-dimensional APES and CAPON spectral estimators," *Multidimensional Systems and Signal Processing*, vol. 13, pp. 35–54, Jan. 2002.
- [125] P. Stoica and E. G. Larsson, "Comments on *Linearization Method for Finding Cramér-Rao Bounds in Signal Processing*," *IEEE Transactions on Signal Processing*, vol. 49, pp. 3168–3169, Dec. 2001.
- [126] E. G. Larsson and J. Li, "Preamble design for multiple-antenna OFDM-based WLANs with null subcarriers," *IEEE Signal Processing Letters*, vol. 8, pp. 285–288, Nov. 2001.
- [127] E. G. Larsson, G. Liu, P. Stoica, and J. Li, "High-resolution SAR imaging with angular diversity," *IEEE Transactions on Aerospace and Electronic Systems*, vol. 37, pp. 1359–1372, Oct. 2001.
- [128] E. G. Larsson, G. Liu, J. Li, and G. B. Giannakis, "Joint symbol timing and channel estimation for OFDM based WLANs," *IEEE Communications Letters*, vol. 5, pp. 325–327, Aug. 2001.
- [129] J. Liu, J. Li, H. Li, and E. G. Larsson, "Differential space-code modulation for interference suppression," *IEEE Transactions on Signal Processing*, vol. 49, pp. 1786–1795, Aug. 2001.
- [130] E. G. Larsson, J. Liu, and J. Li, "Demodulation of space-time codes in the presence of interference," *IET Electronic Letters*, vol. 37, pp. 697–698, May 2001.
- [131] E. G. Larsson and P. Stoica, "High-resolution direction finding: the missing data case," *IEEE Transactions on Signal Processing*, vol. 49, pp. 950–958, May 2001.
- [132] P. Stoica, E. G. Larsson, and A. B. Gershman, "The stochastic CRB for array processing: a textbook derivation," *IEEE Signal Processing Letters*, vol. 8, pp. 148–150, May 2001.
- [133] P. Stoica, E. G. Larsson, and J. Li, "Adaptive filterbank approach to restoration and spectral analysis of gapped data," *The Astronomical Journal*, vol. 120, pp. 2163–2173, Oct. 2000.

Editorials in Journal Special Issues:

- [1] M. Matthaiou, G. K. Karagiannidis, E. G. Larsson, T. L. Marzetta and R. Schober, “Large-scale multiple antenna wireless systems,” *IEEE Journal on Selected Areas in Communications*, 2013.
- [2] R. W. Heath, Jr., M. Debbah, E. G. Larsson, D. I. Kim, H. Viswanathan and I. Güvenç, “Signal processing in heterogeneous networks for future broadband wireless systems,” *IEEE Journal on Selected Topics in Signal Processing*, 2012.
- [3] E. A. Jorswieck, E. G. Larsson, M. Luise, H. V. Poor and A. Leshem, “Game theory in signal processing,” *IEEE Journal on Selected Topics in Signal Processing*, 2012.
- [4] H. Boche, Z. Han, E. G. Larsson and E. A. Jorswieck, “Game theory in signal processing and communications,” *EURASIP Journal on Advances in Signal Processing*, 2009.
- [5] L. Cottatellucci, X. Mestre, E. G. Larsson and A. Ribeiro, “Cooperative communications in wireless networks,” *EURASIP Journal on Advances in Signal Processing*, 2009.
- [6] E. Jorswieck, E. G. Larsson, M. Luise and V. Poor, “Game theory in signal processing and communications,” *IEEE Signal Processing Magazine*, Sept. 2009.

Conference Papers:

- [1] G. Interdonato, H. Q. Ngo, E. G. Larsson and P. Frenger, “How much do downlink pilots improve cell-free massive MIMO?,” in *Proc. of IEEE Global Telecommunications Conference (GLOBECOM)*, Dec. 2016. To appear.
- [2] J. Flordelis, F. Rusek, F. Tufvesson, O. Edfors and E. G. Larsson, “FD-MIMO versus massive MIMO performance: what do the data say?,” in *Proc. of Asilomar Conference on Signals, Systems and Computers*, Nov. 2016. To appear.
- [3] E. Bertilsson, O. Gustafsson and E. G. Larsson, “A scalable architecture for massive MIMO base stations using distributed processing,” in *Proc. of Asilomar Conference on Signals, Systems and Computers*, Nov. 2016. To appear.
- [4] G. Interdonato, H. Q. Ngo, E. G. Larsson and P. Frenger, “On the performance of cell-free massive MIMO with short-term power constraints,” in *Proc. of IEEE International Workshop on Computer Aided Modelling and Design of Communication Links and Networks (CAMAD)*, Oct. 2016. To appear.
- [5] T. van Chien, E. Björnson and E. G. Larsson, “Multi-cell massive MIMO performance with double scattering channels,” in *Proc. of IEEE International Workshop on Computer Aided Modelling and Design of Communication Links and Networks (CAMAD)*, Oct. 2016. To appear.
- [6] V. Savic and E. G. Larsson, “Experimental study of indoor tracking using UWB measurements and particle filtering,” in *Proc. of IEEE Signal Processing Advances in Wireless Communications (SPAWC)*, July 2016.
- [7] S. Kashyap, C. Mollén, E. Björnson and E. G. Larsson, “Frequency-domain interpolation of the zero-forcing matrix in massive MIMO-OFDM,” in *Proc. of IEEE Signal Processing Advances in Wireless Communications (SPAWC)*, July 2016.

