CURRICULUM VITAE

Prof. **Sergiy A. Vorobyov**

Department of Information and Communication Engineering
(formerly Department of Signal Processing and Acoustics)
Aalto University, School of Electrical Engineering
PO Box 15400 FI-00076 AALTO, Finland Konemiehentie 1, 02150, Espoo, Finland

Emails: svor@ieee.org, sergiy.vorobyov@aalto.fi
URL: http://users.aalto.fi/∼vorobys1/

PERSONAL DATA

Data and place of birth: May 24, 1972; Ukraine
Citizenship: Canada

ACADEMIC POSITIONS

Full Professor	01/13 – present	Aalto University (former HUT), Espoo, Helsinki	Finland
Full Professor	07/12 – 2014	University of Alberta, Edmonton, Alberta	Canada
Associate Professor	07/10 – 06/12	University of Alberta, Edmonton, Alberta	Canada
Reader (Associate Professor)	09/07 – 07/08	Joint Research Institute: Heriot-Watt and Edinburgh Universities, Edinburgh	UK
Assistant Professor	09/06 – 06/10	University of Alberta, Edmonton, Alberta	Canada
Senior Researcher	04/05 – 09/06	Darmstadt University of Technology, Darmstadt	Germany
Senior Researcher	04/03 – 12/04	Duisburg-Essen University, Duisburg	Germany
PDF & Researcher	04/01 – 03/05	McMaster University, Hamilton, Ontario	Canada
Research Scientist	04/99 – 03/01	Inst. Physical and Chemical Research, Wako-shi	Japan
Research Scientist	06/97 – 03/99	Kharkov National University of Radioelectronics	Ukraine

EDUCATION

Ph.D. in Systems and Data Processing (with distinction)
Kharkiv National University of Radioelectronics, Kharkiv, Ukraine 10/94 – 05/97
Thesis: Adaptive multilayered estimation and fault detection in nonstationary stochastic sequences

M.Sc. in Optimal Control and Data Processing (top grade in the year – 5/5)
Kharkiv National University of Radioelectronics, Kharkiv, Ukraine 09/89 – 07/94
Thesis: Detection of fractal properties of neuronal activity signals

P.Eng. of Alberta, Canada since 01/09

RESEARCH AWARDS AND HONORS

Paper "Tensorized neural layer decomposition for 2D DOA estimation" is *Top 3% of all papers accepted at IEEE ICASSP 2023*

IEEE Fellow named in 2018 **for contributions to optimization in robust signal processing**

IEEE Signal Processing Society's 2004 Best Paper Award for the paper titled "Robust adaptive beamforming using worst-case performance optimization: A solution to the signal mismatch prob-

lem" (co-authored with A.B. Gershman and Z.-Q. Luo) that was published in the February 2003 issue of the *IEEE Transactions on Signal Processing*

NSERC Discovery Accelerator Award, 2012, Canada

Carl Zeiss Award, 2011, Germany

Alberta Ingenuity New Faculty Award, 2007, Alberta, Canada

1st Price Best Student Paper Award, Matthew W. Morency at IEEE CAMSAP 2015, IEEE International Workshop on Computational Advances in Multi-Sensor Adaptive Processing for our paper on algebraic approach to rank-constrained beamforming.

Highly cited paper (ISI Web of Knowledge) status for my 2003 IEEE Trans. Signal Processing paper (coauthored by A.B. Gershman and Z.-Q. Luo) on robust adaptive beamforming.

ACADEMIC FELLOWSHIPS

1999 German Academic Exchange Service (DAAD) Young Scientist Fellowship, Germany
01/96 – 04/98 Outstanding Young Scientist (Cabinet of Ministers) Fellowship, Ukraine
04/95 – 03/96 and 04/96 – 03/97 Young Scientist grant (Ph.D. student), Soros Foundation (ISSEP)

OTHER AWARDS AND HONORS

05/89 Rank 3 in Universities' Physics Contest, Ukraine
03/88 Rank 1 in Projective Geometry Contest (Kharkov region), Ukraine

Appreciated Reviewer: Recognition granted by *IEEE Transactions on Signal Processing*, 2006 and 2007

RESEARCH

My interests are: Applications of optimization, learning, and linear algebra methods in signal processing and communications; Statistical signal and array processing with applications to wireless communications, MIMO radar, data networks, and biomedical engineering; Resource allocation in communication networks; Cognitive and cooperative aspects of data processing, Estimation and detection theory; Sampling and compressive sampling of data.

