

List of publications

Visa Koivunen, Prof., D.Sc. (EE)
IEEE Fellow

Peer-reviewed Journal Papers

1. S. Basiri, E. Ollila, V. Koivunen (2017), "ENhanced bootstrap method for statistical inference in ICA model." *Signal Processing*, Vol. 138, pp. 53-62, EURASIP, 2017.
2. T. Aittomaki, V. Koivunen (2017) "Mismatched Filter Design and Interference Mitigation for MIMO Radars," *IEEE Transactions on Signal Processing*, vol. 65, no. 2, pp. 454-466, 2017.
3. H. Naseri, V. Koivunen, (2017), "Cooperative simultaneous localization and mapping by exploiting multipath propagation," *IEEE Transactions on Signal Processing*, vol. 65, no. 1, pp. 200-211, Jan.1, 1 2017.
4. M. Koivisto; M. Costa; J. Werner; K. Heiska; J. Talvitie; K. Leppanen; V. Koivunen; M. Valkama, (2017) "Joint Device Positioning and Clock Synchronization in 5G Ultra-Dense Networks," in *IEEE Transactions on Wireless Communications* , To appear, vol.PP, no.99, pp.1-1
5. A. Chis; J. Lunden; V. Koivunen, (2016) "Reinforcement Learning-Based Plug-in Electric Vehicle Charging with Forecasted Price," in *IEEE Transactions on Vehicular Technology* , vol.PP, no.99, pp.1-1, To Appear.
6. Michael B Wakin, Rmi Gribonval, Visa Koivunen, Justin Romberg, John Wright, (2016) "Introduction to the Issue on Structured Matrices in Signal and Data Processing" , *IEEE Journal of Selected Topics in Signal Processing*, Vol. 10, No. 4, pp. 605-6+9, 2016.
7. Bica, M., Koivunen, V., (2016) Generalized Multicarrier Radar: Models and Performance, *IEEE Transactions on Signal Processing*, Vol. 64, No.:17, pp. 4389 – 4402, 2016.
8. Basiri, S., Ollila, E., Koivunen, V., (2016) "Robust, scalable and fast bootstrap method for analyzing large scale data, *IEEE Transaction on Signal Processing*," *IEEE Transactions on Signal Processing*, Vol 64, No. 4, pp 1007-1017, 2016.

9. T. Aittomki and V. Koivunen, (2016) "Radar Waveform Sidelobe Level Optimality and Sampling," in *IEEE Signal Processing Letters*, vol. 23, no. 3, pp. 371-375, March 2016.
10. Chaudhari, S.; Kosunen, M.; Makinen, S.; Oksanen, J.; Laatta, M.; Ojaniemi, J.; Koivunen, V.; Ryyanen, J.; Valkama, M.,(2016) "Performance Evaluation of Cyclostationary Based Cooperative Sensing Using Field Measurements," *IEEE Transactions on Vehicular Technology*, Vol. 65, No. 4, pp. 1982-1997, 2016.
11. Oksanen, J., Kaufman, B., Koivunen, V., Poor, H.V., (2015) "Robotics Inspired Opportunistic Routing for Cognitive Radio Using Potential Fields," in *IEEE Transactions on Cognitive Communications and Networking*, vol. 1, no. 1, pp. 45-55, March 2015.
12. Lunden, J.; Koivunen, V.; Poor, H.V. (2015) "Spectrum Exploration and Exploitation for Cognitive Radio: Recent Advances", *IEEE Signal Processing Magazine*, Volume: 32, No: 3, Pages: 123 - 140.
13. Yongzhe Li; Vorobyov, S.A.; Koivunen, V., (2015) "Ambiguity Function of the Transmit Beamspace-Based MIMO Radar," in *IEEE Transactions on Signal Processing*, vol.63, no.17, pp.4445-4457, Sept.1, 2015
14. Chaudhari, S. Jantti, J., Koivunen, V., (2015) "Detection and Classification of OFDM Waveforms using Cepstral Analysis," *IEEE Transactions on Signal Processing*, Vol. 63, No. 16, pp. 4282-4299.
15. Oksanen, J., Koivunen, V., (2015) "An Order Optimal Policy for Exploiting Idle Spectrum in Cognitive Radio Networks," *IEEE Transactions on Signal Processing*, vol.63, no.5, pp.1214-1227, March, 2015
16. J. Rajasekharan, V. Koivunen, (2015) "Cooperative Game-Theoretic Approach to Spectrum Sharing in Cognitive Radios", *Signal Processing, EURASIP/Elsevier journal*. Volume 106, January 2015, Pages 15-29.
17. J. Rajasekharan, V. Koivunen (2014) "Optimal Energy Consumption Model for Smart Grid Households with Energy Storage", *IEEE Journal of Selected Topics in Signal Processing*, Special issue on Smart Grids, Vol.8, no.6, pp.1154-1166, Dec. 2014
18. Lohan E., Lunden, J., Seco-Granados G., Lopez-Salcedo J., Koivunen, V., (2014) "Cyclic Frequencies of BOC-Modulated GNSS Signals and Their Potential Within a Cognitive Positioning Framework", *Navigation*, Vol. 61, No. 2, pp.95-114, 2014.
19. M. Costa, V. Koivunen, H.V. Poor, (2014) "Estimating Directional Statistics Using Wavefield Modeling and Mixtures of von-Mises Distribution", *IEEE Signal Processing Letters*, pp. 1496- 1500.

20. J. Lunden and V. Koivunen, (2014) "Spatial Sign and Rank Cyclic Detectors", *IEEE Signal Processing Letters*, Vol 21, No. 5, pp. 595-599, 2014
21. M. Costa and V. Koivunen (2014) "Application of Manifold Separation to Polarimetric Capon Beamformer and Source Tracking", *IEEE Transactions on Signal Processing*, Vol. 62, No. 4, pp. 813-827, 2014.
22. YF Huang, S Kishore, V Koivunen, D Mandic, L Tong (2014) "Introduction to the Issue on Signal Processing in Smart Electric Power Grid," *IEEE Journal of Selected Topics in Signal Processing* Vol 8 No. 6, pp. 1019-1021, 2014.
23. S. Chaudhari, J. Lunden, V. Koivunen, and H. Vincent Poor, (2013) BEP walls for cooperative sensing in cognitive radios using K-out-of-N fusion rule, *Signal Processing*, Vol. 93, No. 7, July 2013, Pages 1900-1908
24. Lunden, J., Koivunen, V., Poor. H.V., Kulkarni, S., (2013) "Multiagent Reinforcement Learning Based Spectrum Sensing Policies for Cognitive Radio Networks.", *IEEE Journal of Selected Topics in Signal Processing*, vol.7, no.5, pp.858-868, Oct. 2013
25. Abrudan, T., Haghparast, A., Koivunen, V., (2013) "Time Synchronization and Ranging in OFDM Systems using Time-Reversal", *IEEE Transactions on Instrumentation and Measurement*, *IEEE Transaction on Instrumentation and Measurement*, Vol. 62 No. 12, pp. 3276-3290.
26. Koivisto, T.; Koivunen, V., "Diversity Transmission of Synchronization Sequences in MIMO Systems," *IEEE Transactions on Wireless Communications*, vol.11, no.11, pp.4048-4057, November 2012
27. Ollila, E.; Tyler, D.; Koivunen, V.; Poor, H. (2012) "Complex elliptically symmetric distributions: survey, new results and applications." *IEEE Transactions on Signal Processing*, Vol. 60, No. 11, pp. 5597- 5625, 2012
28. Ollila, E.; Tyler, D.E.; Koivunen, V.; Poor, H.V., (2012) "Compound-Gaussian Clutter Modeling With an Inverse Gaussian Texture Distribution," *IEEE Signal Processing Letters*, Vol.19, No.12, pp.876-879, Dec. 2012
29. Kapetanovic, D., Abrudan, T., Rusek, F., Koivunen, V., (2012) "Construction of Minimum Euclidean Distance MIMO Precoders and their Lattice Classifications." *IEEE Transactions on Signal Processing*, Vol. 60, No. 8, pp. 4470-4474.
30. Costa, M., Richter, A., Koivunen, V., (2012) "DoA and Polarization Estimation for Arbitrary Array Configurations," *IEEE Transactions on Signal Processing*, Vol. 60, No. 5, pp. 2330 - 2343.

31. Zoubir, A., Koivunen, V., Chakchouk, Y, Muma, M., (2012) "Robust Estimation in Signal Processing.", IEEE Signal Processing Magazine, Vol 29, No. 4, pp. 61-80.
32. Oborina A., Koivunen, V., Moisio M. (2012) "Performance of Mobile MIMO OFDM Systems with Application to UTRAN LTE Downlink.", IEEE Transaction on Wireless Communication, Vol 11, No. 8, pp. 2696-2706.
33. Chaudhari, S., Lunden, J., Poor, H.V., Koivunen, V., (2012) "Cooperative Sensing with Imperfect Reporting Channels: Hard Decisions or Soft Decisions?", IEEE Transaction on Signal Processing, Vol. 60, No. 1, pp. 18 - 28.
34. Oksanen, J., Lunden, J., Koivunen, V., (2012) Reinforcement learning based sensing policy optimization for energy efficient cognitive radio networks, Neurocomputing, Vol. 80, pp. 102-110..
35. Pekka Janis, Visa Koivunen, and Cossio B. Ribeiro, (2011) "Interference-Aware Radio Resource Management for Local Area Wireless Networks," EURASIP Journal on Wireless Communications and Networking, vol. 2011, 15 pages.
36. Pun, M.; Koivunen, V.; Poor, H. V. (2011) "Performance Analysis of Joint Opportunistic Scheduling and Receiver Design for MIMO-SDMA Downlink Systems." IEEE Transactions on Communications, Volume: 59 , Issue: 1, pp.268 - 280.
37. Ollila, E.; Eriksson, J.; Koivunen, V.; (2011) "Complex elliptically symmetric random variables – generation, characterization and circularity tests." IEEE Transactions on Signal Processing, Vol. 59 , No: 1, pp. 58 - 69.
38. X. Liu, A. Petropulu, H. V. Poor and V. Koivunen (2011) "Blind Separation Of Two Users Based on User Delays and Optimal Pulse Shape Design," Eurasip Journal of Wireless Communication and Networking.
39. Costa, M.; Richter, A.; Koivunen, V.; (2010) "Unified Array Manifold Decomposition Based on Spherical Harmonics and 2-D Fourier Basis", IEEE Transactions on Signal Processing, Vol. 58 , No. 9, pp. 4634 - 4645.
40. Eriksson, J.; Ollila, E.; Koivunen, V.; (2010) "Essential Statistics and Tools for Complex Random Variables." IEEE Transactions on Signal Processing, Vol. 58 , No. 10, pp. 5400 - 5408.
41. Lunden, J.; Kassam, S.A.; Koivunen, V, (2010) "Robust Nonparametric Cyclic Correlation-Based Spectrum Sensing for Cognitive Radio," IEEE Transactions on Signal Processing, Volume: 58 , No: 1, pp. 38 - 52.