- [8] J. Vinogradova, E. Björnson and E. G. Larsson, “Detection and mitigation of jamming attacks in massive MIMO systems using random matrix theory,” in *Proc. of IEEE Signal Processing Advances in Wireless Communications (SPAWC)*, July 2016.
- [9] P. Chandhar, D. Danev and E. G. Larsson, “On ergodic rates and optimal array geometry in line-of-sight massive MIMO,” in *Proc. of IEEE Signal Processing Advances in Wireless Communications (SPAWC)*, July 2016.
- [10] P. Chandhar, D. Danev and E. G. Larsson, “Massive MIMO as enabler for communications with drone swarms,” in *Proc. of International Conference on Unmanned Aircraft Systems (ICUAS)*, June 2016.
- [11] C. Mollén, U. Gustafsson, T. Eriksson and E. G. Larsson, “Out-of-band radiation measure for MIMO arrays with beamformed transmission,” in *Proc. of IEEE International Conference on Communications (ICC)*, May 2016.
- [12] T. van Chien, E. Björnson and E. G. Larsson, “Downlink power control for massive MIMO cellular systems with optimal user association,” in *Proc. of IEEE International Conference on Communications (ICC)*, May 2016.
- [13] E. Björnson, E. de Carvalho, E. G. Larsson and P. Popovski, “Random access protocol for massive MIMO: Strongest-user collision resolution (SUCR),” in *Proc. of IEEE International Conference on Communications (ICC)*, May 2016.
- [14] A. Gökceoglu, M. Valkama, E. G. Larsson and E. Björnson, “Waveform design for massive MISO downlink with energy-efficient receivers adopting 1-bit ADCs,” in *Proc. of IEEE International Conference on Communications (ICC)*, May 2016.
- [15] C. Mollén, J. Choi, E. G. Larsson and R. W. Heath, Jr., “Performance of linear receivers for wideband massive MIMO with one-bit analog-to-digital converters,” in *Proc. of the 20th International ITG Workshop on Smart Antennas*, Mar. 2016.
- [16] C. Mollén, J. Choi, E. G. Larsson and R. W. Heath, Jr., “One-bit ADCs in wideband massive MIMO systems with OFDM transmission,” in *Proc. of IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*, Mar. 2016.
- [17] E. de Carvalho, E. Björnson, E. G. Larsson and P. Popovski, “Random access for massive MIMO systems with intra-cell pilot contamination,” in *Proc. of IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*, Mar. 2016.
- [18] J. Vinogradova, E. Björnson and E. G. Larsson, “On the separability of signal and interference-plus-noise subspaces in blind pilot decontamination,” in *Proc. of IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*, Mar. 2016.
- [19] E. Björnson and E. G. Larsson, “Three practical aspects of massive MIMO: Intermittent user activity, pilot synchronism, and asymmetric deployment,” in *Proc. of IEEE Global Telecommunications Conference (GLOBECOM)*, Workshop on Massive MIMO: from Theory to Practice, Dec. 2015.

- [20] X. Li, E. Björnson, E. G. Larsson, S. Zhou and J. Wang, “A multi-cell MMSE detector for massive MIMO systems and new large system analysis,” in *Proc. of IEEE Global Telecommunications Conference (GLOBECOM)*, Dec. 2015.
- [21] X. Li, E. Björnson, E. G. Larsson, S. Zhou and J. Wang, “A multi-cell MMSE precoder for massive MIMO systems and new large system analysis,” in *Proc. of IEEE Global Telecommunications Conference (GLOBECOM)*, Dec. 2015.
- [22] X. Gao, O. Edfors, F. Tufvesson and E. G. Larsson, “Multi-switch for antenna selection in massive MIMO,” in *Proc. of IEEE Global Telecommunications Conference (GLOBECOM)*, Dec. 2015.
- [23] V. Savic and E. G. Larsson, “Fingerprinting-based positioning in distributed massive MIMO systems,” in *Proc. of IEEE Vehicular Technology Conference (VTC)*, Sept. 2015.
- [24] H. V. Cheng, E. Björnson, and E. G. Larsson, “Uplink pilot and data power control for single-cell massive MIMO Systems with MRC,” in *Proc. of IEEE International Symposium on Wireless Communication Systems (ISWCS)*, Aug. 2015.
- [25] M. Karlsson, E. Björnson, and E. G. Larsson, “Broadcasting in massive MIMO using OSTBC with reduced dimension,” in *Proc. of IEEE International Symposium on Wireless Communication Systems (ISWCS)*, Aug. 2015.
- [26] E. Björnson, M. Matthaiou, A. Pitarokoilis, and E. G. Larsson, “Distributed massive MIMO in cellular networks: Impact of imperfect hardware & number of oscillators,” in *Proc. of European Signal Processing Conference (EUSIPCO)*, Aug. 2015.
- [27] H. Q. Ngo, A. Ashikhmin, H. Yang, E. G. Larsson and T. L. Marzetta, “Cell-free massive MIMO: Uniformly great service for everyone,” in *Proc. of IEEE Signal Processing Advances in Wireless Communications (SPAWC)*, June 2015.
- [28] S. Kashyap, E. Björnson and E. G. Larsson, “On the feasibility of wireless energy transfer using massive antenna arrays in Rician channels,” in *Proc. of IEEE Signal Processing Advances in Wireless Communications (SPAWC)*, June 2015.
- [29] E. G. Larsson, “Joint beamforming and broadcasting in massive MIMO,” in *Proc. of IEEE Signal Processing Advances in Wireless Communications (SPAWC)*, June 2015.
- [30] C. Mollén and E. G. Larsson, “Multiuser MIMO precoding with per-antenna continuous-time constant-envelope constraints,” in *Proc. of IEEE Signal Processing Advances in Wireless Communications (SPAWC)*, June 2015.
- [31] A. Pitarokoilis, E. Björnson and E. G. Larsson, “Optimal detection in training assisted SIMO systems with phase noise impairments,” in *Proc. of IEEE International Conference on Communications (ICC)*, June 2015.
- [32] X. Jiang, M. Čirkić, F. Kaltenberger, E. G. Larsson, L. Deneire and R. Knopp, “MIMO-TDD reciprocity under hardware imbalances: Experimental results,” in *Proc. of IEEE International Conference on Communications (ICC)*, June 2015.