PUBLICATIONS

Papers: 138 (124 published/to appear, 14 preprints/under review)
Books and book chapters: 5 (4 published, 1 under review)
Conferences: 181 (180 published/accepted, 1 under review)
Conference Tutorials, Invited Talks and Presentations: 9
Editorials and technical reports: 10

Papers

Preprints / Papers under review

[P1] M. Vaezi, G.A Baduge, E. Ollila, and **S. A. Vorobyov**, "AI-empowered integrated sensing and communications," submitted Apr. 17, 2025.

[P2] T.T. Zhang, **S. A. Vorobyov**, D.J. Love, T. Kim, and K. Dong, "Pilot contamination-aware graph attention network for power control in CFmMIMO," submitted Apr. 24, 2025.

[P3] E. Dosti, **S. A. Vorobyov**, and T. Charalambous, "Estimating sequences with memory for minimizing convex non-smooth composite functions," submitted Mar. 19, 2025.

[P4] M. Esfandiari, P. Pulkkinen, **S. A. Vorobyov**, and V. Koivunen, "One-bit direction-of-arrival estimation via AdaBoost," submitted Feb. 9, 2025.

[P5] M. Esfandiari and **S. A. Vorobyov**, "Generalized framework to subspace-based DOA estimation," submitted Jan. 17, 2025.

[P6] K. H. Irani, Y. Huang, and **S. A. Vorobyov**, "SINR maximizing distributionally robust adaptive beamforming," submitted Dec. 30, 2024.

[P7] X. Wang, E. Ollila, and **S. A. Vorobyov**, "Robust activity detection in massive random access," submitted Dec. 17, 2024, revised May 7, 2025.

[P8] A. K. Kocharlakota, **S. A. Vorobyov**, and R. W. Heath Jr., "Pilot contamination aware transformer for downlink power control in cell-free massive MIMO networks," submitted Nov. 11, 2024.

[P9] L. Lin, C. Zhou, H. Zheng, Z. Shi, **S. A. Vorobyov**, and R.W. Heath Jr., "Sensing-aided precoding with high-dynamic moving scatterers," submitted Nov. 7, 2024.

[P10] L. Zhu, **S. A. Vorobyov**, Y. Liu, D. He, K. Guan, and Z. Zhong, "Enhanced target parameter estimation based on tensor train decomposition in FMCW radar," 2023.

[P11] Y. Jing, **S. A. Vorobyov**, J. Liang, X. Fan, and Z. Chen, "Joint space-(slow) time waveforms and adaptive filter design for MIMO radar in the presence of (un)correlated clutter sources," 2023.

[P12] M. Neinavaie, M. Derakhtian, N. Daryanavardan, and **S. A. Vorobyov**, "A complexity efficient DMT-optimal tree pruning based sphere decoding," Oct. 21, 2019. `arxiv.org/1910.09177`

[P13] M. W. Morency and **S. A. Vorobyov**, "An algebraic approach to a class of rank-constrained semi-definite programs with applications," Oct. 7, 2016. `arxiv.org/1610.02181`

[P14] M. F. A. Ahmed and **S. A. Vorobyov**, "Simple semi-distributed lifetime maximizing strategy via power allocation in collaborative beamforming for wireless sensor networks," *unpublished*, Jan. 16, 2014. `arxiv.org/1401.4147`

Papers published / to appear

[J1] E. Dosti, **S. A. Vorobyov**, and T. Charalambous, "Embedding a heavy-ball type of momentum into the estimating sequences," *Signal Processing*, vol. 233, 109865, pp. 1–14, Aug. 2025.

[J2] K. Dong, H. Yu, T. Taleb, A. Sezgin, and **S. A. Vorobyov**, "Network-controlled repeater aided time-sensitive communications in urban vehicular networks," *IEEE Wireless Communications Letters*, vol. 14, no. 5, pp. 1511–1515, May 2025.

[J3] M. Esfandiari and **S. A. Vorobyov**, "Noise covariance matrix estimation in block-correlated noise field for direction finding," *IEEE Signal Processing Letters*, vol. 32, pp. 531–535, Jan. 2025.

[J4] T.T. Zhang, **S. A. Vorobyov**, and F. Xu, "Transmit energy focusing for parameter estimation in slow-time transmit beamspace L-shaped MIMO radar," *IEEE Trans. Signal Processing*, vol. 72, pp. 5228–5243, Nov. 2024.

[J5] X. Wang, E. Ollila, and **S. A. Vorobyov**, "Graph convolutional neural networks sensitivity under probabilistic error model," *IEEE Trans. Signal and Information Processing over Networks*, vol. 10, pp. 788–803, Nov. 2024.