42. Aittomaki, T.; Koivunen, V. (2010) "Performance of MIMO Radar With Angular Diversity Under Swerling Scattering Models." *IEEE Journal of Selected Topics in Signal Processing*, Special Issue on MIMO Radar, Volume: 4 , No. 1.,pp. 101 - 114.
43. Lunden J, Koivunen, V., Huttunen A., Poor, H.V. (2009) "Collaborative Cyclostationary Spectrum Sensing for Cognitive Radio Systems," *IEEE Transactions on Signal Processing*, Volume: 57 , No. 11, pp. 4182 - 4195
44. Salmi, J.; Richter, A.; Koivunen, V.(2009) "Detection and Tracking of MIMO Propagation Path Parameters Using State-Space Approach," *IEEE Transactions on Signal Processing*, Volume: 57 , No. 4, pp. 1538 - 1550
45. Chaudhari, S., Poor, H.V., Koivunen, V., (2009) Autocorrelation-Based Decentralized Sequential Detection of OFDM Signals in Cognitive Radios, *IEEE Transactions on Signal Processing*, Vol. 57, No. 7, pp. 2690-2700.
46. Ollila, E., Koivunen, V., (2009) " Influence Function and Asymptotic Efficiency of Scatter Matrix Based Array Processors: Case MVDR Beamformer ," *IEEE Transactions on Signal Processing*, Volume: 57, No. 1, pp. 247-259.
47. Salmi, J.; Richter, A.; Koivunen, V. (2009) "Sequential Unfolding SVD for Tensors With Applications in Array Signal Processing," *IEEE Transactions on Signal Processing*, Volume: 57 , Issue: 12, pp. 4719 - 4733.
48. T. Abrudan, J. Eriksson, V. Koivunen, (2009) "Conjugate Gradient Algorithm for Optimization Under Unitary Matrix Constraint", *Signal Processing*, vol. 89, is. 9, Sep. 2009, pp. 1704-1714.
49. Abrudan, T., Eriksson, J., Koivunen, V., (2008) Steepest Descent Algorithms for Optimization under Unitary Matrix Constraint. *IEEE Transactions on Signal Processing*, Vol. 56, No. 3, pp. 1134-1147.
50. Ollila, E., Koivunen, V., (2008) Compact Cramer-Rao Bound Expression for Independent Component Analysis. *IEEE Transactions on Signal Processing*, Vol. 56, No. 4, pp. 1421-1428.
51. Ollila, E., Koivunen, V., (2008) Complex-Valued ICA Based on a Pair of Generalized Covariance Matrices. *Computational Statistics and Data Analysis*, Vol. 52, pp. 3789-3805.
52. Belloni, F., Richter, A., Koivunen, V., (2007) DoA Estimation via Manifold Separation for Arbitrary Array Structures. *IEEE Transactions on Signal Processing*. Vol. 55, No. 10, pp. 4800-4810.
53. Ollila E. and Koivunen, V. (2008) "Complex ICA using generalized uncorrelating transform," *Signal Processing*, Vol. 89, No. 4, April 2009, Pages 365-377.

54. Ribeiro, C., Richter, A., Koivunen, V., (2007) Joint Angular and Delay Domain MIMO Propagation Parameter Estimation Using Approximate ML Method. *IEEE Transactions on Signal Processing*. Vol. 55, No. 10, pp. 4775-4790.
55. Koivisto, T., Koivunen, V., (2007) Blind despreading of short-code DS-CDMA signals in asynchronous multi-user systems. *Signal Processing*, Vol. 87, No. 11, pp, 2560-2568.
56. Enescu, M., Roman, T., Koivunen, V., (2007) State Space Approach to Spatially Correlated MIMO OFDM Channel Estimation. *Signal Processing*, Vol. 87, No. 9, pp, 2272-2279.
57. Abrudan, T., Koivunen, V., (2007) Blind Equalization in Spatial Multiplexing MIMO-OFDM Systems based on Vector CMA and Decorrelation Criteria. *Wireless Personal Communications*, Vol 43(4):1151-1172. Nov., 2007.
58. Lunden, J., Koivunen, V., (2007) Automatic Radar Waveform Recognition, *IEEE Journal of Selected Topics in Signal Processing*, *IEEE Journal of Selected Topics in Signal Processing*, Special issue on waveform diversity in radars, Vol. 1, No.1., pp. 124-136.
59. With, M., Werner, S., Koivunen, V., (2007) Householder Multi-stage Wiener filter for Space-Time Navigation Receivers. *IEEE Transactions on Aerospace and Electronic Systems*. Vol. 43, No. 3, pp. 975-988.
60. Ribeiro, C., Ollila, E., Koivunen, V., (2007) Stochastic Maximum-Likelihood Method for MIMO Propagation Parameter Estimation *IEEE Transactions on Signal Processing*. In Vol. 55, No.1, pp. 46-55, January 2007
61. Roman, T., Visuri, S., Koivunen, V., (2006) Blind frequency synchronization for OFDM via diagonality criterion, *IEEE Transactions on Signal Processing*. Vol. 54, nro 8, pp. 3125-3135.
62. Eriksson, J. and Koivunen, V. (2006) Complex Random Vectors and ICA Models: Identifiability, Uniqueness and Separability, 2006. *IEEE Transactions on Information Theory*. Vol. 52, nro 3, pp. 1017-1029.
63. Belloni, F., Koivunen, V., (2006) Beamspace Transform for UCA: Error Analysis and Bias reduction, *IEEE Transactions on Signal Processing*, Vol. 54, nro 8, pp. 3078-3089.
64. Valkama, M., Renfors, M., Koivunen, V., (2005) Blind Signal Estimation in Conjugate Signal Models with Application to I/Q Imbalance Compensation. *IEEE Signal Processing Letters*, Vol. 12, No. 11, pp. 733-736.
65. Valkama, M., Renfors, M., Koivunen, V., (2005) Blind I/Q Signal Separation Based Solutions for Receiver Signal Processing, *EURASIP Journal on Applied Signal Processing*, Special issue on Software Defined Radio, No. 16, 2708-2718.

66. Enescu, M., Sirbu, M., Koivunen, V., (2005) Adaptive Equalization of time-varying MIMO channels, *Signal Processing*. Vol. 85, nro 1, pp.81-93.
67. Roman, T., Enescu, M., Koivunen, V., (2004) Joint Time-Doimain Tracking of Channel and Frequency Offset for MIMO OFDM System, *Wireless Personal Communications*, Vol. 31, pp. 181-200.
68. Sirbu, Marius, Koivunen, Visa (2004) Delay Estimation in Long-Code Asynchronous DS-CDMA Systems Using Multiple Antennas. *EURASIP Journal on Wireless Communications and Networking*, 2004. Nro 1, pp. 84-97.
69. Eriksson, J., Koivunen, V. (2004) Identifiability, separability, and uniqueness of linear ICA models *IEEE Signal Processing Letters*, Volume: 11 , Issue: 7 , July 2004 Pages:601 - 604
70. Karvanen, Juha, Koivunen, Visa (2004) Independent component analysis via optimum combining of kurtosis and skewness-based criteria. *Journal of The Franklin Institute*, 2004. Vol. 341, pp. 401-418.
71. Melvasalo, Maarit; Koivunen, Visa Blind Channel Estimation in Multicode CDMA Using Multiantenna Receiver. *Wireless Personal Communications*, 2004. Nro 28, pp. 163-178.
72. Ollila E., Oja, H., Koivunen, V., (2003) "Estimates of regression coefficients based on lift rank covariance matrix", *Journal of American Statistical Association (JASA)*, Vol. 98, nro 461, pp. 90-98.
73. Sirbu, Marius and Koivunen, Visa (2003) "Multichannel Estimation and Equalization Algorithm for Asynchronous Uplink DS/CDMA". *Wireless Personal Communications*, Vol. 25, August 2003, pp.33-52.
74. Eriksson, Jan and Koivunen, Visa (2003) "Characteristic-function-based independent component analysis" *Signal Processing*, Vol. 83, pp. 2195-2208.
75. Karvanen, J. Erikson, J., Koivunen, V., (2002) Adaptive Score Models for Maximum Likelihood ICA. *Journal of VLSI Signal Processing Systems*, Vol. 32, nro 1/2, pp. 83-92.
76. Visuri, S., Koivunen, V., Möttönen, J., Ollila, E., Oja, H., (2003) "Affine Equivariant Multivariate Rank Methods", *Journal of Statistical Planning and Inference*. Vol. 114, pp. 161-185.
77. Karvanen, J., Koivunen, V., (2002) Blind Separation Methods Based on Pearson System and its Extensions, *Signal Processing*, Vol. 82, pp. 663-673.

78. Visuri, S., Oja, H., Koivunen, V., (2001) Direction of Arrival Estimation Based on Nonparametric Statistics. *IEEE Transactions on Signal Processing*, 2001. Vol. 49, nro 9, pp. 2060-2073.
79. Valkama, M., Renfors, M., Koivunen, V., (2001) Advanced Methods for I/Q Imbalance Compensation in Communication Receivers. *IEEE Transactions on Signal Processing*, 2001. Vol. 49, nro 10, pp. 2335-2344.
80. Koivunen, V., Enescu, M., Oja, E., (2001) Adaptive Algorithm for Blind Separation from Noisy Time-Varying Mixtures, *Neural Computation*, 2001. Vol. 13, nro 10, pp.2339-2357.
81. Mannerkoski, J., Koivunen, V. (2000) Autocorrelation Properties of Channel Encoded Sequences – Applicability to Blind Equalization. *IEEE Transactions on Signal Processing*, Vol. 48, No. 12, pp. 3501-3507.
82. Mannerkoski, J., Koivunen, V., Taylor, D., (2001) Performance Bounds for Multi-Step Prediction Based Blind Equalization. 2001. Vol. 49, nro 1, pp.84-93.
83. Ollila, E., Oja, H., Koivunen, V., (2002) Estimates of Regression Coefficients based on Lift Rank Covariance Matrix. *Journal of American Statistical Association*, Accepted for for Publication.
84. Visuri, S., Koivunen, V., Oja, H. (2000) Rank and Sign Covariance Matrices, *Journal of Statistical Planning and Inference*, Vol. 97, No. 2, pp. 557-575.
85. Koivunen, V., Himayat, N., Kassam, S.A., (1997) Nonlinear Filtering Techniques for Multivariate Images - Design and Robustness Characterization. *Signal Processing*, Vol. 57, pp. 81-91.
86. Koivunen, V. (1996) Nonlinear filtering of multivariate images under robust error criterion., *IEEE Transactions on Image Processing*, Vol. 5, No.6, pp. 1054-1060.
87. Koivunen V. (1995) A Robust Nonlinear Filter for Image Restoration. *IEEE Transactions on Image Processing*, Vol.4, No. 5, pp. 569-578.
88. Koivunen V., Vezien, J-M., (1996) Machine Vision Tools for CAGD. *Int. Journal of Pattern Recognition and Artificial Intelligence*. Vol. 10, No. 2, pp. 165-182.
89. Koivunen, V., Bajcsy, R., (1995) Spline Representations in 3-D Vision. *Springer-Verlag Lecture Notes on Computer Science Series (LNCS) 994*. pp. 177-190.
90. Koivunen, V., Vezien, J-M. & Bajcsy, R. (1994) Procedural CAD-Models from Range Data. *IFIP Transactions B-17*. Eds. Wozny M., Olling G., Elsevier Publishers.

91. Moring, I., Ailisto, H., Koivunen, V. & Myllylä, R. (1989) Active 3-D Vision System for Automatic Model-Based Shape Inspection. *Optics and Lasers Engineering* 10, pp. 149-160.