- [33] H. V. Cheng, D. Persson, E. Björnson and E. G. Larsson, “Massive MIMO at night: on the operation of massive MIMO in low traffic scenarios,” in *Proc. of IEEE International Conference on Communications (ICC)*, June 2015.
- [34] S. Kashyap, E. Björnson and E. G. Larsson, “Can wireless power transfer benefit from large transmitter arrays?,” in *Proc. of IEEE Wireless Power Transfer Conference (WPTC)*, May 2015.
- [35] H. Q. Ngo and E. G. Larsson, “Blind estimation of effective downlink channel gains in massive MIMO,” in *Proc. of IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*, April 2015.
- [36] E. Axell, E. G. Larsson and D. Persson, “GNSS spoofing detection using multiple mobile COTS receivers,” in *Proc. of IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*, April 2015.
- [37] E. Björnson, E. G. Larsson and M. Debbah, “Optimizing multi-cell massive MIMO for spectral efficiency: How many users should be scheduled?,” *Proc. of IEEE Global Conference on Signal and Information Processing (GlobalSIP)*, Dec. 2014.
- [38] M. Karlsson and E. G. Larsson, “Massive MIMO as a cyber-weapon,” in *Proc. of Asilomar Conference on Signals, Systems and Computers*, Nov. 2014.
- [39] H. Q. Ngo, E. G. Larsson and T. L. Marzetta, “Aspects of favorable propagation in massive MIMO,” in *Proc. of European Signal Processing Conference (EUSIPCO)*, Sept. 2014.
- [40] V. Savic, E. G. Larsson, J. Ferrer-Coll, and P. Stenumgaard, “Kernel principal component analysis for UWB-based ranging,” in *Proc. of IEEE Signal Processing Advances in Wireless Communications (SPAWC)*, June 2014.
- [41] M. Čirkić and E. G. Larsson, “On the computational complexity of very large multi-user MIMO detection,” in *Proc. of IEEE Signal Processing Advances in Wireless Communications (SPAWC)*, June 2014.
- [42] H. V. Cheng, D. Persson and E. G. Larsson, “MIMO capacity under power amplifiers consumed power and per-antenna radiated power constraints,” in *Proc. of IEEE Signal Processing Advances in Wireless Communications (SPAWC)*, June 2014.
- [43] M. Karlsson and E. G. Larsson, “On the operation of massive MIMO with and without transmitter CSI,” in *Proc. of IEEE Signal Processing Advances in Wireless Communications (SPAWC)*, June 2014. Invited paper.
- [44] H. Q. Ngo, H. A. Suraweera, M. Matthaiou and E. G. Larsson, “Multipair massive MIMO full-duplex relaying with MRC/MRT processing,” in *Proc. of IEEE International Conference on Communications (ICC)*, June 2014.
- [45] C. Mollén, E. G. Larsson and T. Eriksson, “On the impact of PA-induced in-band distortion in massive MIMO,” in *Proc. of European Wireless Conference*, May 2014.

- [46] T. V. K. Chaitanya, D. Danev and E. G. Larsson, "Constant envelope signal space diversity," in *Proc. of IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*, May 2014.
- [47] K. Huang and E. G. Larsson, "Simultaneous information-and-power transfer over broadband channels," in *Proc. of Asilomar Conference on Signals, Systems and Computers*, Nov. 2013.
- [48] H. V. Cheng and E. G. Larsson, "Some fundamental limits on synchronization in massive MIMO," in *Proc. of Asilomar Conference on Signals, Systems and Computers*, Nov. 2013.
- [49] H. Q. Ngo and E. G. Larsson, "Spectral efficiency of the multipair two-way relay channel with massive arrays," in *Proc. of Asilomar Conference on Signals, Systems and Computers*, Nov. 2013. Invited paper.
- [50] A. Pitarokoilis, S. K. Mohammed and E. G. Larsson, "Achievable rates of ZF receivers in large MU-MIMO systems with phase noise impairments," in *Proc. of Asilomar Conference on Signals, Systems and Computers*, Nov. 2013. Invited paper.
- [51] H. Q. Ngo, E. G. Larsson and T. L. Marzetta, "Massive MU-MIMO downlink TDD systems with linear precoding and downlink pilots," in *Proc. of Allerton Conference on Communication, Control, and Computing*, Oct. 2013.
- [52] V. Savic, H. Wymeersch and E. G. Larsson, "Simultaneous sensor localization and target tracking in mine tunnels," in *Proc. of International Conference on Information Fusion*, July 2013.
- [53] T. V. K. Chaitanya and E. G. Larsson, "Improving 3GPP-LTE uplink control signaling by repetition across frequency bands," in *Proc. of IEEE International Conference on Communications (ICC)*, June 2013.
- [54] H. A. Suraweera, H. Q. Ngo, T. Q. Duong, C. Yuen and E. G. Larsson, "Multi-pair amplify-and-forward relaying with very large antenna arrays," in *Proc. of IEEE International Conference on Communications (ICC)*, June 2013.
- [55] R. Gangula, D. Gesbert, J. Lindblom and E. G. Larsson, "On the value of spectrum sharing among operators in multicell networks," in *Proc. of IEEE Vehicular Technology Conference (VTC)*, June 2013.
- [56] K. Huang and E. G. Larsson, "Simultaneous information-and-power transfer for broadband downlink systems," in *Proc. of IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*, May 2013.
- [57] T. V. K. Chaitanya and E. G. Larsson, "Bits-to-symbol mappings for superposition coding based HARQ systems," in *Proc. of IEEE Wireless Communications and Networking Conference (WCNC)*, April 2012.
- [58] J. Eriksson, R. Moosavi and E. G. Larsson, "Complexity reduction of blind decoding schemes using CRC splitting," in *Proc. of IEEE Global Telecommunications Conference (GLOBECOM)*, Dec. 2012.