[J6] M. Esfandiari, **S. A. Vorobyov**, and R. W. Heath Jr., "AdaBoost-based efficient channel estimation and data detection in one-bit massive MIMO," *IEEE Trans. Wireless Communications*, vol. 23, no. 10, pp. 13935–13945, Oct. 2024.

[J7] K. Dong, **S. A. Vorobyov**, H. Yu, and T. Taleb, "Beamforming design for integrated sensing, computation over-the-air, and communication in internet of robotic things," *IEEE Internet of Things Journal*, vol. 11, no. 20, pp. 32478–32489, Oct. 2024.

[J8] H. Zheng, Z. Shi, C. Zhou, **S. A. Vorobyov**, and Y. Gu, "Deep tensor 2D DOA estimation for URA," *IEEE Trans. Signal Processing*, vol. 72, pp. 4065–4080, Sept. 2024.

[J9] L. Zhu, Y.-S. Liu, **S. A. Vorobyov**, D. He, K. Guan, Z. Zhong, and L. Chang, "Noise reduction in automotive pulse radar using signal subspace and presumed ambiguity function," *IEEE Trans. Vehicular Technology*, vol. 73, no. 7, pp. 10708–10713, July 2024.

[J10] F. Xu, H. Zheng, and **S. A. Vorobyov**, "Tensor-based 2D DOA estimation for L-shaped nested array," *IEEE Trans. Aerospace and Electronic Systems*, vol. 60, no. 1, pp. 604–618, Feb. 2024.

[J11] F. G. Veshki and **S. A. Vorobyov**, "Efficient approximate online convolutional dictionary learning," *IEEE Trans. Computational Imaging*, vol. 9, pp. 1165–1175, Dec. 2023.

[J12] H. Zheng, C. Zhou, **S. A. Vorobyov**, Q. Wang, and Z. Shi, "Decomposed CNN for sub-Nyquist tensor-based 2D DOA estimation," *IEEE Signal Processing Letters*, vol. 30, pp. 708–712, June 2023.

[J13] A. M. Elbir, K. V. Mishra, **S. A. Vorobyov**, and R. W. Heath Jr., "Twenty-five years of advances in beamforming: From convex and nonconvex optimization to learning techniques" *IEEE Signal Processing Magazine*, **invited paper**, Special Issue: *75th Anniversary of Signal Processing Society*, vol. 40, no. 4, pp. 118–131, June 2023.

[J14] E. Dosti, **S. A. Vorobyov**, and T. Charalambous, "A new class of composite objective multi-step estimating sequence techniques," *Signal Processing*, vol. 206, 108889, pp. 1–14, May 2023.

[J15] Y. Huang, H. Fu, **S. A. Vorobyov**, and L.-Q. Luo, "Robust adaptive beamforming via worst-case SINR maximization with nonconvex uncertainty sets," *IEEE Trans. Signal Processing*, vol. 71, pp. 218–232, 2023. **The IEEE Signal Processing Society's top 25 downloaded articles from Sept. 2022 - Sept. 2023 for IEEE Transactions on Signal Processing on IEEE Xplore.**

[J16] Y. Tian, X. Han, **S. A. Vorobyov**, J. Yin, Q. Liu, and G. Qiao, "Wideband signal detection in multipath environment affected by impulsive noise," *The Journal of the Acoustical Society of America*, vol. 152, no. 1, pp. 445–455, July 2022.

[J17] F. G. Veshki, N. Ouzir, **S. A. Vorobyov**, and E. Ollila, "Multimodal image fusion via coupled feature learning," *Signal Processing*, vol. 200, 108637, pp. 1–12, June 2022.

[J18] F. Xu, M. W. Morency, and **S. A. Vorobyov**, "DOA estimation for transmit beamspace MIMO radar via tensor decomposition with Vandermonde factor matrix," *IEEE Trans. Signal Processing*, vol. 70, pp. 2901–2917, June 2022.

[J19] Y. Huang and **S. A. Vorobyov**, "Enhanced robust adaptive beamforming designs for general-rank signal model via an induced norm of matrix errors," *Signal Processing*, vol. 194,

108439, pp. 1–9, May 2022.

[J20] F. Xu, **S. A. Vorobyov**, and F. Yang, "Transmit beamspace DDMA based automotive MIMO radar," *IEEE Trans. Vehicular Technology*, vol. 71, no. 2, pp. 1669–1684, Feb. 2022.

[J21] F. G. Veshki and **S. A. Vorobyov**, "Efficient ADMM-based algorithms for convolutional sparse coding," *IEEE Signal Processing Letters*, vol. 29, pp. 386–393, 2022.