Submitted

- Total of 6 other journal papers are under review currently

Peer-reviewed Book chapters

1. V. Koivunen and T. Abrudan, (2015) "Riemannian optimization in complex-valued ICA" Chapter 4 in *Advances in Independent Component Analysis and Learning Machines*, Pages 83-94. Academic Press. 2015. ISBN: 9780128028063
2. V. Koivunen and J. Lunden, (2015) "Nonparametric Detection of Complex-Valued Cyclostationary Signals" in *Modern Nonparametric, Robust and Multivariate Methods*, Pages 491-506, Springer, 2015, ISBN: 978-3-319-22403-9
3. Ollila, E., Kim, H-J. and Koivunen, V., (2014) "Robust Compressive Sensing", chapter in *Regularization, Optimization, Kernels, and Support Vector Machines*, eds. Johan A.K. Suykens, Marco Signoretto, Andreas Argyriou, Chapman and Hall/CRC, 2014, 525 pages
4. Koivunen, V., Ollila, E., (2013) "Model Order Selection", Chapter 2 in *Signal Processing Reference (Handbook of Signal Processing)*, Academic Press Library of Signal Processing, Vol. 3, 2013.
5. Costa, M., Koivunen, V., Viberg, M., (2013) "Array Processing in the face of nonidealities", Chapter 19 in *Signal Processing Reference (Handbook of Signal Processing)*, Academic Press Library of Signal Processing, Vol 3, 2013.
6. Lunden J, Koivunen, V., Poor, H.V. (2012) "Spectrum Exploration and Exploitation" Chapter 5 (72 pages) in *Principles of Cognitive Radio*, editors E. Biglieri, A. Goldsmith, L. Greenstein, N. Mandaym and H.V. Poor, Cambridge University Press, 321 pages, 2012.
7. Ollila E., Koivunen, V., (2009) *Robust Estimation Techniques for Complex-Valued Random vectors*. Chapter (46 pages) in *Adaptive Signal processing: Next Generation Solutions*, Simoin Haykin and Tulay Adali (eds.) Wiley, 2009.
8. Koivunen, V., Ollila, E., (2006) *Direction of Arrival Estimation under Uncertainty*. Chapter 12 in *Advances in Direction of Arrival estimation*, ed. Sathish Chandran, Artech House, 2005. pp. 241-258.

9. Ollila, E. and Koivunen, V., (2003) "Robust ML-estimation of the transmitter location," in *Theory and Applications of Recent Robust Methods* (Eds. M. Hubert, G. Pison, A. Struyf & S. Van Aelst), Series: Statistics for Industry and Technology, Birkhäuser, Basel, 2003.
10. Koivunen, V., Enescu, M., Sirbu, M., (2003) "Blind and Semi-blind Channel Estimation", Chapter 8 In: *Nonlinear Signal and Image Processing: Theory, Methods, and Applications*, CRC Press, pp. 263-300, 2003.
11. Koivunen, V., Laurila, J., Bonek, E., (2002) *Blind Methods for Wireless Communication Receivers*, Review of Radio Science 1999-2002. 2002, John Wiley & Sons, pp. 247-273.
12. Oja, H., Koivunen, V., (1998) *Robust Covariance Estimation and Its Signal Processing Applications*, The Yearbook of Finnish Statistical Association 1997, pp. 87-109.
13. Koivunen V., Vezien, J-M., (1996) *Machine Vision Tools for CAGD. Machine Vision for Advanced Production*, World Scientific series in Machine Perception and Artificial Intelligence, Vol. 22, 1996.
14. Koivunen, V., Pietikäinen, M. & Silven O. (1989) *Edge Detection in Range Images*. in *from Pixels to Features*, ed. J.C. Simon, North-Holland, pp. 175-184.
15. Koivunen, V. & Pietikäinen, M. (1992) *Experiments with Combined Edge and Region-Based Range Image Segmentation*. In: *Theory and Applications of Image Analysis*, World Scientific Publications, pp. 162-176.
16. Koivunen, V. (1993) *Processing and Interpretation of 3-D Sensory Data with an Application in Geometric Modeling*. Dissertation, Univ. of Oulu, Dept. of Electrical Engineering.

Refereed Papers in International Conferences

1. V. Koivunen and E. Mozafari, (2016) "Sparsity-promoting bootstrap method for large-scale data," 50th Asilomar Conference on Signals, Systems and Computers, Pacific Grove, CA, USA, 2016, pp. 343-348.
2. M. Melvasalo, V. Koivunen and J. Lunden, (2016) "Spectrum maps for cognition and co-existence of communication and radar systems," 50th Asilomar Conference on Signals, Systems and Computers, Pacific Grove, CA, USA, 2016, pp. 58-63.
3. Aittomaki, T., Koivunen, V., (2016) "Worst-Case Jamming Signal Design and Avoidance for MIMO Radars", Proceedings of the EUSIPCO 2016, Budapest, Hungary.

4. Chis, A., Rajasekharan, J., Lunden, J., Koivunen, V., (2016), "Demand Response for Renewable Energy Integration and Load Balancing in Smart Grid Communities", Proceedings of the EUSIPCO 2016, Budapest, Hungary.
5. Hentila, H., Oksanen, J., Koivunen, V., (2016) Potential Field Based Scheduling in Cognitive Radio Networks, IEEE SPAWC, Edinburgh, UK, 2016.
6. Lunden, J., Koivunen, V., (2016) Deep Learning for HRRP-based Target Recognition in Multistatic Radar Systems, IEEE Radar Conference, Philadelphia, May 2016.
7. Wu, Z., Kassam, S.A., Koivunen, V., (2016) RELATIVE-GRADIENT BUSSGANG-TYPE BLIND EQUALIZATION ALGORITHMS, in IEEE ICASSP, Shanghai, March 2016.
8. Naseri, H., Koivunen, V., (2016) COOPERATIVE JOINT SYNCHRONIZATION AND LOCALIZATION USING TIME DELAY MEASUREMENTS. in IEEE ICASSP, Shanghai, March 2016.
9. Bica, M., Huang, K-W., Koivunen, V., Mitra, U., (2016) "Mutual Information based Radar Waveform Design for Joint Radar and Cellular Communication Systems", in IEEE ICASSP, Shanghai, March 2016.
10. Aittomaki, T., Koivunen, V., (2016) Iterative Quadratic Relaxation Method for Optimization of Multiple Radar Waveforms., in IEEE ICASSP, Shanghai, March 2016.
11. Rajasekharan, J., Koivunen, V., (2015) Cooperative Game-Theoretic Approach to Load Balancing in Smart Grids with Community Energy Storage, Proceedings of EUSIPCO 2015, Nice, France.
12. Ajaz, E., Ollila, E., Koivunen, V., (2015) Randomized Simultaneous Orthogonal Matching Pursuit, Proceedings of EUSIPCO 2015, Nice, France.
13. M. Bica, K. W. Huang, U. Mitra and V. Koivunen, (2015) "Opportunistic Radar Waveform Design in Joint Radar and Cellular Communication Systems," 2015 IEEE Global Communications Conference (GLOBECOM), San Diego, CA, 2015, pp. 1-7.
14. Naseri, H.; Koivunen, V. (2015) "Indoor mapping based on time delay estimation in wireless networks", 2015 IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP), Pages: 2424 - 2428.
15. Kuan-Wen Huang; Bica, M.; Mitra, U.; Koivunen, V. (2015) "Radar waveform design in spectrum sharing environment: Coexistence and cognition", 2015 IEEE Radar Conference (RadarCon), Pages: 1698 - 1703.

16. Oksanen, J.; Kaufman, B.; Koivunen, V.; Poor, H.V. (2015) "Minimizing the routing delay in cognitive radios using potential fields" in 2015 IEEE 16th International Workshop on Signal Processing Advances in Wireless Communications (SPAWC), Pages: 625 - 629.
17. Aittomaki, T., Koivunen, V., (2015) "MISMATCHED FILTER DESIGN FOR RADAR WAVEFORMS BY SEMIDEFINITE RELAXATION", IEEE ICASSP 2015.
18. Chis, A., Lunden, J., Koivunen, V., (2015) "OPTIMIZATION OF PLUG-IN ELECTRIC VEHICLE CHARGING WITH FORECASTED PRICE", IEEE ICASSP, 2015.
19. Polonen, K., Koivunen, V., (2015) "Measurement Association in SFN Passive Radar Systems," IEEE RadarCon 2015.
20. Basiri, S.; Ollila, E.; Koivunen, V. (2014) "Fast and robust bootstrap in analysing large multivariate datasets", 2014 48th Asilomar Conference on Signals, Systems and Computers, Pages: 8 - 13.
21. T. Aittomaki, V. Koivunen (2014) "MIMO radar filterbank design for interference mitigation," 2014 IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP), pp.5297,5301, 4-9 May 2014
22. Y. Li, Yongzhe; S.A. Vorobyov, V. Koivunen, Visa, (2014) "Generalized ambiguity function for the MIMO radar with correlated waveforms," 2014 IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP), pp.5302,5306, 4-9 May 2014
23. S. Basiri, E. Ollila, V. Koivunen,(2014) "Fast and robust bootstrap method for testing hypotheses in the ICA model," 2014 IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP), pp.6,10, 4-9 May 2014
24. J. Jantti, S. Chaudhari, V. Koivunen, (2014) "Cepstrum based detection and classification of OFDM waveforms," 2014 IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP), pp.8063,8067, 4-9 May 2014
25. Ollila, E.; Hyon-Jung Kim; Koivunen, V.,(2014) "Robust iterative hard thresholding for compressed sensing," 6th International Symposium on Communications, Control and Signal Processing (ISCCSP), pp.226-229, Athens, 21-23 May 2014.
26. S. Chaudhari, M. Kosunen, S. Makinen, A. Cardenas-Gonzales, V. Koivunen, J. Ryyanen, M. Laatta, M. Valkama, (2014) "Measurement campaign for collaborative sensing using cyclostationary based mobile sensors," 2014 IEEE International Symposium on Dynamic Spectrum Access Networks (IEEE DySPAN), pp.283,290, 1-4 April 2014

27. Hyon-Jung Kim, Esa Ollila, Visa Koivunen and H. Vincent Poor (2014) “Robust iteratively reweighted LASSO for sparse tensor factorizations”, IEEE Statistical Signal Processing conference, Australia, 2014.
28. M. Bica, V. Koivunen, (2014) “Frequency agile generalized multicarrier radar”, 48th CISS conference, Princeton, NJ, 2014.
29. J. Rajasekharan, V. Koivunen (2014) “Production equilibrium in cooperative smart hybrid renewable minigrids”, 48th CISS conference, Princeton, NJ, 2014.
30. H. Naseri, M. Costa, V. Koivunen (2014) A Generalized Formulation for Harmonic Retrieval in Correlated Noise, 48th CISS conference, Princeton, NJ, 2014.
31. H. Naseri, J. Salmi, V. Koivunen, “SYNCHRONIZATION AND RANGING BY SCHEDULED BROADCASTING”, IEEE ICASSP 2013, Vancouver. 2013.
32. J. Lunden, S. Werner, V. Koivunen, “Distributed Demand-Side Optimization With Load Uncertainty”, IEEE ICASSP 2013, Vancouver, 2013.
33. T. Aittomaki, V. Koivunen, “Improved MIMO Radar Channel Estimation Using Spatial Coding”, IEEE ICASSP 2013, Vancouver, 2013.
34. H-J. Kim, E. Ollila, V. Koivunen, “SPARSE REGULARIZATION OF TENSOR DECOMPOSITIONS”, IEEE ICASSP 2013.
35. Chis, A., Lunden, J., Koivunen, V., “Scheduling of Plug-in Electric Vehicle Battery Charging with Price Prediction”, Proceedings of IEEE ISGT 2013.
36. Rautiainen, T., Lunden, J., Werner, S., Koivunen, V., “Demand Side Management through Electricity Pricing in Competitive Environments”, Proceedings of IEEE ISGT 2013.
37. Polonen, K; Koivunen, V., (2013) “Control symbol based fluctuating target detection in DVB-T2 passive radar systems,” IEEE Radar Conference (RADAR), 2013.
38. Aho, J; Salmi, J; Koivunen, V, (2013) “Adaptive processing and realistic signal propagation modeling for multiantenna vital sign radar,” IEEE Radar Conference (RADAR), 2013.
39. Rajasekharan, J.; Lunden, J.; Koivunen, V., (2013) “Competitive equilibrium pricing and cooperation in smart grids with energy storage,” 47th Annual Conference on Information Sciences and Systems (CISS), 2013.
40. Aittomaki, T., Koivunen, V. (2012) “Target velocity estimation with distributed MIMO radar using multiple pulse repetition frequencies”, Proceedings of IEEE ICASSP, Kyoto, Japan, 2012.