- [59] R. Moosavi and E. G. Larsson, “Fast identification of control signaling aided by please-decode-blindly (PDB) messages,” in *Proc. of IEEE Swedish Communication Technologies Workshop*, Oct. 2012.
- [60] H. Q. Ngo, M. Matthaiou and E. G. Larsson, “Performance analysis of large scale MU-MIMO with optimal linear receivers,” in *Proc. of IEEE Swedish Communication Technologies Workshop*, Oct. 2012.
- [61] A. Pitarokoilis, S. K. Mohammed and E. G. Larsson, “Effect of oscillator phase noise on uplink performance of large MU-MIMO systems,” in *Proc. of Allerton Conference on Communication, Control, and Computing*, Oct. 2012.
- [62] Y. Wu, D. Danev and E. G. Larsson, “On ACK/NACK messages detection in the LTE PUCCH with multiple receive antennas,” in *Proc. of European Signal Processing Conference (EUSIPCO)*, Aug. 2012.
- [63] L. Yu, E. Karipidis and E. G. Larsson, “Coordinated scheduling and beamforming for multicell spectrum sharing networks using branch & bound,” in *Proc. of European Signal Processing Conference (EUSIPCO)*, Aug. 2012.
- [64] J. Luo, J. Lindblom, J. Li, R. Mochaourab, A. Kortke, E. Karipidis, M. Haardt, E. Jorswieck and E. G. Larsson, “Transmit beamforming for inter-operator spectrum sharing: From theory to practice,” in *Proc. of International Symposium on Wireless Communication Systems (ISWCS)*, Aug. 2012.
- [65] C. Studer and E. G. Larsson, “PAR-aware multi-user precoder for the large-scale MIMO-OFDM downlink,” in *Proc. of the Ninth International Symposium on Wireless Communication (ISWCS)*, Paris, France, Aug. 2012. Invited paper.
- [66] J. Lindblom and E. G. Larsson, “Does non-orthogonal spectrum sharing in the same cell improve the sum-rate of wireless operators?,” in *Proc. of IEEE Signal Processing Advances in Wireless Communications (SPAWC)*, June 2012. Invited paper.
- [67] A. Blad, E. Axell and E. G. Larsson, “Spectrum sensing of OFDM signals in the presence of CFO: New algorithms and empirical evaluation using USRP,” in *Proc. of IEEE Signal Processing Advances in Wireless Communications (SPAWC)*, June 2012.
- [68] M. Matthaiou, G. C. Alexandropoulos, H. Q. Ngo and E. G. Larsson, “Effective rate analysis of MISO Rician fading channels,” in *Proc. of IEEE Sensor Array and Multichannel Signal Processing (SAM)*, June 2012.
- [69] S. K. Mohammed and E. G. Larsson, “Power-efficient downlink communication using large antenna arrays: the doughnut channel,” in *Proc. of IEEE International Conference on Communications (ICC)*, June 2012.
- [70] Y. Wu, D. Danev and E. G. Larsson, “Improved detection of ACK/NACK messages in the LTE uplink control channel,” in *Proc. of IEEE Vehicular Technology Conference (VTC)*, May 2012.
- [71] M. Ćirkić and E. G. Larsson, “Near-optimal soft-output fixed-complexity MIMO detection via subspace marginalization and interference suppression,” in *Proc. of IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*, March 2012.

- [72] H. Q. Ngo and E. G. Larsson, "EVD-based channel estimation in multicell multiuser MIMO systems with very large antenna arrays," in *Proc. of IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*, March 2012.
- [73] S. K. Mohammed and E. G. Larsson, "Constant-envelope precoding for power-efficient downlink wireless communication in multiuser MIMO systems using large antenna arrays," in *Proc. of IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*, March 2012.
- [74] J. Lindblom, E. Karipidis and E. G. Larsson, "Efficient computation of the Pareto boundary for the two-user MISO interference channel with multi-user decoding capable receivers," in *Proc. of IEEE International Workshop on Computational Advances in Multi-Sensor Adaptive Processing (CAMSAP)*, Dec. 2011.
- [75] E. Axell and E. G. Larsson, "Multiantenna spectrum sensing of a second-order cyclostationary signal," in *Proc. of IEEE International Workshop on Computational Advances in Multi-Sensor Adaptive Processing (CAMSAP)*, Dec. 2011.
- [76] E. A. Gharavol and E. G. Larsson, "Robust joint optimization of MIMO interfering relay channels with imperfect CSI," in *Proc. of IEEE International Workshop on Computational Advances in Multi-Sensor Adaptive Processing (CAMSAP)*, Dec. 2011.
- [77] E. Axell and E. G. Larsson, "Spectrum sensing of signals with structured covariance matrices using covariance matching estimation techniques," in *Proc. of IEEE Global Telecommunications Conference (GLOBECOM)*, Dec. 2011.
- [78] R. Moosavi and E. G. Larsson, "A fast scheme for blind identification of channel codes," in *Proc. of IEEE Global Telecommunications Conference (GLOBECOM)*, Dec. 2011.
- [79] S. K. Mohammed and E. G. Larsson, "A low-complexity user grouping based multiuser MISO downlink precoder," in *Proc. of IEEE Global Telecommunications Conference (GLOBECOM)*, Dec. 2011.
- [80] E. A. Gharavol and E. G. Larsson, "Robust joint optimization of non-regenerative MIMO relay channels with imperfect CSI," in *Proc. of Asilomar Conference on Signals, Systems and Computers*, Nov. 2011.
- [81] H. Q. Ngo, T. Q. Duong and E. G. Larsson, "Uplink performance analysis of multicell MU-MIMO with zero-forcing receivers and perfect CSI," in *Proc. of IEEE Swedish Communication Technologies Workshop*, Oct. 2011.
- [82] T. V. K. Chaitanya and E. G. Larsson, "Optimal resource allocation for IR-HARQ," in *Proc. of IEEE Swedish Communication Technologies Workshop*, Oct. 2011. **Best student paper award.**
- [83] E. A. Gharavol and E. G. Larsson, "Robust joint optimization of MIMO two-way relay channels with imperfect CSI," in *Proc. of Allerton Conference on Communication, Control, and Computing*, Sept. 2011.