[J22] A. K. Kocharlakota, K. Upadhya, and **S. A. Vorobyov**, "Impact of pilot overhead and channel estimation on the performance of massive MIMO," *IEEE Trans. Communications*, vol. 69, no. 12, pp. 8242–8255, Dec. 2021.

[J23] W. Shi, **S. A. Vorobyov**, and Y. Li, "ULA fitting for sparse array design," *IEEE Trans. Signal Processing*, vol. 69, pp. 6431–6447, Dec. 2021.

[J24] J. Miettinen, **S. A. Vorobyov**, and E. Ollila, "Modelling and studying the effect of graph errors in graph signal processing," *Signal Processing*, vol. 189, 108256, pp. 1–8, Dec. 2021.

[J25] Y. Jing, J. Liang, **S. A. Vorobyov**, X. Fan, and D. Zhou, "Efficient joint transmit waveform and receive filter design based on a general L_p-norm metric for sidelobe level of pulse compression," *Signal Processing*, vol. 188, 108174, pp. 1–9, Nov. 2021.

[J26] J. Miettinen, E. Nitzan, **S. A. Vorobyov**, and E. Ollila, "Graph signal processing meets blind source separation," *IEEE Trans. Signal Processing*, vol. 69, pp. 2585–2599, May 2021.

[J27] H. Chen, F. Ahmad, **S. A. Vorobyov**, and F. Porikli, "Tensor decompositions in wireless communications and MIMO radar," *IEEE J. Selected Topics in Signal Processing*, **overview paper**, Special Issue: *Tensor Decomposition for Signal Processing and Machine Learning*, vol. 15, no. 3, pp. 438–453, Apr. 2021.

[J28] M. Neinavaie, M. Derakhtian, and **S. A. Vorobyov**, "Lossless dimension reduction for integer least squares with application to sphere decoding," *IEEE Trans. Signal Processing*, vol. 68, pp. 6547–6561, Dec. 2020.

[J29] N. Ouzir, E. Ollila, and **S. A. Vorobyov**, "Data-adaptive similarity measures for B-mode ultrasound images using robust noise models," *IEEE J. Selected Topics in Signal Processing*, **invited paper**, Special Issue: *Domain Enriched Learning for Medical Imaging*, vol. 14, no. 6, pp. 1244–1254, Oct. 2020.

[J30] F. Xu, **S. A. Vorobyov**, and X. Yang, "Joint DOD and DOA estimation in slow-time MIMO radar via tensor decomposition," *IEEE Signal Processing Letters*, vol. 27, pp. 1495–1499, 2020.

[J31] M. I. Florea and **S. A. Vorobyov**, "A generalized accelerated composite gradient method: Uniting Nesterov's fast gradient method and FISTA," *IEEE Trans. Signal Processing*, vol. 68, pp. 3033–3048, 2020.

[J32] M. Esfandiari, **S. A. Vorobyov**, and M. Karimi, "New estimation methods for autoregressive process in the presence of white observation noise," *Signal Processing*, **invited paper**, Special Issue: *Statistical Signal Processing and Advances for Data Science: Complex, Dynamic and Large-Scale Settings*, vol. 171, 107480, pp. 1–11, June 2020.

[J33] Y. Huang, **S. A. Vorobyov**, and Z.-Q. Luo, "Quadratic matrix inequality approach to robust adaptive beamforming for general-rank signal model," *IEEE Trans. Signal Processing*, vol. 68, pp. 2244–2255, 2020.

[J34] P. Kumari, **S. A. Vorobyov**, and R. W. Heath Jr., "Adaptive virtual waveform design for millimeter-wave joint communication-radar," *IEEE Trans. Signal Processing*, vol. 68, pp. 715–730, 2020.

[J35] F. G. Veshki and **S. A. Vorobyov**, "An efficient coupled dictionary learning method," *IEEE Signal Processing Letters*, vol. 26, no. 10, pp. 1441–1445, Oct. 2019.

[J36] K. V. Mishra, B. Shankar, V. Koivunen, B. Ottersten, **S. A. Vorobyov**, "Towards millimeter wave joint radar-communications: A signal processing perspective," *IEEE Signal Processing Magazine*, vol. 36, no. 5, pp. 100–114, Sept. 2019.

[J37] Y. Huang, M. Zhou, and **S. A. Vorobyov**, "New designs on MVDR robust adaptive beamforming based on optimal steering vector estimation," *IEEE Trans. Signal Processing*, vol. 67, no. 14, pp. 3624–3638, July 2019.

[J38] M. Esfandiari, **S. A. Vorobyov**, S. Alibani, and M. Karimi, "Non-iterative subspace-based DOA estimators in the presence of nonuniform noise," *IEEE Signal Processing Letters*, vol. 26, no. 6, pp. 848–852, June 2019.