41. Oksanen, J., Lunden, J., Koivunen, V. (2012) "Resource minimization driven spectrum sensing policy", Proceedings of IEEE ICASSP, Kyoto, 2012.
42. Oksanen, J.; Lunden, J.; Koivunen, V., "Design of spectrum sensing policy for multi-user multi-band cognitive radio network," 46th Annual Conference on Information Sciences and Systems (CISS), March 2012.
43. Salmi, J.; Luukkonen, O.; Koivunen, V., "Continuous wave radar based vital sign estimation: Modeling and experiments," IEEE Radar Conference (RADAR), pp. 564-569, May 2012
44. Oborina, Alexandra; Henttonen, T.; Koivunen, V.; Moisio, Martti, "Efficient computation of effective SINR," 46th Annual Conference on Information Sciences and Systems (CISS), March 2012
45. Chaudhari, S.; Lunden, J.; Koivunen, V., "Effects of quantization and channel errors on sequential detection in cognitive radios," 46th Annual Conference on Information Sciences and Systems (CISS), March 2012
46. Polonen, K.; Koivunen, V., "Detection of DVB-T2 control symbols in passive radar systems," IEEE Sensor Array and Multichannel Signal Processing Workshop (IEEE SAM), pp.309-312, June 2012
47. Lunden, J.; Koivunen, V., "Locally optimum and suboptimum detection of complex-valued cyclostationary signals," 46th Annual Conference on Information Sciences and Systems (CISS), March 2012
48. Razavi, S.A.; Ollila, E.; Koivunen, V., "Robust greedy algorithms for compressed sensing," Proceedings of the 20th European Signal Processing Conference (EUSIPCO), pp.969-973, Aug. 2012
49. Chaudhari, S.; Lunden, J.; Koivunen, V., "BEP walls for cooperative Bayesian detection with reporting channel errors," IEEE 23rd International Symposium on Personal Indoor and Mobile Radio Communications (PIMRC), pp.2166-2172, Sept. 2012
50. Costa, M.; Koivunen, V., "Incorporating array nonidealities into adaptive Capon beamformer for source tracking," IEEE Sensor Array and Multichannel Signal Processing Workshop (IEEE SAM), pp.445-448, June 2012
51. Oksanen, J.; Koivunen, V.; Poor, H.V., "A sensing policy based on confidence bounds and a restless multi-armed bandit model," Forty Sixth Asilomar Conference on Signals, Systems and Computers (ASILOMAR), pp.318-323, Nov. 2012
52. Lunden, J.; Koivunen, V.; Kulkarni, S.R.; Poor, H.V.(2011) "Exploiting spatial diversity in multiagent reinforcement learning based spectrum sensing", 4th IEEE International Workshop on Computational Advances in Multi-Sensor Adaptive Processing (CAMSAP), pp. 325 - 328.

53. Abdullah Al-Hadi Azremi, Mario Costa, Visa Koivunen, Pertti Vainikainen, (2011) "Ambiguity analysis of isolation-based multi-antenna structures on mobile terminal," , Proceedings of the 5th European Conference on Antennas and Propagation (EUCAP), pp. 552-556, 2011.
54. Janis, P.; Koivunen, V.; Ribeiro, C.B.(2011) "On the performance of flexible UL-DL switching point in TDD wireless networks.," IEEE GLOBECOM, 2011
55. Chaudhari, S.; Lunden, J.; Koivunen, V. (2011) "Performance limitations for cooperative spectrum sensing with reporting channel errors.," 22nd IEEE Personal Indoor and Mobile Radio Communications Symposium (PIMRC), pp. 337 - 342, 2011
56. Lunden, J.; Koivunen, V.; Kulkarni, S.R.; Poor, H.V.; , "Reinforcement learning based distributed multiagent sensing policy for cognitive radio networks," 2011 IEEE Symposium on New Frontiers in Dynamic Spectrum Access Networks (DySPAN), vol., no., pp.642-646, 3-6 May 2011.
57. Polonen, K.; Koivunen, V.; , "Reduced complexity space-time coding in single-frequency networks," 2011 IEEE Wireless Communications and Networking Conference (WCNC), vol., no., pp.1523-1528, 28-31 March 2011.
58. Aittomaki, Tuomas; Koivunen, Visa; , "Widely distributed MIMO radar beamforming for detecting targets with slow RCS fluctuations," 2011 IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP), vol., no., pp.2792-2795, 22-27 May 2011
59. Chaudhari, S.; Lunden, J.; Koivunen, V.; , "BEP walls for collaborative spectrum sensing," 2011 IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP), vol., no., pp.2984-2987, 22-27 May 2011
60. Ollila, E.; Koivunen, V.; Poor, H.V.; , "Complex-valued signal processing: essential models, tools and statistics," Information Theory and Applications Workshop (ITA), 2011 , vol., no., pp.1-10, 6-11 Feb. 2011
61. Chaudhari, Sachin; Lunden, Jarmo; Koivunen, Visa; , "Effects of quantization on bepwalls for soft decision based cooperative sensing," 2011 IEEE 12th International Workshop on Signal Processing Advances in Wireless Communications (SPAWC), vol., no., pp.106-110, 26-29 June 2011
62. Ollila, E.; Koivunen, V.; Poor, H.V.; , "A robust estimator and detector of circularity of complex signals," 2011 IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP), vol., no., pp.3620-3623, 22-27 May 2011.

63. Oksanen, J.; Koivunen, V.; Lunden, J.; Huttunen, A.; ,(2010) "Diversity-based spectrum sensing policy for detecting primary signals over multiple frequency bands," IEEE ICASSP 2010, pp.3130-3133, 14-19 March 2010
64. Oksanen, J.; Lunden, J.; Koivunen, V.; , (2010) "Characterization of spatial diversity in cooperative spectrum sensing," 4th International Symposium on Communications, Control and Signal Processing (ISCCSP), pp.1-5.
65. Kokkinen, K.; Turunen, V.; Kosunen, M.; Chaudhari, S.; Koivunen, V.; Ryyanen, J.; ,(2010) "On the implementation of autocorrelation-based feature detector," 4th International Symposium on , vol., no., pp.1-4, Communications, Control and Signal Processing (ISCCSP).
66. Oksanen, J.; Lunden, J.; Koivunen, V.; ,(2010) "Reinforcement learning method for energy efficient cooperative multiband spectrum sensing," IEEE International Workshop on Machine Learning for Signal Processing (MLSP), vol., no., pp.59-64.
67. Costa, M.; Richter, A.; Koivunen, V.; ,(2010) "Steering vector modeling for polarimetric arrays of arbitrary geometry," IEEE Sensor Array and Multichannel Signal Processing Workshop (SAM), pp.265-268,
68. Oksanen, J.; Lunden, J.; Koivunen, V.; ,(2010) "Reinforcement learning-based multiband sensing policy for cognitive radios," 2nd International Workshop on Cognitive Information Processing (CIP), pp.316-321.
69. Aittomaki, T.; Koivunen, V. (2010) "Target detection and positioning in correlated scattering using widely distributed MIMO radar," European Radar Conference (EuRAD), pp.403-406.
70. Aittomaki, T.; Koivunen, V.; , (2010) "MIMO radar target detection with parametric scattering correlation model," 4th International Symposium on Communications, Control and Signal Processing (ISCCSP).
71. Salmi, J.; Richter, A.; Koivunen, V.; (2009) "Angular Doppler characterization in indoor channels" 3rd European Conference on Antennas and Propagation, 2009. EuCAP 2009, pp: 3839 - 3843
72. Aittomaki, T.; Koivunen, V. (2009) "Beampattern optimization by minimization of quartic polynomial." IEEE/SP 15th Workshop on Statistical Signal Processing, 2009. SSP '09. pp. 437 - 440.
73. Haghparast, A.; Abrudan, T.; Koivunen, V. (2010) "OFDM ranging in multipath channels using time reversal method." IEEE 10th Workshop on Signal Processing Advances in Wireless Communications, 2009. SPAWC '09, pp. 568 - 572

74. Kokkinen, Kari; Turunen, Vesa; Kosunen, Marko; Chaudhari, Sachin; Koivunen, Visa; Ryynanen, Jussi (2009) "FPGA implementation of autocorrelation-based feature detector for cognitive radio.", NORCHIP, 2009 pp. 1 - 4
75. S. Chaudhari, V. Koivunen, (2009) "Effect of Quantization and Channel Errors on Collaborative Spectrum Sensing", 43rd Annual Asilomar Conference on Signals, Systems, and Computers, Pacific Grove, CA, USA, Nov. 1-4, 2009.
76. Jnis, Pekka; Koivunen, Visa; Nentwing, Markus (2009) "Optimizing spectral shape under general spectrum emission mask constraints". The 20th Personal, Indoor, and Mobile Radio Communications Symposium 2009, Tokyo, Japan, September 13.-16, 2009.
77. Ollila, E.; Koivunen, V. (2009), "Adjusting the generalized likelihood ratio test of circularity robust to non-normality." IEEE 10th Workshop on Signal Processing Advances in Wireless Communications, 2009. SPAWC '09. pp. 558 - 562.
78. Costa, M.; Koivunen, V.; Richter, A. (2009) "Azimuth, elevation, and polarization estimation for arbitrary polarimetric array configurations," IEEE/SP 15th Workshop on Statistical Signal Processing, SSP '09, pp. 261 - 264.
79. Janis, P., Tirkkonen, O., Koivunen, V., Hugel, K., (2009) Adjacent channel interference between asynchronous TDD cellular networks, IEEE VTC Spring,
80. Janis, P., Ribeiro, C., Doppler, K., Hugel, K., Korhonen, J., (2009) Interference-aware resource allocation for device-to-device radio underlaying cellular networks. IEEE VTC Spring,
81. Koivisto, T., Koivunen, V., (2009) Diversity Transmission for Correlation-Based Slot Synchronization with Noncoherent Combining, IEEE VTC Spring,
82. Costa, M., Richter, A., Koivunen, V., (2009) Low Complexity Azimuth and Elevation Estimation for Arbitrary Array Configurations (2009) IEEE ICASSP.
83. Werner, S., Huang Y-H., de Campos, M., Koivunen, V., (2009) Distributed Parameter Estimation with Selective Cooperation, IEEE ICASSP.
84. Eriksson, J., Ollila, E., Koivunen, V., (2009) Statistics for Complex Random Variables Revisited. IEEE ICASSP.
85. Aittomaki, T., Koivunen, V., (2008) MIMO Radar Direction Finding Performance Using Swerling Models, Proceedings of 42nd Asilomar Conference on Signals, Systems and Computers. Pacific Grove, CA, October 26-29, 2008.