- [84] H. Q. Ngo, E. G. Larsson and T. L. Marzetta, "Uplink power efficiency of multiuser MIMO with very large antenna arrays," in *Proc. of Allerton Conference on Communication, Control, and Computing*, Sept. 2011.
- [85] E. Axell and E. G. Larsson, "A unified framework for GLRT-based spectrum sensing of signals with covariance matrices with known eigenvalue multiplicities," in *Proc. of IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*, May 2011.
- [86] H. Q. Ngo, T. L. Marzetta and E. G. Larsson, "Analysis of the pilot contamination effect in very large multicell multiuser MIMO systems for physical channel models," in *Proc. of IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*, May 2011.
- [87] M. Čirkić, D. Persson and E. G. Larsson, "New results on adaptive computational resource allocation in soft MIMO detection," in *Proc. of IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*, May 2011.
- [88] M. Čirkić, D. Persson and E. G. Larsson, "Gaussian approximation of the LLR distribution for the ML and partial marginalization MIMO detectors," in *Proc. of IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*, May 2011.
- [89] J. Lindblom, E. Karipidis and E. G. Larsson, "Closed-form parameterization of the Pareto boundary for the two-user MISO interference channel," in *Proc. of IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*, May 2011.
- [90] E. Karipidis, D. Yuan and E. G. Larsson, "Mixed-integer linear programming framework for max-min power control with single-stage interference cancellation," in *Proc. of IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*, May 2011.
- [91] Y. Wu, Z. Tang and E. G. Larsson, "Optimization of frame length in OFDMA systems taking into account the control signaling cost," in *Proc. of IEEE Vehicular Technology Conference (VTC)*, 2011.
- [92] C. Luo, Y. Wu, Z. Fei, E. G. Larsson and J. Kuang, "Adaptive partial decode-and-forward relaying with quantized feedback," in *Proc. of IEEE Vehicular Technology Conference (VTC)*, 2011.
- [93] R. Moosavi, J. Eriksson and E. G. Larsson, "Differential signaling of scheduling information in wireless multiple access systems," in *Proc. of IEEE Global Telecommunications Conference (GLOBECOM)*, Dec. 2010.
- [94] R. Moosavi and E. G. Larsson, "Reducing downlink signaling traffic in wireless systems using mobile-assisted scheduling," in *Proc. of IEEE Global Telecommunications Conference (GLOBECOM)*, Dec. 2010.
- [95] K. Eriksson, S. Shi, N. Vucic, M. Schubert and E. G. Larsson, "Globally optimal resource allocation for achieving maximum weighted sum-rate," in *Proc. of IEEE Global Telecommunications Conference (GLOBECOM)*, Dec. 2010.
- [96] G. Bergqvist and E. G. Larsson, "Overview of recent advances in numerical tensor algebra," in *Proc. of Asilomar Conference on Signals, Systems and Computers*, Nov. 2010.

- [97] D. Danev, E. Axell and E. G. Larsson, "Spectrum sensing methods for detection of DVB-T signals in AWGN and fading channels," in *Proc. of IEEE International Symposium on Personal, Indoor and Mobile Radio Communication (PIMRC)*, 2010.
- [98] T. V. K. Chaitanya and E. G. Larsson, "Retransmission strategies for symmetric relaying using superposition modulation," in *Proc. of IEEE Vehicular Technology Conference (VTC)*, 2010.
- [99] E. Karipidis and E. G. Larsson, "Efficient computation of the Pareto boundary for the MISO interference channel with perfect CSI," in *Proc. of International Workshop on Wireless Networks: Communication, Cooperation and Competition (WNC3)*, June 2010.
- [100] E. Axell and E. G. Larsson, "Optimal and near-optimal spectrum sensing of OFDM signals in AWGN channels," in *Proc. of International Workshop on Cognitive Information Processing (CIP)*, June 2010.
- [101] E. Axell, G. Leus and E. G. Larsson, "Overview of spectrum sensing for cognitive radio," in *Proc. of International Workshop on Cognitive Information Processing (CIP)*, June 2010.
- [102] T. V. K. Chaitanya, E. G. Larsson and N. Wiberg, "Improved error protection for uplink control signaling in 3GPP-LTE via complex-field coding," in *Proc. of IEEE Vehicular Technology Conference (VTC)*, 2010.
- [103] E. Ayanoglu, E. G. Larsson and E. Karipidis, "Computational complexity of decoding orthogonal space-time block codes," in *Proc. of IEEE International Conference on Communications (ICC)*, 2010.
- [104] E. G. Larsson, R. Thobaben and G. Wang, "On diversity combining with unknown channel state information and unknown noise variance," in *Proc. of IEEE Wireless Communications and Networking Conference (WCNC)*, April 2010.
- [105] E. Axell and E. G. Larsson, "Spectrum sensing of orthogonal space-time block coded signals with multiple receive antennas," in *Proc. of IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*, March 2010.
- [106] E. Karipidis, A. Gründinger, J. Lindblom and E. G. Larsson, "Pareto-optimal beamforming for the MISO interference channel with partial CSI," in *Proc. of IEEE International Workshop on Computational Advances in Multi-Sensor Adaptive Processing (CAMSAP)*, Dec. 2009.
- [107] E. Karipidis, E. G. Larsson and K. Holmberg, "Optimal scheduling and QoS power control for cognitive underlay networks," in *Proc. of IEEE International Workshop on Computational Advances in Multi-Sensor Adaptive Processing (CAMSAP)*, Dec. 2009.
- [108] J. Lindblom, E. Karipidis and E. G. Larsson, "Outage rate regions for the MISO IFC," in *Proc. of Asilomar Conference on Signals, Systems and Computers*, Nov. 2009.
- [109] M. Čirkić, D. Persson and E. G. Larsson, "Optimization of computational resource allocation for soft MIMO-detection using partial marginalization," in *Proc. of Asilomar Conference on Signals, Systems and Computers*, Nov. 2009.

- [110] E. Axell, E. G. Larsson and J.-Å. Larsson, "On the optimal K -term approximation of a sparse parameter vector MMSE estimate," in *Proc. of IEEE Workshop on Statistical Signal Processing*, (Cardiff, UK), Aug. 2009.
- [111] J. Eriksson, R. Moosavi, E. G. Larsson, N. Wiberg, P. Frenger, F. Gunnarsson, "On coding of scheduling information in OFDM," in *Proc. of IEEE Vehicular Technology Conference (VTC)*, (Barcelona, Spain), Apr. 2009.
- [112] D. Wu, E. G. Larsson and D. Liu, "Implementation aspects of fixed-complexity soft-output MIMO detection," in *Proc. of IEEE Vehicular Technology Conference (VTC)*, (Barcelona, Spain), Apr. 2009.
- [113] E. Axell and E. G. Larsson, "A Bayesian approach to spectrum sensing, denoising and anomaly detection," in *Proc. of IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*, April. 2009.
- [114] E. Jorswieck and E. G. Larsson, "Monotonic optimization framework for the MISO IFC," in *Proc. of IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*, April. 2009.
- [115] J. Lindblom, E. G. Larsson and E. Jorswieck, "Parameterization of the MISO interference channel with transmit beamforming and partial channel state information," in *Proc. of Asilomar Conference on Signals, Systems and Computers*, Nov. 2008.
- [116] E. G. Larsson, D. Danev and E. Jorswieck, "Asymptotically optimal transmit strategies for the multiple antenna interference channel," in *Proc. of Allerton Conference on Communication, Control, and Computing*, Sept. 2008.
- [117] B. Mercier, V. Fodor, R. Thobaben, M. Skoglund, V. Koivunen, S. Lindfors, J. Ryyänen, E. G. Larsson, C. Petrioli, G. Bongiovanni, O. Grondalen, K. Kansanen, G. Oien, T. Ekman, A. M. Hayar, R. Knopp, B. Beferull-Lozano, "Sensor networks for cognitive radio: theory and system design," in *Proc. of ICT Mobile Summit*, June 2008.
- [118] O. Sjöbergh, E. Jorswieck, and E. G. Larsson, "Greedy user selection for zero-forcing and MMSE multiuser beamforming with channel estimation errors," in *Proc. of IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*, Mar. 2008.
- [119] E. Jorswieck and E. G. Larsson, "The MISO interference channel from a game-theoretic perspective: a combination of selfishness and altruism achieves Pareto optimality," in *Proc. of IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*, Mar. 2008.
- [120] E. Jorswieck and E. G. Larsson, "Linear precoding in multiple-antenna broadcast channels: efficient computation of the achievable rate region," in *Proc. of International ITG Workshop on Smart Antennas (WSA)*, Feb. 2008.
- [121] M. N. Khormuji and E. G. Larsson, "A spectrally efficient transmission scheme for half-duplex decode-and-forward relaying," in *Proc. of IEEE Global Telecommunications Conference (GLOBECOM)*, Nov. 2007.