[J39] M. I. Florea and **S. A. Vorobyov**, "An accelerated composite gradient method for large-scale composite objective problems," vol. 67, no. 2, pp. 444–459, *IEEE Trans. Signal Processing*, Jan. 2019.

[J40] Y. Huang and **S. A. Vorobyov**, "An inner SOCP approximate algorithm for robust adaptive beamforming for general-rank signal model," *IEEE Signal Processing Letters*, vol. 25, no. 11, pp. 1735–1739, Nov. 2018.

[J41] K. Upadhya, **S. A. Vorobyov**, and M. Vehkaperä, "Downlink performance of superimposed pilots in massive MIMO systems," *IEEE Trans. Wireless Communications*, vol. 17, no. 10, pp. 6630–6644, Oct. 2018.

[J42] M. W. Morency, **S. A. Vorobyov**, and G. Leus, "Joint detection and localization of an unknown number of sources using algebraic structure of the noise subspace," *IEEE Trans. Signal Processing*, vol. 66, no. 17, pp. 4685–4700, Sept. 2018.

[J43] M. I. Florea, A. Basarab, D. Kouamé, and **S. A. Vorobyov**, "An axially-variant kernel imaging model for ultrasound image reconstruction," *IEEE Signal Processing Letters*, vol. 25, no. 7, pp. 961–965, July 2018.

[J44] K. Upadhya and **S. A. Vorobyov**, "Covariance matrix estimation for massive MIMO," *IEEE Signal Processing Letters*, vol. 25, no. 4, pp. 546–550, Apr. 2018.

[J45] Y. Li and **S. A. Vorobyov**, "Fast algorithms for designing multiple unimodular waveform(s) with good correlation properties," *IEEE Trans. Signal Processing*, vol. 66, no. 5, pp. 1197–1212, Mar. 2018.

[J46] M. Shaghaghi and **S. A. Vorobyov**, "Finite-length and asymptotic analysis of averaged correlogram for undersampled data," *Applied and Computational Harmonic Analysis*, vol. 43, no. 3, pp. 404–423, Nov. 2017.

[J47] M.-Y. Cao, **S. A. Vorobyov**, and A. Hassanien, "Transmit array interpolation for DOA estimation via tensor decomposition in 2D MIMO radar," *IEEE Trans. Signal Processing*, vol. 65, no. 19, pp. 5225–5239, Oct. 2017.

[J48] R. Gao, **S. A. Vorobyov**, and H. Zhao, "Image fusion with cosparse analysis operator," *IEEE Signal Processing Letters*, vol. 24, no. 7, pp. 943–947, July 2017.

[J49] K. Upadhya, **S. A. Vorobyov**, and M. Vehkaperä, "Superimposed pilots are superior for mitigating pilot contamination in massive MIMO," *IEEE Trans. Signal Processing*, vol. 65, no. 11, pp. 2917–2932, June 2017.

[J50] L. Qin, **S. A. Vorobyov**, and J. Dong, "Joint cancellation of autocorrelation sidelobes and cross-correlation in MIMO-SAR," *IEEE Geoscience and Remote Sensing Letters*, vol. 14,

no. 6, pp. 931–935, June 2017.

[J51] L. Yang, J. Chen, H. Jiang, **S. A. Vorobyov**, and H. Zhang, "Optimal relay selection for secure cooperative communications with an adaptive eavesdropper," *IEEE Trans. Wireless Communications*, vol. 16, no. 1, pp. 26–42, Jan. 2017.

[J52] L. Yang, J. Chen, H. Zhang, H. Jiang, **S. A. Vorobyov**, and D. T. Ngo, "Cooperative wireless multicast: Performance analysis and time allocation," *IEEE Trans. Vehicular Technology*, vol. 65, no. 7, pp. 5810–5819, July 2016.

[J53] L. Yang, H. Jiang, **S. A. Vorobyov**, J. Chen, and H. Zhang, "Secure communications in underlay cognitive radio networks: User scheduling and performance analysis," *IEEE Communications Letters*, vol. 20, no. 6, pp. 1191–1194, June 2016.

[J54] W. Zhang and **S. A. Vorobyov**, "Joint robust transmit/receive adaptive beamforming for MIMO radar using probability-constrained optimization," *IEEE Signal Processing Letters*, vol. 23, no. 1, pp. 112–116, Jan. 2016.

[J55] H. Fang, **S. A. Vorobyov**, and H. Jiang, "Performance limits of segmented compressive sampling: Correlated samples versus bits," *IEEE Trans. Signal Processing*, vol. 63, no. 22, pp. 6061–6073, Nov. 2015.