86. Salmi, J., Richter, A., Koivunen, V., (2008) Proceedings of 42nd Asilomar Conference on Signals, Systems and Computers. Pacific Grove, CA, October 26-29, 2008.
87. Pun, M.O., Koivunen V., and Poor, H.V. (2008) "SINR analysis of opportunistic MIMO-SDMA downlink systems with linear combining," IEEE International Conference on Communications (ICC), Beijing, 2008,
88. Chaudhari, S., Koivunen, V., and Poor, H.V., (2008) "Distributed autocorrelation-based sequential detection of OFDM signals in cognitive radios," The Third International Congerence on Cognitive Radio Oriented Wireless and Networks and Communications, Singapore, May 15-17, 2008, CD-ROM.
89. Lunden, J., Kassam, S.A., and Koivunen, V., (2008) "Nonparametric cyclic correlation based detection for cognitive radio systems," The Third International Congerence on Cognitive Radio Oriented Wireless and Networks and Communications, Singapore, May 15-17, 2008, CD-ROM
90. Ollila, E., Koivunen, V., (2008) "Nonparametric tests of circularity of complex-valued random vectors," Nonparametric Statistics and Mixture Models, State College, Pennsylvania, USA, May 23-24, 2008.
91. Ollila, E., Koivunen V., Eriksson, J., (2008) "On the Cramer.Rao Bound for the constrained and unconstrained random parameters," The Fifth IEEE Sensor Array and Multichannel Signal Processing Workshop, IEEE SAM 2008, Darmstadt, Germany, July 21-23, 2008.
92. Pereira da Costa, M., Richter, A., Belloni, F., and Koivunen, V., (2008) "Polynomial rooting-based direction finding for arbitrary array configurations," The Fifth IEEE Sensor Array and Multichannel Signal Processing Workshop, IEEE SAM 2008, Darmstadt, Germany, July 21-23, 2008.
93. Richter, A., Salmi, J., Koivunen, V., (2008) "Tensor decomposition of MIMO channel sounding measurements and its applications," URSI General Assembly, Chicago, IL, Aug. 7-16, 2008.
94. Chaudhari, S., Lunden, J., Koivunen, V., Collaborative Autocorrelation-Based Spectrum Sensing of OFDM signals in Cognitive Radios, in the proceedings of CISS 2008, Princeton, NJ, March 19-21, 2008.
95. Oborina, A., Moisiu, M., Henttonen, T., Pernila, E., Koivunen, V., MIMO performance evaluation in UTRAN long term evolution downlink, in the proceedings of CISS 2008, Princeton, NJ, March 19-21, 2008.
96. Abrudan, T., Eriksson, J., Koivunen, V., (2008) Efficient Riemannian Algorithms for Optimization under Unitary Matrix Constraints, IEEE ICASSP, pp. 2353-2356.
97. Richter, A., Salmi, J., Koivunen, V., (2008) ML Estimation of Covariance Matrix for Tensor Valued Signals in Noise. IEEE ICASSP, pp. 2349-2352.

98. Werner, S., Mobien, M., Huang, Y-H., Koivunen, V., (2008) Decentralized Set-Membership Adaptive Estimation for Clustered Sensor Networks. IEEE ICASSP, pp. 3573-3576.
99. Lunden, J., Koivunen, V., Huttunen, A., Poor, H.V. (2007) Censoring for Collaborative Spectrum Sensing in Cognitive Radios. Invited Paper, 41st Asilomar Conference on Signals Systems and Computers, pp. 772-776.
100. Aittomaki, T., Koivunen, V., (2007) Signal Covariance Matrix Optimization for Transmit Beamforming in MIMO Radars. Invited Paper, 41st Asilomar Conference on Signals Systems and Computers, pp. 182-186.
101. Abrudan, T., Eriksson, J., Koivunen, V., (2007) Efficient Line Search Methods for Riemannian Optimization under Unitary Matrix Constraints. 41st Asilomar Conference on Signals Systems and Computers, pp. 671-675.
102. Salmi, J., Richter, A., Koivunen, V., (2007) Tracking of MIMO propagation Parameters under Spatio-Temporal Scattering Models. 41st Asilomar Conference on Signals Systems and Computers, pp. 666-670.
103. Polonen, Keijo; Koivunen, Visa (2007) Iterative Interpolation Method for Multiband-OFDM Channel Estimation. 2007 IEEE International Conference on Ultra-Wideband, ICUWB, pp. 225-228, Singapore, September 24-26, 2007.
104. Ribeiro C., Richter, A., Koivunen, V., (2008) Detecting Specular Propagation Paths in the Presence of Distributed Scattering in Angle and Delay Domain, 41st Asilomar Conference on Signals Systems and Computers, pp. 2259-2263.
105. Roman, T., Koivunen, V., (2007) Carrier frequency synchronization for mobile television receivers. IEEE ISCAS 2007, pp. 261-264.
106. Aittomaki, T. Koivunen, V. (2007) Low-Complexity Method for Transmit Beamforming in MIMO Radars IEEE ICASSP 2007, Vol. 2, pp. 305-308.
107. Lunden, J., Koivunen, V., Huttunen, A., and Poor, H.V., (2007) Spectrum Sensing in Cognitive Radios Based on Multiple Cyclic Frequencies. Proceedings of CrownCom 2007.
108. Yuanning Yu, Athina P. Petropulu, H. Vincent Poor, Visa Koivunen (2007) Blind Estimation of Multiple Carrier Frequency Offsets. To appear in the Proceedings of the 18th Annual IEEE International Symposium on Personal, Indoor and Mobile Radio Communications (PIMRC), Athens, Greece, September 3-7, 2007
109. Lunden, J. Koivunen, V. (2007) Scaled Conjugate Gradient Method for Radar Pulse Modulation Estimation IEEE ICASSP 2007. ICASSP 2007, Hawaii, Vol. 2, pp: 297-300.

110. M.O. Pun, V. Koivunen and H.V. Poor, (2007) Opportunistic scheduling and beamforming for MIMO-SDMA downlink systems with linear combining, To appear in the Proceedings of the 18th Annual IEEE International Symposium on Personal, Indoor and Mobile Radio Communications (PIMRC), Athens, Greece, September 3-7, 2007.
111. Melvasalo, Maarit; Jnis, Pekka; Koivunen, Visa (2007) Sparse equalization in high data rate WCDMA systems. 8th IEEE Workshop on Signal Processing Advances for Wireless Communications (SPAWC'07), Helsinki, Finland June 2007.
112. Pekka Janis, Maarit Melvasalo, Visa Koivunen (2006) Fast Reduced Rank Equalizer for HSDPA Systems Based on Lanczos Algorithm. Proceedings of IEEE International Workshop on Signal Processing Advances in Wireless Communications, (SPAWC), Cannes France, July 2-5, 2006.
113. Richter, Andreas; Salmi, Jussi; Koivunen, Visa (2006) An Algorithm for Estimation and Tracking of Distributed Diffuse Scattering in Mobile Radio Channels, IEEE International Workshop on Signal Processing Advances in Wireless Communications, (SPAWC), Cannes France, July 2-5, 2006
114. Richter, Andreas; Salmi, Jussi; Koivunen, Visa (2006) On Distributed Scattering in Radio Channels and Its Contribution to MIMO Channel Capacity. 1st European Conference on Antennas and Propagation EuCAP 2006, Nice France, November 6-10, 2006, WINNER OF THE BEST PAPER AWARD.
115. Salmi, Jussi; Richter, Andreas; Koivunen, Visa (2006) MIMO propagation parameter tracking using EKF. in proceedings of Nonlinear Statistical Signal Processing Workshop 2006, Cambridge UK, September 13.-15, 2006
116. Salo, J., Eriksson, J., Koivunen, V., Vainikainen, P., (2006) Empirical Characteristic Function Based Estimation of Multiple Scattering Channel Parameters. Proceedings of 17th IEEE Personal, Indoor and Mobile Radio Communications conference (PIMRC'06), Helsinki Finland.
117. Lundn, J., Koivunen, V., (2006) Robust estimation of radar pulse modulation. The 6 th IEEE International Symposium on Signal Processing and Information Technology, Vancouver, BC, Canada, August 27-30, 2006 . pp. 271-276.
118. Salmi, J., Richter, A., Koivunen, V., (2006) Enhanced Tracking of Radio Propagation Path Parameters Using State-Space Modeling in proceedings of EUSIPCO 2006, Florence, Italy. WINNER OF THE BEST STUDENT PAPER AWARD.
119. Roman, T., Richter, A., Koivunen, V., (2006) Blind CFO estimation for OFDM with constant modulus constellations: performance bounds and algorithms in proceedings of EUSIPCO 2006, Florence, Italy.

120. Belloni, F., Richter, A., Koivunen, V., (2006) Performance of root-MUSIC algorithm using Real-World Arrays in proceedings of EUSIPCO 2006, Florence, Italy.
121. Richter, A., Belloni, F., Koivunen, V., (2006) DoA and Polarization Estimation using Arbitrary Polarimetric Array Configurations. IEEE SAM 2006, Waltham, MA, USA.
122. Douglas, S.C., Eriksson, J., Koivunen, V., (2006) The strong uncorrelating projection approximation (SUPA) algorithm for decorrelating complex non-circular data. IEEE SAM 2006, Waltham, MA, USA.
123. Salmi, J., Richter, A., Enescu, M., Koivunen, V., (2006) Propagation Parameter Tracking using Variable State Dimension Kalman Filter. IEEE VTC 2006 Spring. Melbourne, Australia.
124. Melvasalo, M., Janis, P., Koivunen, V., (2006) MMSE equalizer and chip level inter-antenna interference canceler for HSDPA MIMO systems. IEEE VTC 2006 Spring. Melbourne, Australia.
125. Werner, S., Enescu, M., Koivunen, V. (2006) Combined Frequency and Time Domain Channel Estimation in Mobile MIMO-OFDM Systems. in IEEE ICASSP 2006, Toulouse, France.
126. Belloni, F., Richter, A., Koivunen, V. (2006) Extension of root-MUSIC to non-ULA Array Configurations. in IEEE ICASSP 2006, Toulouse, France, to appear.
127. Douglas, S.C., Eriksson, J., Koivunen, V. (2006) Adaptive Estimation of the Strong Uncorrelating Transform With Applications to Subspace Tracking. in IEEE ICASSP 2006, Toulouse, France, to appear.
128. Douglas, S.C., Eriksson, J., Koivunen, V. (2006) equivariant algorithms for estimating the strong-uncorrelation transform in complex independent component analysis. International Conference on Independent Component Analysis and Blind Signal Separation, ICA2006, March 5-8, 2006 Charleston, SC USA. pp. 57-65.
129. Douglas, S.C., Eriksson, J., Koivunen, V. (2006) fixed-point complex ICA algorithms for the blind separation of sources using their real or imaginary components. International Conference on Independent Component Analysis and Blind Signal Separation, ICA 2006, March 5-8,2006, Charleston, SC, USA. pp. 343-351.
130. Risnen, A., Vainikainen, P., Tretyakov, S., Koivunen, V., Laakso, T. (2006) Smart antennas: overview of research in SMARAD. 2006 IEEE Radio and Wireless Symposium, San Diego, CA, USA, January 17-19, 2006. San Diego, CA, USA 2006, pp.331-334.