- [122] E. G. Larsson and J. Jaldén, “Soft MIMO detection at fixed complexity,” in *Proc. of IEEE Global Telecommunications Conference (GLOBECOM)*, Nov. 2007.
- [123] E. G. Larsson and M. Skoglund, “Cognitive radio in a frequency planned environment: Can it work?” in *Proc. of IEEE Global Telecommunications Conference (GLOBECOM)*, Nov. 2007.
- [124] R. Thobaben and E. G. Larsson, “Sensor-network aided cognitive radio: On the optimal receiver for estimate-and-forward protocols applied to the relay channel,” in *Proc. of Asilomar Conference on Signals, Systems and Computers*, Nov. 2007. Invited paper.
- [125] E. G. Larsson and E. Jorswieck, “The MISO interference channel: Competition versus collaboration,” in *Proc. of Allerton Conference on Communication, Control, and Computing*, Sept. 2007. Invited paper.
- [126] M. N. Khormuji and E. G. Larsson, “Analytical results on block length optimization for decode-and-forward relaying with CSI feedback,” in *Proc. of IEEE Signal Processing Advances in Wireless Communications (SPAWC)*, June 2007.
- [127] E. A. Jorswieck and E. G. Larsson, “Multiuser Gaussianity and constellation randomization for the MIMO multiple access channel: a unified view,” in *Proc. of IEEE Signal Processing Advances in Wireless Communications (SPAWC)*, June 2007.
- [128] M. N. Khormuji and E. G. Larsson, “Receiver design for wireless relay channels with regenerative relays,” in *Proc. of IEEE International Conference on Communications (ICC)*, June 2007.
- [129] Y. Selén and E. G. Larsson, “Empirical Bayes linear regression with unknown model order,” in *Proc. of IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*, Apr. 2007.
- [130] M. Mowlér, E. G. Larsson, B. Lindmark, and B. Ottersten, “Methods and bounds for antenna array coupling matrix estimation,” in *Proc. of IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*, Apr. 2007.
- [131] M. Skoglund and E. G. Larsson, “Optimal modulation for known interference,” in *Proc. of IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*, Apr. 2007.
- [132] M. N. Khormuji and E. G. Larsson, “Improving collaborative transmit diversity by using constellation rearrangement,” in *Proc. of IEEE Wireless Communications and Networking Conference (WCNC)*, Mar. 2007.
- [133] Y. Selén and E. G. Larsson, “Parameter estimation and order selection for linear regression problems,” in *Proc. of European Signal Processing Conference (EUSIPCO)*, Sept. 2006.
- [134] E. G. Larsson and Y. Selén, “Linear regression with a sparse parameter vector,” in *Proc. of IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*, May 2006.

- [135] J. Du, E. G. Larsson, and M. Skoglund, "Costa precoding in one dimension," in *Proc. of IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*, May 2006.
- [136] T. T. Kim, M. Bengtsson, E. G. Larsson, and M. Skoglund, "Combining short-term and long-term channel state information over correlated MIMO channels," in *Proc. of IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*, May 2006.
- [137] Y. Selén and E. G. Larsson, "Model-averaged RAKE receivers for direct-sequence spread-spectrum systems," in *Proc. of Asilomar Conference on Signals, Systems and Computers*, (Pacific Grove, CA), Nov. 2005.
- [138] E. G. Larsson and B. R. Vojcic, "Cooperative transmit diversity via superposition coding," in *Proc. of EUROCON 2005*, (Belgrade, Serbia & Montenegro), Nov. 2005. Invited paper.
- [139] B. Peric, M. Souryal, E. G. Larsson, and B. Vojcic, "Soft-decision metrics for turbo-coded FH M-FSK ad hoc packet radio networks," in *Proc. of IEEE Vehicular Technology Conference*, (Stockholm, Sweden), May 2005.
- [140] Y. Cao, E. G. Larsson, and B. Vojcic, "Cooperative diversity transmission versus macro-diversity in cellular networks," in *Proc. of the Conference on Information Sciences and Systems (CISS)*, (Baltimore, MD), Mar. 2005.
- [141] E. G. Larsson, "Robust structured interference rejection combining," in *Proc. of IEEE Wireless Communications and Networking Conference (WCNC)*, (New Orleans, LA), Mar. 2005.
- [142] M. Souryal, E. G. Larsson, B. Peric, and B. Vojcic, "Soft-decision metrics for coded orthogonal signaling in symmetric alpha-stable noise," in *Proc. of IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*, (Philadelphia, PA), Mar. 2005.
- [143] Y. Selén, E. G. Larsson, P. Stoica, and N. Sandgren, "A model averaging approach for equalizing sparse communication channels," in *Proc. of Asilomar Conference on Signals, Systems and Computers*, (Pacific Grove, CA), Nov. 2004.
- [144] E. G. Larsson, "Constellation randomization (CoRa) for outage performance improvement on MIMO channels," in *Proc. of IEEE Global Telecommunications Conference (GLOBECOM)*, (Dallas, TX), Dec. 2004.
- [145] E. G. Larsson, Y. Selén, and P. Stoica, "Adaptive equalization for frequency-selective channels of unknown length," in *Proc. of IEEE Global Telecommunications Conference (GLOBECOM)*, (Dallas, TX), Dec. 2004.
- [146] S. Alty, A. Jakobsson, and E. G. Larsson, "Efficient implementation of the time-recursive Capon and APES spectral estimators," in *Proc. of European Signal Processing Conference*, Sept. 2004.
- [147] D. Erdogmus, R. Yan, E. G. Larsson, J. C. Principe, and J. R. Fitzsimmons, "Mixture of competitive linear models for phased-array magnetic resonance imaging," in *Proc. of IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*, (Montreal, Quebec, Canada), May 2004.