[J56] J. Gao, **S. A. Vorobyov**, H. Jiang, and H. V. Poor, "Worst-case jamming on MIMO Gaussian channels," *IEEE Trans. Signal Processing*, vol. 63, no. 21, pp. 5821–5836, Nov. 2015.

[J57] A. Hassanien, **S. A. Vorobyov**, and A. Khabbazibasmenj, "Transmit radiation pattern invariance in MIMO radar with application to DOA estimation," *IEEE Signal Processing Letters*, vol. 22, no. 10, pp. 1609–1613, Oct. 2015.

[J58] Y. Li, **S. A. Vorobyov**, and V. Koivunen, "Ambiguity function of the transmit beamspace-based MIMO radar," *IEEE Trans. Signal Processing*, vol. 63, no. 17, pp. 4445–4457, Sept. 2015.

[J59] M. Shaghaghi and **S. A. Vorobyov**, "Cramér-Rao bound for sparse signals fitting the low-rank model with small number of parameters," *IEEE Signal Processing Letters*, vol. 22, no. 9, pp. 1497–1501, Sept. 2015.

[J60] A. E. Geyer, R. Nikjah, **S. A. Vorobyov**, and N. C. Beaulieu, "Euclidean and space-time block codes: Relationship, optimality, performance analysis revisited," *IEEE Trans. Communications*, vol. 63, no. 8, pp. 2912–2923, Aug. 2015.

[J61] M. Shaghaghi and **S. A. Vorobyov**, "Subspace leakage analysis and improved DOA estimation with small sample size," *IEEE Trans. Signal Processing*, vol. 63, no. 12, pp. 3251–3265, June 2015.

[J62] O. Taheri and **S. A. Vorobyov**, "Reweighted l1-norm penalized LMS for sparse channel estimation and its analysis," *Signal Processing*, vol. 104, pp. 70–79, May 2014.

[J63] A. Khabbazibasmenj, A. Hassanien, **S. A. Vorobyov**, and M. W. Morency, "Efficient transmit beamspace design for search-free based DOA estimation in MIMO radar," *IEEE Trans. Signal Processing*, vol. 62, no. 6, pp. 1490–1500, Mar. 2014.

[J64] H. Fang, **S. A. Vorobyov**, H. Jiang, and O. Taheri, "Permutation meets parallel compressed sensing: How to relax restricted isometry property for 2D sparse signals," *IEEE Trans. Signal Processing*, vol. 62, no. 1, pp. 196–210, Jan. 2014.

[J65] Z. Chen, C.-X. Wang, X. Hong, J. Thompson, **S. A. Vorobyov**, F. Zhao, and X. Ge, "Interference mitigation for cognitive radio MIMO systems based on practical precoding," *Physical Communication*, **invited paper**, Special Issue: *Wireless Networks Planning and Optimization*, vol. 9, pp. 308–315, Dec. 2013.

[J66] A. Khabbazibasmenj and **S. A. Vorobyov**, "Robust adaptive beamforming for general-rank signal model with positive semi-definite constraint via POTDC," *IEEE Trans. Signal Processing*, vol. 61, no. 23, pp. 6103–6117, Dec. 2013.

[J67] **S. A. Vorobyov**, "Principles of minimum variance robust adaptive beamforming design," *Signal Processing*, **invited paper**, Special Issue: *Advances in Sensor Array Processing*, vol. 93, pp. 3264–3277, Dec. 2013 (in memory of Alex B. Gershman).

[J68] J. Gao, **S. A. Vorobyov**, H. Jiang, J. Zhang, and M. Haardt, "Sum-rate maximization with minimum power consumption for MIMO DF two-way relaying: Part II - Network optimization," *IEEE Trans. Signal Processing*, vol. 61, no. 14, pp. 3578–3591, July 2013.

[J69] J. Gao, **S. A. Vorobyov**, H. Jiang, J. Zhang, and M. Haardt, "Sum-rate maximization with minimum power consumption for MIMO DF two-way relaying: Part I - Relay optimization," *IEEE Trans. Signal Processing*, vol. 61, no. 14, pp. 3563–3577, July 2013.

[J70] Z. Chen, **S. A. Vorobyov**, C.-X. Wang, and J. Thompson, "Pareto region characterization for rate control in MIMO interference systems and Nash bargaining," *IEEE Trans. Automatic Control*, vol. 57, no. 12, pp. 3203–3208. Dec. 2012.