131. Melvasalo, M., Koivunen, V. (2005) Semi-blind channel estimation in HSDPA systems. Thirty-Ninth Asilomar Conference on Signals, Systems and Computers, CA USA October 28 - November 1, 2005. pp. 1292-1296.
132. Belloni, F., Richter, A., Koivunen, V. (2005) avoiding bias in circular arrays using optimal beampattern shaping and EADF. Thirty-Ninth Asilomar Conference on Signals, Systems and Computers, CA USA October 28 - November 1, 2005. pp. 1390-1393.
133. Ribeiro, C., Richter, A., Koivunen, V. (2005) joint maximum likelihood estimation of angular and time-delay MIMO propagation parameters. Thirty-Ninth Asilomar Conference on Signals, Systems and Computers, CA USA October 28 - November 1, 2005. pp. 843-847.
134. Abrudan, T., Eriksson, J., Koivunen, V. (2005) optimization under unitary matrix constraint using approximate matrix exponential. Thirty-Ninth Asilomar Conference on Signals, Systems and Computers, CA USA October 28 -November 1, 2005. pp. 242-246.
135. Werner, S., Enescu, M., Koivunen, V. (2005) Low-complexity time-domain channel estimation for mobile wireless OFDM systems. IEEE Workshop on Signal Processing Systems SIPS2005 Athens Greece, November 2.-4. 2005.
136. Ribeiro, Cassio, Richter, Andreas, Koivunen, Visa, (2005) Stochastic Maximum Likelihood Estimation of Angle- and Delay-Domain Propagation Parameters. 16th Annual IEEE International Symposium on Personal Indoor and Mobile Radio Communications PIMRC2005, Berlin Germany, September 11.-14.2005. WINNER OF THE BEST PAPER AWARD.
137. Melvasalo, Maarit, Jänis, Pekka, Koivunen, Visa (2005) Low complexity space-time MMSE equalization in WCDMA systems. 16th Annual IEEE International Symposium on Personal Indoor and Mobile Radio Communications PIMRC 2005, Berlin Germany, September 11.-14.2005.
138. Melvasalo, Maarit, Jänis, Pekka, Koivunen, Visa (2005) Semi-blind channel estimation in HSDPA systems, 39th Asilomar Conference on Signals, Systems and Computers, Pacific Grove, CA, Nov. 2005.
139. Belloni, F., Richter, A., Koivunen, V., (2005) Avoiding Bias in Circular Arrays Using Optimal Beampattern Shaping and EADF, 39th Asilomar Conference on Signals, Systems and Computers, Pacific Grove, CA, Nov. 2005.
140. Lunden, Jarmo, Terho, Liisa, Koivunen, Visa (2005) Waveform recognition in pulse compression radar systems. 2005 IEEE International Workshop on Machine Learning for Signal Processing MLSP2005, Mystic Connecticut USA, September 28-30,2005. pp. 271-276.

141. Eriksson, Jan; Seppola, Anne-Mari; Koivunen, Visa (2005) Complex ICA for circular and non-circular sources. 13th European Signal Processing Conference EUSIPCO 2005, September 4-8.2005 Antalya Turkey
142. Eriksson, J., Koivunen, V. (2005) Blind Separation of a Class of Nonlinear ICA Models. IEEE International Symposium on Circuits and Systems ISCAS 2005, Kobe Japan, May 23-26,2005.
143. Ribeiro, Cassio, Richter, Andreas, Koivunen, Visa (2005) Recent Advances in Modeling and Estimation of Local and Distributed Scattering of Mobile Radio Channels. Proceedings of XXVIII th URSI General Assembly, New Delhi, India, October 23-29 2005.
144. Ribeiro, Cassio, Richter, Andreas, Koivunen, Visa (2005) Joint Maximum Likelihood Estimation of Angular and Time-Delay MIMO Propagation Parameters. 39th Asilomar Conference on Signals, Systems and Computers, Pacific Grove, CA, Nov. 2005.
145. Abrudan, T., Eriksson, J., Koivunen, V., (2005) Optimization under Unitary Matrix Constraint using Approximate Matrix Exponential. 39th Asilomar Conference on Signals, Systems and Computers, Pacific Grove, CA, Nov. 2005.
146. Richter, Andreas, Koivunen, Visa (2005) Recent advances in radio channel parameter estimation from channel sounding measurements,. Proceedings of XXVIII th URSI General Assembly, New Delhi, India, October 23-29, 2005.
147. Enescu, M., Koivunen, V. (2005) Estimating the fading coefficient in mobile OFDM systems using state-space model. IEEE International Symposium on Circuits and Systems ISCAS 2005, Kobe Japan, May 23-26.2005.
148. Richter, A., Enescu, M., Koivunen, V., (2005) State-Space Approach to Propagation Path Parameter Estimation and Tracking. The Sixth IEEE International Workshop on Signal Processing Advances in Wireless Communication, SPAWC 2005, New York City USA, June 5-8.2005. pp. 533-537
149. Roman, Timo, Koivunen, Visa (2005) Subspace method for blind CFO estimation for OFDM systems with constant modulus constellations,. The 61st IEEE Vehicular Technology Conference VTC2005-Spring, Stockholm Sweden.
150. Delfino, Eugenio, Sirbu, Marius, Koivunen, Visa (2005) One-Step Code-Phase Tracking Method for Long-Code Navigation Systems. 2005 IEEE 61 st Vehicular Technology Conference VTC2005-Spring, Stockholm Sweden 30 May-1 June 2005.
151. Roman, T., Koivunen, V., (2005) One-shot Subspace Based Method for Blind CFO Estimation for OFDM. IEEE ICASSP, Philadelphia, PA.

152. Belloni, F., Koivunen, V., (2005) Reducing Bias in BeamSpace Methods for Uniform Circular Array. IEEE ICASSP, Philadelphia, PA.
153. Ribeiro, C., Ollila, E., Koivunen, V., (2005) Propagation Parameter Estimation in MIMO Systems using Mixture of Angular Distributions Model. IEEE ICASSP, Philadelphia, PA.
154. Seppola, A-M., Eriksson, J., Koivunen, V., (2005) Separation of Complex Signals Using Characteristic Functions. 39th Annual Conference on Information Sciences and Systems, CISS 2005, Baltimore, March 16-18, 2005.
155. Lunden, J., Terho, L., Koivunen, V., (2005) Classifying Pulse Compression Radar Waveforms using Time-Frequency Distributions. 39th Annual Conference on Information Sciences and Systems, CISS 2005, Baltimore, March 16-18, 2005.
156. Koivisto, T., Koivunen, V., (2005) Blind Despreading and Synchronization of Short-Code CDMA Signals. 39th Annual Conference on Information Sciences and Systems, CISS 2005, Baltimore, March 16-18, 2005.
157. Nyblom, T., Roman, T., Enescu, M., Koivunen, V., (2004) Time-Varying Carrier Offset Tracking in OFDM Systems Using Particle Filtering. The 4th IEEE International Symposium on Signal Processing and Information Technology IEEE ISSPIT2004, Rome Italy December 18-21, 2004. pp. 217-220.
158. Enescu, M., Herdin, M., Roman, T., Koivunen, V., (2004) Parameter estimation of measured channels in mobile MIMO OFDM system. The 4th IEEE International Symposium on Signal Processing and Information Technology IEEE ISSPIT2004, Rome, Italy December 18-21.2004. pp. 123-126.
159. Sirbu, M., Delfino, E., Koivunen, V., (2004) A Novel Method for Time-Delay Acquisition in Satellite Navigation Systems. 2004 IEEE International Symposium on Spread-Spectrum Technologies and Applications, Sydney Australia Aug.30- Sept.2, 2004.
160. Sirbu, M., Delfino, E., Koivunen, V., (2004) MMSE Delay Acquisition of Pulse-Shaped Signals in Satellite Navigation Systems. IEEE Vehicular Technology Conference 2004-Fall, Los Angeles, California, Sept 26-29, 2004.
161. Ollila, E., Koivunen, V. (2004) Generalized Complex Elliptical Distributions. IEEE 3rd Sensor Array and Multichannel Signal Processing Workshop, SAM04, Sitges Spain, 18-21 July 2004.
162. Valkama, M., Renfors, M., Koivunen, V., (2004) Blind Image Suppression and Carrier Tracking in Direct-Conversion Receivers Based on I/Q Signal

- Separation. Proceedings of 38th Asilomar Conference on Signals, Systems, and Computers 2004, Pacific Grove, CA
163. Ribeiro, C., Ollila, E., Koivunen, V., (2004) Cramer-Rao Bound for Angular Propagation Parameter Estimation in MIMO Systems. Proceedings of 38th Asilomar Conference on Signals, Systems, and Computers 2004, Pacific Grove, CA
 164. Belloni, F., Koivunen, V., (2004) Analysis of Beamspace Transform on Uniform Circular Array. Proceedings of 38th Asilomar Conference on Signals, Systems, and Computers 2004, Pacific Grove, CA
 165. Roman, Timo; Koivunen, Visa (2004) Blind CFO Estimation in OFDM Systems Using Diagonality Criterion. IEEE ICASSP 2004, Montreal Canada, May 17.-21 2004. IV369-IV372.
 166. Eriksson, J., Koivunen, V. (2004) Complex-Valued ICA Using Second Order Statistics. Workshop on Machine Learning for Signal Processing XIV, Sao Luis Brazil 29.9.-1.10.2004. pp. 183-191
 167. Roman, T., Visuri, S.; Koivunen, V. (2004) Performance bound for blind CFO estimation in OFDM with real-valued constellations. 2004 IEEE 60th Vehicular Technology Conference, 26-29 September 2004, LA California USA.
 168. Werner, S., With, M., Koivunen, V. (2004) Householder based Low-Rank Space-time Processor For Anti-jamming Navigation Receivers. XII.European Signal Processing Conference EUSIPCO-2004, Septembr 6-10,2004 Vienna Austria. pp. 825-828.
 169. Cassio, R., Ollila, E., Koivunen, V., (2004) Stochastic maximum likelihood method for propagation parameter estimation. 2004 IEEE 15th International Symposium on Personal, Indoor and Mobile Radio Communications PIMRC2004, Baarcelona Spain, 5-8 September 2004.
 170. With, M., Werner, S., Koivunen, V., (2004) Householder-based Anti-jamming Navigation Receiver Structures. SAM2004 Third IEEE Sensor Array Multichannel Signal Processing Workshop 18.-21.7.2004 Siges Barcelona, Spain.
 171. Abrudan, Traian; Hjorungnes, Are; Koivunen, Visa (2004) A Blind equalizer for MIMO OFDM Systems. International Zurich Seminar on Communications, Zurich Switzerland, 2004. pp. 212-215.
 172. Sirbu, M., Delfino, E., Koivunen, V., (2004) A novel method for delay acquisition in satellite navigation systems, IEEE ISSSTA, 2004, Sydney.
 173. Aittomaki, Tuomas; Koivunen, Visa Recursive Householder-based Space-time Processor for Jammer Mitigation in Navigation Receivers. 38th Annual CISS2004 Conference on Information Sciences and Systems, USA, March 17-19 2004.