- [148] E. G. Larsson and M. Doroslovački, “Design of a nonuniform array for joint direction-of-arrival and range estimation,” in *Proc. of URSI International Symposium on Electromagnetic Theory*, (Pisa, Italy), May 2004. Invited paper.
- [149] E. G. Larsson, “Multiuser detection with an unknown number of users,” in *Proc. of the Conference on Information Sciences and Systems (CISS)*, (Princeton, NJ), pp. 1078–1082, Mar. 2004.
- [150] E. G. Larsson, “Semi-structured interference suppression for orthogonal frequency division multiplexing,” in *Proc. of IEEE International Symposium on Signal Processing and Information Technology*, (Darmstadt, Germany), Dec. 2003.
- [151] E. K. Larsson and E. G. Larsson, “The CRB for parameter estimation in irregularly sampled continuous-time ARMA systems,” in *Proc. of IEEE International Symposium on Signal Processing and Information Technology*, (Darmstadt, Germany), Dec. 2003.
- [152] E. G. Larsson, “Distributed positioning in ad hoc networks: A Cramér-Rao bound analysis,” in *Proc. of IEEE Vehicular Technology Conference (VTC)*, (Orlando, FL), Oct. 2003.
- [153] E. G. Larsson and P. Stoica, “Mean square error optimality of orthogonal space-time block codes,” in *Proc. of IEEE International Conference on Communications (ICC)*, (Anchorage, Alaska), May 2003.
- [154] R. Yan, D. Erdogmus, E. G. Larsson, J. C. Principe, and J. R. Fitzsimmons, “Image combination for high-field phased-array MRI,” in *Proc. of IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*, (Hong Kong), Apr. 2003.
- [155] G. Ganesan, P. Stoica, and E. G. Larsson, “Diagonally weighted orthogonal space-time block codes,” in *Proc. of Asilomar Conference on Signals, Systems and Computers*, (Pacific Grove, CA), pp. 1147–1151, Nov. 2002.
- [156] E. G. Larsson, P. Stoica, E. Lindskog, and J. Li, “Space-time block coding for frequency-selective channels,” in *Proc. of IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*, (Orlando, FL), pp. 2405–2408, May 2002.
- [157] E. G. Larsson and J. Li, “SAR image construction from periodically gapped phase-history data,” in *Proc. of SPIE Aerosense Conference*, (Orlando, FL), pp. 154–165, Apr. 2002.
- [158] E. G. Larsson, P. Stoica, and J. Li, “Space-time block codes: ML detection for unknown channels and unstructured interference,” in *Proc. of Asilomar Conference on Signals, Systems and Computers*, (Pacific Grove, CA), pp. 916–920, Nov. 2001.
- [159] E. G. Larsson, P. Stoica, and J. Li, “ML detection and decoding of space-time codes,” in *Proc. of Asilomar Conference on Signals, Systems and Computers*, (Pacific Grove, CA), pp. 1435–1439, Nov. 2001. Invited paper.
- [160] E. G. Larsson, P. Stoica, and J. Li, “SAR image construction from gapped phase-history data,” in *Proc. of International Conference on Image Processing*, (Thessaloniki, Greece), pp. 608–611, Oct. 2001.

- [161] P. Åhlgren and E. G. Larsson, "Echo-cancellation in mono and stereo using the conjugate gradient method," in *Proc. of the IEEE/EURASIP International Workshop on Acoustic Echo and Noise Control*, (Darmstadt, Germany), pp. 115–119, Sept. 2001.
- [162] E. G. Larsson, G. Liu, J. Li, and G. B. Giannakis, "An algorithm for joint symbol timing and channel estimation for OFDM systems," in *Proc. of IEEE Workshop on Statistical Signal Processing*, (Orchid Country Club, Singapore), pp. 393–396, Aug. 2001. Invited paper.
- [163] R. Abrahamsson, E. G. Larsson, J. Li, J. Habersat, G. Maksymonko, and M. Bradley, "Elimination of leakage and ground-bounce in ground-penetrating radar data," in *Proc. of IEEE Workshop on Statistical Signal Processing*, (Orchid Country Club, Singapore), pp. 150–153, Aug. 2001. Invited paper.
- [164] A. B. Gershman, M. Pesavento, P. Stoica, and E. G. Larsson, "The stochastic CRB for array processing in unknown noise fields," in *Proc. of IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*, vol. 5, (Salt Lake City, UT), pp. 2898–2992, May 2001.
- [165] E. K. Larsson and E. G. Larsson, "Cramér-Rao bounds for continuous-time AR parameter estimation with irregular sampling," in *Proc. of IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*, vol. 5, (Salt Lake City, UT), pp. 3097–3100, May 2001.
- [166] E. G. Larsson and P. Stoica, "Fast implementation of two-dimensional APES and CAPON spectral estimators," in *Proc. of IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*, vol. 5, (Salt Lake City, UT), pp. 3069–3072, May 2001.
- [167] E. G. Larsson, G. Liu, J. Li, P. Stoica, and R. Williams, "Spectral estimation of gapped data and SAR imaging with angular diversity," in *Proc. of SPIE Aerosense Conference*, (Orlando, FL), Apr. 2001.
- [168] E. G. Larsson, R. Abrahamsson, J. Li, K. Gu, M. Bradley, J. Habersat, and G. Maksymonko, "Reducing the ground-bounce effects for mine detection with a ground-penetrating radar," in *Proc. of the UXO/Countermining Forum*, (New Orleans, LA), Apr. 2001.
- [169] E. G. Larsson, J. Li, J. Habersat, G. Maksymonko, and M. Bradley, "Removal of surface returns in ground-penetrating radar data," in *Proc. of SPIE Aerosense Conference*, (Orlando, FL), Apr. 2001.
- [170] J. Liu, E. G. Larsson, J. Li, and H. Li, "High-rate differential space-code modulation for interference suppression," in *Proc. of IEEE Signal Processing Workshop on Signal Processing Advances in Wireless Communications*, (Taoyuan, Taiwan), pp. 283–286, Mar. 2001.
- [171] E. G. Larsson, P. Stoica, and J. Li, "Spectral analysis of gapped data," in *Proc. of Asilomar Conference on Signals, Systems and Computers*, vol. 1, (Pacific Grove, CA), pp. 207–211, Oct. 2000.
- [172] E. G. Larsson and P. Stoica, "Direction-of-arrival estimation from incomplete data," in *Proc. of IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*, vol. 5, (Istanbul, Turkey), pp. 3081–3084, June 2000.