[J71] A. Khabbazibasmenj, F. Roemer, **S. A. Vorobyov**, and M. Haardt, "Sum-rate maximization in two-way AF MIMO relaying: Polynomial time solutions to a class of DC programming problems," *IEEE Trans. Signal Processing*, vol. 60, no. 10, pp. 5478–5493, Oct. 2012.

[J72] Y. Ko, M. Ardakani, and **S. A. Vorobyov**, "Power allocation strategies across N orthogonal channels at both source and relay," *IEEE Trans. Communications*, vol. 60, no. 6, pp. 1469–1473, June 2012.

[J73] A. Khabbazibasmenj, **S. A. Vorobyov**, and A. Hassanien, "Robust adaptive beamforming based on steering vector estimation with as little as possible prior information," *IEEE Trans. Signal Processing*, vol. 60, no. 6, pp. 2974–2987, June 2012.

[J74] A. Hassanien, **S. A. Vorobyov**, and A. B. Gershman, "Moving target parameters estimation in non-coherent MIMO radar systems," *IEEE Trans. Signal Processing*, vol. 60, no. 5, pp. 2354–2361, May 2012.

[J75] Z. Chen, C.-X. Wang, X. Hong, J. Thompson, **S. A. Vorobyov**, X. Ge, H. Xiao, and F. Zhao, "Aggregate interference modeling in cognitive radio networks with power and contention control," *IEEE Trans. Communications*, vol. 60, no. 2, pp. 456–468, Feb. 2012.

[J76] A. Khabbazibasmenj and **S. A. Vorobyov**, "Power allocation based on SEP minimization in two-hop decode-and-forward relay networks," *IEEE Trans. Signal Processing*, vol. 59, no. 8, pp. 3954–3963, Aug. 2011.

[J77] A. Hassanien and **S. A. Vorobyov**, "Transmit energy focusing for DOA estimation in MIMO radar with colocated antennas," *IEEE Trans. Signal Processing*, vol. 59, no. 6, pp. 2669–2682, June 2011.

[J78] X. Gong, **S. A. Vorobyov**, and C. Tellambura, "Optimal bandwidth and power allocation for sum ergodic capacity under fading channels in cognitive radio networks," *IEEE Trans. Signal Processing*, vol. 59, no. 4, pp. 1814–1826, Apr. 2011.

[J79] X. Gong, **S. A. Vorobyov**, and C. Tellambura, "Joint bandwidth and power allocation with admission control in multi-user networks with and without relaying," *IEEE Trans. Signal Processing*, vol. 59, no. 4, pp. 1801–1813, Apr. 2011.

[J80] O. Taheri and **S. A. Vorobyov**, "Segmented compressed sampling for analog-to-information conversion: Method and performance analysis," *IEEE Trans. Signal Processing*, vol. 59, no. 2,

pp. 554–572, Feb. 2011.

[J81] M. F. A. Ahmed and **S. A. Vorobyov**, "Sidelobe control in collaborative beamforming via node selection," *IEEE Trans. Signal Processing*, vol. 58, no. 8, pp. 6168–6180, Dec. 2010.

[J82] Y. Ko, **S. A. Vorobyov**, and M. Ardakani, "How much multiuser diversity is required for energy limited multiuser systems?" *IEEE Trans. Signal Processing*, vol. 58, no. 8, pp. 4367–4378, Aug. 2010.

[J83] J. Gao, **S. A. Vorobyov**, and H. Jiang, "Cooperative resource allocation games with spectral mask and total power constraints," *IEEE Trans. Signal Processing*, vol. 58, no. 8, pp. 4379–4395, Aug. 2010.

[J84] A. Hassanien and **S. A. Vorobyov**, "Phased MIMO radar: A tradeoff between phased-array and MIMO radars," *IEEE Trans. Signal Processing*, vol. 58, no. 6, pp. 3137–3151, June 2010. **N.B. Nominated by the IEEE SAM Radar sub-committee for IEEE Signal Processing Society Best Paper Award, 2015.**

[J85] X. Hong, Z. Chen, C.-X. Wang, **S. A. Vorobyov**, and J. Thompson, "Cognitive radio networks: Interference cancelation and management techniques," *IEEE Vehicular Technology Magazine*, vol. 4, no. 4, pp. 76–84, Dec. 2009.

[J86] K. T. Phan, L. Le, **S. A. Vorobyov**, and T. Le-Ngoc, "Power allocation and admission control in multi-user relay networks via convex programming: Centralized and distributed schemes," *EURASIP Journal on Wireless Communications and Networking*, **invited paper**, Special Issue: *Optimization Techniques in Wireless Communications*, vol. 2009, Article ID 901965, 12 pages.