174. Ollila, E. and Koivunen, V., "Influence functions for array covariance matrix estimators," in Proc. IEEE Workshop on Statistical Signal Processing (SSP'03), St.Louis, USA, Sept. 28- Oct. 1, 2003, pp. 445-448.
175. Ollila, E and Koivunen, V., "Robust space-time scatter matrix estimator for broadband antenna arrays," in Proc. IEEE Vehicular Technology Conference (VTC'03-Fall), Orlando, USA, Oct. 6-9, 2003.
176. Abrudan, T., Sirbu, M., Koivunen, V. "Block-Toeplitz VCMA Equalizer for MIMO-OFDM Systems". Proceedings of 37th Asilomar Conference on Signals, Systems, and Computers 2003, Nov. 9-12, 2003, Pacific Grove, CA
177. Järvinen, J., Koivunen, V. " δ -Signed Correlation Method for Noisy Channel Identification.". Proceedings of 37th Asilomar Conference on Signals, Systems, and Computers 2003, Nov. 9-12, 2003, Pacific Grove, CA
178. Enescu, M., Koivunen, V., "On the estimation of noise statistics in a class of state-space models." Proceedings of 37th Asilomar Conference on Signals, Systems, and Computers 2003, Nov. 9-12, 2003, Pacific Grove, CA
179. Roman, T., Enescu, M., Koivunen, V. (2003) "Time-domain method for tracking dispersive channels in MIMO OFDM systems" IEEE International Conference on Multimedia and Expo, 2003. ICME '03, Volume: 2 , 6-9 July 2003 Page(s): 609 -612
180. Belloni, F., Koivunen, V., (2003) "Unitary root-MUSIC Technique for Uniform Circular Array", To appear in IEEE International Symposium on Signal Processing and Information Technology (ISSPIT 2003), Darmstadt, Germany, Dec. 14-17, 2003.
181. Roman, Timo; Enescu, Mihai; Koivunen, Visa Recursive Estimation of Time-Varying Channel and Frequency Offset in MIMO OFDM Systems. The 14 th IEEE 2003 International Symposium on Personal, Indoor and Mobile Radio Communications, PIMRC 2003, Beijing, China, September 7.-10.2003. pp. 1934-1938.
182. Ollila, Esa; Koivunen, Visa Robust Antenna Array Processing Using M-estimators of Pseudo-Covariance. The 14th IEEE 2003 International Symposium on Personal, Indoor and Mobile Radio Communications, PIMRC 2003, Beijing, China, September 7-10.2003. pp. 2659-2663.
183. Sirbu M. and Koivunen, V., " One-step refinement method for joint channel estimation and timing acquisition in OFDM transmission, Proceedings of the IEE&IEEE International Workshop on Signal Processing for Wireless Communications 2003, May 2003, pp. 261-264.

184. Abrudan, T., Sirbu, M., Koivunen, V., (2003) "Blind Multi-user Receiver for MIMO-OFDM System", IEEE Signal Processing Advances in Wireless Communications (SPAWC) 2003, Rome, Italy.
185. Roman, T., Enescu, M., Koivunen, V., (2003) "Joint time-domain tracking of channel and frequency offset for OFDM system", IEEE SPAWC 2003, Rome, Italy.
186. Ollila, E., Quattropiani, L., Koivunen, V., (2003) " Robust Space-Time Covariance Estimation for Smart Antennas", NATO RTO/SET Symposium on Smart Antennas, Chester, UK, April 2003, To appear.
187. Oja, E., Koivunen, V., (2003) "Tracking Mobile Radios Using Antenna Arrays and Particle Filters" NATO RTO/SET Symposium on Smart Antennas, Chester, UK, April 2003, To appear.
188. Ollila E., Koivunen, V., (2003) "ML-estimation of the Transmitter Location using Directional Data", International Conference on Robust Statistics, ICORS 2003.
189. Roman, T. Enescu, M., Koivunen, V., (2003) Time Domain Methods for Tracking Dispersive Channels in MIMO-OFDM Systems, IEEE ICASSP 2003. Volume: 4 , April 6-10, 2003 Page(s): 393-396.
190. Eriksson, J. and Koivunen, V. "Identifiability and Separability of Linear ICA Models Revisited", Proc. of ICA2003, Nara, Japan, April 2003.
191. Roman, T., Enescu, M., Koivunen, V., (2003) Time Domain Method for Channel Tracking in OFDM systems, IEEE VTC Spring 2003, Jeju, Korea.
192. Enescu, M., Koivunen, V., (2002) On the estimation of state transition matrix and noise statistics in state-space models. IEEE VTC2002-Vancouver, BC, Canada 24-28 September 2002.
193. Venäläinen, J., Terho, L., Koivunen, V., (2002) Modulation Recognition System for Frequency Selective Channels, In the proceedings of IEEE Nordic Signal Processing Conference NORSIG 2002.
194. Venäläinen, J., Terho, L., Koivunen, V., (2002) Modulation Classification in Fading Multipath Channel. 36th Asilomar Conference on Signals, Systems and Computers, Pacific Grove, CA USA, November 3-6. 2002.
195. Visuri, S., Koivunen, V., (2002) Resolving Ambiguities in Subspace-Based Blind Receiver for MIMO Channels. 36th Asilomar Conference on Signals, Systems and Computers, Pacific Grove, CA USA, November 3-6. 2002.
196. Eriksson, J., Koivunen, V., (2002) Blind Identifiability of Class of Nonlinear Instantaneous ICA Models. XI European Signal Processing Conference EUSIPCO2002, Toulouse France, 3-6 September 2002. pp.7-10.

197. Enescu, M., Koivunen, V., (2002) Kalman smoothing based channel estimation for space-time block coding. European Conference on Signal Processing EUSIPCO2002, Toulouse France, 3-6 September 2002.
198. Enescu, M., Sirbu, M., Koivunen, V., (2002) Recursive Estimation of Noise Statistics in Kalman Filter Based MIMO Equalization. In the proceedings of XXVIIth General Assembly of the International Union of Radio Science, Maastricht the Netherlands, 17-24 August 2002.
199. Sirbu, M., Koivunen, V., (2002) In the proceedings of Propagation delay estimation in asynchronous DS/CDMA using multiple antennas. XI European Signal Processing Conference EUSIPCO 2002, Toulouse France 3-6 September 2002.
200. Sirbu, M., Koivunen, V., (2002) Multichannel stochastic gradient method for adaptive equalization in uplink asynchronous DS/CDMA. Second IEEE Sensor Array and Multichannel Signal Processing workshop SAM2002, Rosslyn VA USA, August 2002.
201. Sirbu, M., Koivunen, V., (2002) Channel estimation and tracking in uplink asynchronous DS/CDMA using multiple antennas. 14th International Conference on Digital Signal Processing DSP2002, Santorini Greece, July 2002. pp.635-638.
202. Melvasalo, M., Koivunen, V., (2002) Blind Channel Estimation in Multicode CDMA System with Antenna Array. Second IEEE Sensor Array and Multichannel Signal Processing workshop SAM2002, VA USA, 4.-6. August 2002.
203. Melvasalo, M., Koivunen, V., (2002) Blind Channel Estimators for Multicode Transmission in Long Code CDMA Systems. 36th Conference on Information Sciences and Systems (CISS 2002). Princeton, NJ, March 2002, .
204. Enescu, M., Koivunen, V., (2002) Time-varying Channel Tracking for Space-Time Block Coding. In the proceedings of IEEE Vehicular Technology Conference, Spring 2002, Birmingham, Alabama. May 2002.
205. Sirbu, M., Enescu, M., Koivunen, V. (2001) Estimating Noise Statistics in Adaptive Semiblind Equalization. 35th Asilomar Conference on Signals, Systems and Computers, Pacific Grove, CA USA, November 4-9. 2001.
206. Eriksson, J., Kankainen, A., Koivunen, V., (2001) Novel Characteristic Function Based Criteria For ICA. 3rd International Conference on Independent Component Analysis and Blind Signal Separation, ICA 2001, San Diego USA Dec 2001 . pp. 108-113.
207. Karvanen, J., Koivunen, V., (2001) Blind Separation using Absolute Moments Based Adaptive Estimating Function. 3rd International Conference

- on Independent Component Analysis and Blind Signal Separation, ICA 2001, San Diego USA, Dec 2001. pp. 218-223.
208. Sirbu, M., Mannerkoski, J., Zhang, Y., Koivunen, V., (2001) Feasibility of fractionally spaced blind equalization with GMSK modulated signals, 15th European Conference on Circuit Theory and Design ECCTD'01, Espoo Finland, 28-31 August 2001. pp. 45-48.
 209. Zhang, Y., Mannerkoski, J., Koivunen, V., Kassam, S.A., Blind Equalization for GSM Systems via Source Separation, ECCTD'01-European Conference on Circuit Theory and Design, Espoo Finland, August 28-31, 2001. pp. 37-40.
 210. Visuri, S., Koivunen, V., Terho, L., Direction of Arrival Estimation in Nonstandard Conditions Using Nonparametric Statistics. NATO SET SYMPOSIUM on PASSIVE AND LPI RADIO FREQUENCY SENSORS, CD-ROM Proceedings, Warsaw Poland, April 21-25, 2001.
 211. Visuri, S., Oja, H., Koivunen, V., (2001) Blind channel identification using robust subspace estimation. The 11th IEEE Workshop on Statistical Signal Processing, Singapore, August 2001. pp. 281-284.
 212. Enescu, M., Sirbu, M., Koivunen, V., (2001) Recursive Semi Blind Equalizer For Time Varying MIMO Channels, The 11th IEEE Workshop on Statistical Signal Processing, Singapore, August 2001. pp. 289-292.
 213. Sirbu, M., Enescu, M., and Koivunen, V., (2001) Real-Time Semi-Blind Equalization of Time Varying Channels, IEEE-EURASIP Workshop on Nonlinear Signal and Image Processing, CD-ROM Proceedings, Baltimore, MD USA, June 3-6, 2001.
 214. Eriksson, J., Koivunen, V., (2001) Blind Separation using Characteristic Function Based Criterion. The Thirty-Fifth Annual Conference on Information Sciences and Systems, Baltimore USA, March 19-23, 2001. pp.781-785.
 215. Karvanen, J., Koivunen, V., (2001) Blind Separation of Communication Signals using Pearson System Based Method. The Thirty-Fifth Annual Conference on Information Sciences and Systems, March 19-23, 2001. pp. 764-767.
 216. Valkama, M., Renfors, M., Koivunen V., (2001) Compensation of Frequency Selective I/Q Imbalances in Wideband Receivers: Models and Algorithms. 2001 IEEE Third Workshop on Signal Processing Advances in Wireless Communications, SPAWC'01, Taoyuan, Taiwan, R.O.C, March 20-23, 2001. pp. 42-45.
 217. Enescu, M., Zhang, Y., Kassam, S.A., Koivunen, V., (2001) Recursive Estimator for Blind Equalization via BSS and Fractional Sampling. 2001

- IEEE Third Workshop on Signal Processing Advances in Wireless Communications, SPAWC'01, Taoyuan, Taiwan, R.O.C, March 20-23, 2001. pp. 94-97.
218. Sirbu. M., Mannerkoski, J., Koivunen, V., (2000) On the feasibility of blind equalization for EDGE systems To appear in IEEE Signal Processing Advances in Wireless Communications 2001, Taiwan.
 219. Karvanen, J., Eriksson, J., Koivunen, V., (2000) Maximum Likelihood Estimation of ICA-model for Wide Class of Source Distributions, IEEE Neural Networks for Signal Processing 2000, pp. 445-454.
 220. Valkama, M., Renfors, M., Koivunen, V. (2000) Blind Source Separation Based I/Q Imbalance Compensation. Symposium 2000 on Adaptive Systems for Signal Processing, Communication and Control, AS-SPCC, pp. 310-314, Lake Louise, Canada.
 221. Enescu, M., Koivunen, V., (2000) Recursive Estimator for Separation of Arbitrarily Kurtotic Sources. IEEE Statistical Signal and Array Processing 2000, pp. 301-305. Pocono Manor, PA, USA.
 222. Karvanen, J., Eriksson, J., Koivunen, V., (2000) Flexible Approach to Maximum Likelihood Estimation of ICA Model, ICA-2000, Helsinki, Finland, pp. 227-232.
 223. Valkama, M., Renfors, M., Koivunen, V. (2000) BSS Based I/Q Imbalance Compensation in the Presence of Timing Errors. ICA-2000, Helsinki, Finland, pp. 393-398.
 224. Karvanen, J., Eriksson, J., Koivunen, V., (2000) Pearson System Based method for Blind Separation. ICA-2000, Helsinki, Finland, pp. 585-590.
 225. Valkama, M., Renfors, M., Koivunen, V. (2000) On the Performance of Interference Canceller Based I/Q Imbalance Compensation, ICASSP'2000, Vol. 5, pp. 2885-2888, Istanbul, Turkey.
 226. Visuri S., Oja, H., Koivunen, V., (2000) Nonparametric Statistics for DoA Estimation in the Presence of Multipath. In IEEE Sensor Array and Multichannel Signal Processing (SAM-2000), pp. 356-360, Boston, USA, March 15-17, 2000.
 227. Enescu, M., Koivunen, V., (2000) Tracking Time Varying Mixing System in Blind Separation, In IEEE Sensor Array and Multichannel Signal Processing (SAM-2000), pp. 291-295, Boston, USA, March 15-17, 2000.
 228. Rosti, A., Koivunen, V., (2000) Classification of MFSK Modulated Signals Using the Mean of Complex Envelope, EUSIPCO-2000, Tampere, Finland, pp. 581-584.