- [173] D. Bladsjö, A. Furuskär, S. Jäverbring, and E. G. Larsson, “Interference cancellation using antenna diversity for EDGE - enhanced data rates in GSM and TDMA/136,” in *Proc. of IEEE Vehicular Technology Conference*, vol. 4, (Amsterdam, The Netherlands), pp. 1956–1960, Sept. 1999.
- [174] S. Fischer, H. Koorapaty, E. G. Larsson, and A. Kangas, “System performance evaluation of mobile positioning systems,” in *Proc. of IEEE Vehicular Technology Conference*, vol. 3, (Houston, TX), pp. 1962–1966, May 1999.
- [175] S. Fischer, H. Grubeck, A. Kangas, H. Koorapaty, E. G. Larsson, and P. Lundqvist, “Time-of-arrival estimation of narrowband TDMA signals for communications,” in *Proc. of IEEE International Symposium on Personal, Indoor and Mobile Radio Communication*, vol. 1, (Boston, MA), pp. 451–455, Sept. 1998.

Patents:

- [1] J. Eriksson, P. Frenger, E. G. Larsson, R. Moosavi and N. Wiberg, “Methods, apparatus and computer programs for base station initiated energy savings within an associated user equipment,” U.S. Patent no. 9,301,251 (granted on March 29, 2016).
- [2] E. G. Larsson, “Method and arrangement for conveying additional bits in a communication system,” U.S. Patent no. 9,077,530 (granted on July 7, 2015).
- [3] J. Eriksson, P. Frenger, E. G. Larsson, R. Moosavi and N. Wiberg, “Methods and apparatuses for radio resource allocation and identification,” U.S. Patent no. 9,020,550 (granted on Apr. 28, 2015).
- [4] G. Bark, E. Englund and E. G. Larsson, “Wireless scheduling considering overhead cost estimate,” U.S. Patent no. 8,842,625 (granted on Sept. 23, 2014).
- [5] E. G. Larsson and R. Moosavi, “Method and arrangement related to blind detection,” U.S. Patent no. 8,665,970 (granted on Mar. 4, 2014).
- [6] E. G. Larsson and J. Jaldén, “Method and arrangement relating to telecommunications,” U.S. Patent no. 8,369,461 (granted on Feb. 5, 2013).
- [7] E. G. Larsson and W.-H. Wong, “Method, system and apparatus for broadcasting via phase-shift keying modulation with multiple transmit antennas,” U.S. Patent no. 7,283,783 (granted on Oct. 16, 2007).
- [8] D. Bloomquist, M. McVay, E. G. Larsson, and C. Dumas, “Autonomous highway traffic modules,” U.S. Patent no. 6,900,740 (granted on May 31, 2005).
- [9] E. G. Larsson, A. Kangas, and S. Fischer, “Efficient determination of time of arrival of radio communication bursts,” U.S. Patent no. 6,529,708 (granted on Mar. 4, 2003).
- [10] E. G. Larsson, A. Kangas, and S. Fischer, “Identifying starting time for making time of arrival measurements,” U.S. Patent no. 6,522,887 (granted on Feb. 18, 2003).
- [11] A. Kangas, E. G. Larsson, S. Fischer, and P. Lundqvist, “Downlink observed time difference measurements,” U.S. Patent no. 6,490,454 (granted on Dec. 3, 2002).

- [12] A. Kangas, S. Fischer, P. Lundqvist, and E. G. Larsson, “Making time of arrival measurements,” U.S. Patent no. 6,470,185 (granted on Oct. 22, 2002).
- [13] A. Kangas, E. G. Larsson, S. Fischer, P. Lundqvist, and M. Cedervall, “Downlink observed time difference measurements,” U.S. Patent no. 6,356,763 (granted on Mar. 12, 2002).
- [14] S. Fischer, A. Kangas, P. Lundqvist, and E. G. Larsson, “Methods and arrangements for locating a mobile telecommunications station,” U.S. Patent no. 6,295,455 (granted on Sept. 25, 2001).
- [15] E. G. Larsson, S. Fischer, and A. Kangas, “Selection of location measurement units for determining the position of a mobile communication station,” U.S. Patent no. 6,282,427 (granted on Aug. 28, 2001).
- [16] A. Kangas, E. G. Larsson, and S. Fischer, “Use of global positioning system in locating a radio transmitter,” U.S. Patent no. 6,266,012 (granted on July 24, 2001).

Publicly Available Software:

- [1] Contributions to IT++ (open-source C++ class library for scientific computing, see <http://itpp.sf.net>): GF(2) matrix algebra module, vector/MIMO modulator/demodulator module, fast likelihood algebra calculation module, and classes for LDPC coding. GNU GPL, mostly developed 2005–2007; later on refined by others.
- [2] Various code associated with published research papers: linear regression with a sparse parameter vector, APES/GAPES for spectral estimation, and routines for autonomous distribution of Monte-Carlo simulations. Matlab and C++, public domain or GNU GPL.¹

¹Available at www.commsys.isy.liu.se/~egl/software/