229. Visuri, S., Oja, H., Koivunen, V., (2000) Nonparametric method for subspace based frequency estimation, EUSIPCO-2000, Tampere, Finland, pp. 1261-1264.
230. Mannerkoski, J., Koivunen, V., (2000) Are Blind Equalizers Assuming White Data Applicable to Block Encoded Sequences? EUSIPCO-2000, Tampere, Finland, pp. 613-616.
231. Visuri, S., Oja, H., Koivunen, V. (2000) Robust Subspace DoA Estimation for Wireless Communications. IEEE VTC-2000, pp. 2551-2555, Tokyo, Japan.
232. Mannerkoski, J., Koivunen, V., (2000) Sensitivity of SIMO Blind Equalizers to Channel Precursor Magnitude IEEE VTC-2000, pp. 1879-1883, Tokyo, Japan.
233. Mannerkoski, J., Koivunen, V., (1999) Prediction-based Blind Equalization using Channel Encoded Data. ISSPA'99. Brisbane, Australia, pp. 769-772.
234. Visuri, S., Oja, H., Koivunen V.,(1999) Multichannel Signal Processing using Rank Covariance Matrices, IEEE-EURASIP NSIP'99, Vol. I, pp. 75-79.
235. Möttönen, J., Oja, H., Koivunen, V., (1999) Robust autocovariance estimation based on sign and rank correlation coefficients. IEEE HOS'99, pp. 187-190.
236. Mannerkoski, J., Koivunen, V., (1999) Analytical Performance Bound on a Correlation Matrix based Blind Equalizer. IEEE Workshop on Signal Processing Advances in Wireless Communications (SPAWC'99). Annapolis, MD, pp. 86-89.
237. Mannerkoski, J., Koivunen, V., Taylor, D., (1999) Prediction-Based Adaptive Blind Equalization: A Performance Study, IEEE ICASSP'99, Vol. 5., pp. 2491-2494.
238. Mannerkoski, J., Koivunen, V., (1999) Error Analysis of a Multi-step Prediction Based Blind Equalizer, IEEE ISCAS'99, Vol. 3, pp. 86-89.
239. Koivunen, V., Oja, E., (1999) Predictor-corrector structure for real-time blind separation from noisy mixtures, In ICA'99, Aussois, France, pp. 479-484.
240. Sepponen, M., Koivunen V., (1998) Coding of arbitrarily shaped video objects using B-spline wavelets, Eusipco'98, Vol. III, pp. 1501-1504.
241. Koivunen, V., Pajunen, P., Karhunen, J., Oja, E., (1998) Blind Separation from ϵ -contaminated mixtures, Eusipco'98, Vol. III, pp. 1817-1820.

242. Koivunen, V., Sepponen, M., (1998) Texture Map Coding for Arbitrarily Shaped 2-D and 3-D Video Objects. NMBIA'98, Glasgow, Scotland, pp. 97-102.
243. Koivunen, V, Luukkonen, S, Oja, H. (1998) Affine Equivariance in Multi-channel OS-filtering. ICASSP'98, Vol. V, pp. 2881-2884.
244. Luukkonen, S. Koivunen, V, Oja, H. (1996) Multivariate Median Filter for Correlated Noise. Proceedings of IEEE NORSIG'96, pp. 411-414.
245. Koivunen, V., Kuosmanen, P., Astola, J., (1996) Orthogonal Spline Fitting in Range Data. IEEE International Conference on Image Processing (ICIP-96), Vol. II, pp. 385-388.
246. Koivunen, V., Kassam, S.A., (1996) Covariance Estimation in Multivariate OS-filtering. IEEE International Conference on Image Processing (ICIP-96), Vol. I, pp. 981-984.
247. Koivunen, V., Himayat, N., Kassam, S.A., (1995) Multivariate MTM filters - analysis and design options. IEEE International Conference on Image Processing (ICIP-95), pp. 354-357.
248. Koivunen, V., Kassam, S.A., (1995) Nearest Neighbor Filters for Multivariate Data. 1995 IEEE Workshop on Nonlinear Signal and Image Processing, pp.734-737.
249. Koivunen, V. (1994) A robust approach to enhancement of multivariate images. IEEE International Conference on Image Processing (ICIP-94), Austin, TX, USA. pp. 462-466.
250. Koivunen, V., Himayat, N., Kassam, S.A., (1994) Median and robust polynomial filters for multivariate image data. IEEE International Conference on Image Processing, Austin (ICIP-94), Austin, TX, USA, pp. 487-491.
251. Coyne, R., Finger, S., Konda, S., Monarch, I., Prinz, F., Siewiorek, D., Subrahmanian, E., Tenenbaum, M., Weber, J., Cutkosky, M., Leifer, L., Bajcsy, R., Koivunen, V., Birmingham, W., (1994) Creating an Advanced Collaborative Open Resource Network. ASME Design Theory and Methodology Conference.
252. Koivunen, V. & Vezien, J-M. (1994) Multiple representation approach to geometric model construction from range data. IEEE Cad-Based Vision Workshop '94, Seven Springs, PA, pp. 132-139.
253. Koivunen, V. (1993) Robust Approach to Filtering of Scalar and Vector Valued Signals. IEEE Workshop on Image and Multidimensional Signal Processing, Cannes, France, pp. 34-35.
254. Koivunen V. & Bajcsy, R. (1993) Machine Vision for Rapid Geometric Modeling. Solid Free-Form Fabrication Symposium, Austin, TX, pp. 275-282.

255. Koivunen, V. & Bajcsy, R. (1993) Geometric Methods for Building CAD Models from Range Data. *Geometric Methods in Computer Vision II*, SPIE Vol. 2031, pp. 205-216.
256. Koivunen, V. & Bajcsy, R. (1993) Building Procedural CAD Models using 3-D Machine Vision. 9th International Conference on CAD/CAM, Robotics and Factories of the Future, Newark, NJ.
257. Koivunen, V., Vezien, J-M. & Bajcsy, R. (1993) Procedural CAD-Models from Range Data. *Towards World Class Manufacturing '93*, Phoenix, Arizona.
258. Vezien, J-M. & Koivunen, V. (1993) Registration and data description in geometric model construction from range data. *Videometrics II*, SPIE Vol. 2067, Boston, MA.
259. Koivunen, V., Vezien, J-M., Kumar, V., Bajcsy, R., "Rapid Prototyping from Physical Models", *Proceedings of the DARPA Workshop for Manufacturing Automation and Concurrent Engineering*, June 16-18, Palo Alto, CA, pp. 721-724, 1992.
260. Koivunen V. & Pietikäinen M. (1992) Evaluating Quality of Surface Description Using Robust Methods. 11th International Conference on Pattern Recognition, The Hague, Netherlands, Vol. III, pp. 214-218.
261. Koivunen, V. & Pietikäinen, M. (1991) Improving the Robustness of Edge and Region-Based Range Image Segmentation. *SPIE Conference on Intelligent Robots and Computer Vision X*, SPIE Vol. 1608, Boston, USA.
262. Riekkilä, J., Röning, J., Silven, O., Pietikäinen, M. & Koivunen, V. (1991) Pick-and-place guidance utilizing an integrated control method and structured light ranging. *Proc. of Intelligent Robots and Computer Vision X*, SPIE Vol. 1607, Boston, MA.

Refereed papers in Finnish Conferences

- Enescu, M., Koivunen, V., (1999), Blind Source Separation Using Subspace Tracking and Recursive Estimation. *IEEE FINSIG'99*. pp. 127-131.
- Visuri, S., Oja, H., Koivunen V.,(1999) Matrix Perturbations in Covariance Matrix Estimation, *IEEE FINSIG'99*. pp. 142-146.
- Sepponen, M., Koivunen, V. (1997) Image Patch Coding Methods for Low Bit-Rates. *IEEE FINSIG'97*.
- A few additional papers published in SPIE and STEP (Finnish Artificial Intelligence) conferences.

Other reports

- Richter, Andreas; Enescu, Mihai; Koivunen, Visa A State Space Approach to Propagation Path Parameter Estimation and Tracking. COST 273 temporary document vol. 5.
- Ribeiro, Cassio; Ollila, Esa; Koivunen, Visa Stochastic ML method for propagation parameter estimation using mixture of angular distribution models. Italia: 2005. COST 273 Temporary Document vol. 5.
- Koivunen, V., Oja E., (2001) Blind Methods in Communications Signal Processing, (In Finnish) Prossessori, No. 11, pp. 65-67. 2001

Educational Material

- Lecture Notes on Digital Filter Design, Tampere Univ. of Technology. 1997, In Finnish. \approx 240 pages. With Matlab exercises and workbook.
- Lecture Notes on Signals and Systems, Tampere Univ. of Technology, 170 pages + images, examples and exercises.
- Lecture Notes on Statistical Signal Processing, Helsinki Univ. of Technology, 2006, In English, \approx 540 pages. With examples.
- Lecture Notes on Video Coding, Helsinki Univ. of Technology, 170 pages + images, examples and exercises.
- Lecture Notes on Selected topics in Communications Signal Processing, Helsinki Univ. of Technology, 170 pages + images, examples and exercises.
- Lecture Notes on Random Processes for Communications, 2002, Helsinki Univ. of Technology, 350 pages + images, examples and exercises.
- Lecture Notes on Array Signal Processing, Princeton University, 2007, 130 pages.
- Tutorial in IEEE ICASSP 2007, Circular and Non-circular complex random signals with applications in wireless communications. with Dr. Mikko Valkama.

Software

- Eriksson, J., Karvanen, J., Koivunen, V., (2000) Software for Maximum Likelihood Blind Source Separation using EGLD Model. Available at ICA CENTRAL. Available at <http://sig.enst.fr/~cardoso/icacentral/index.html>.
- Karvanen, J., Eriksson, J., Koivunen, V., (2000) Software for Blind Source Separation using the Pearson System. Available at ICA CENTRAL. Available at <http://sig.enst.fr/~cardoso/icacentral/index.html>.

Patents

- US 7787548 Digital Broadcast Service Discovery Correlation, 09-18-2008
- US 7929937 System and Method for Blind Estimation of Multiple Carrier Frequency Offsets and Separation of User Signals in Wireless Communications Systems, 04-30-2009
- US 7949357 Method and apparatus to select collaborating users in spectrum sensing, 06-11-2009
- US 20090197550 Correlation-based detection in a cognitive radio system, 08-06-2009
- US 20100120467 INTEROPERABILITY OF DIGITAL BROADCASTING AND CELLULAR COMMUNICATION SYSTEMS, 05-13-2010