[J87] K. T. Phan, H. Jiang, R. Fan, **S. A. Vorobyov**, and C. Tellambura, "Network lifetime maximization with node admission in wireless multimedia sensor networks," *IEEE Trans. Vehicular Technology*, vol. 58, no. 7, pp. 3640–3646, Sept. 2009.

[J88] K. T. Phan, **S. A. Vorobyov**, N. D. Sidiropoulos, and C. Tellambura, "Spectrum sharing in wireless networks via QoS-aware secondary multicast beamforming," *IEEE Trans. Signal Processing*, vol. 57, no. 6, pp. 2323–2335, June 2009.

[J89] K. T. Phan, T. Le-Ngoc, **S. A. Vorobyov**, and C. Tellambura, "Power allocation in wireless miltiuser relay networks," *IEEE Trans. Wireless Communications*, vol. 8, no. 2, pp. 2535-2545, May 2009.

[J90] L. Li, **S. A. Vorobyov**, and A. B. Gershman, "Transmit antenna selection based strategies in MISO communication systems with low-rate channel state feedback," *IEEE Trans. Wireless Communications*, vol. 8, no. 4, pp. 1660–1666, Apr. 2009.

[J91] M. F. A. Ahmed and **S. A. Vorobyov**, "Collaborative beamforming for wireless sensor networks with Gaussian distributed sensor nodes," *IEEE Trans. Wireless Communications*, vol. 8, no. 2, pp. 638–643, Feb. 2009.

[J92] K. T. Phan, **S. A. Vorobyov**, and C. Tellambura, "Precoder design for space-time coded systems over correlated Rayleigh fading channels using convex optimization," *IEEE Trans. Signal Processing*, vol. 57, no. 2, pp. 814–819, Feb. 2009.

[J93] A. Hassanien and **S. A. Vorobyov**, "A robust adaptive dimension reduction technique with application to array processing," *IEEE Signal Processing Letters*, vol. 16, no. 1, pp. 22–25, Jan. 2009.

[J94] K. T. Phan, H. Jiang, C. Tellambura, **S. A. Vorobyov**, and R. Fan, "Joint medium access control, routing and energy distribution in multi-hop wireless networks," *IEEE Trans.*

Wireless Communications, vol. 7, no. 12, pp. 5244–5249, Dec. 2008.

[J95] A. Hassanien, **S. A. Vorobyov**, and K. M. Wong, "Robust adaptive beamforming using sequential quadratic programming: An iterative solution to the mismatch problem," *IEEE Signal Processing Letters*, vol. 15, pp. 733–736, 2008. **N.B. Nominated by the IEEE SAM technical committee for IEEE Signal Processing Letters Best Paper Award, 2013.**

[J96] **S. A. Vorobyov**, H. Chen, and A. B. Gershman, "On the relationship between robust minimum variance beamformers with probabilistic and worst-case distrortionless response constraints," *IEEE Trans. Signal Processing*, vol. 56, no. 11, pp. 5719–5724, Nov. 2008.

[J97] **S. A. Vorobyov**, "Robust CDMA multiuser detectors: Probability-constrained versus the worst-case based design," *IEEE Signal Processing Letters*, vol. 15, pp. 273–276, 2008.

[J98] Y. Rong, **S. A. Vorobyov**, and A. B. Gershman, "Adaptive OFDM techniques with one-bit-per-subcarrier channel state feedback," *IEEE Trans. Communications*, vol. 54, no. 11, pp. 1993–2003, Nov. 2006.

[J99] Y. Rong, **S. A. Vorobyov**, and A. B. Gershman, "Robust linear receivers for multi-access space-time block coded MIMO systems: A probabilistically constrained approach," *IEEE J. Selected Areas in Communications*, **invited paper**, Special Issue: *Nonlinear Optimization of Communication Systems*, vol. 24, no. 8, pp. 1560–1570, Aug. 2006.

[J100] **S. A. Vorobyov**, "Blind unitary prewhitening with a real-valued eigendecomposition," *Circuits, Systems and Signal Processing*, vol. 25, no. 3, pp. 421–429, June 2006.

[J101] Y. Rong, **S. A. Vorobyov**, and A. B. Gershman, "Linear block precoding for OFDM systems based on maximization of mean cutoff rate," *IEEE Trans. Signal Processing*, vol. 53, no. 12, pp. 4691–4696, Dec. 2005.

[J102] **S. A. Vorobyov**, Y. Rong, N. D. Sidiropoulos, A. B. Gershman, "Robust iterative fitting of multilinear models," *IEEE Trans. Signal Processing*, vol. 53, no. 8, pp. 2678–2689, Aug. 2005.

[J103] Y. Rong, **S. A. Vorobyov**, A. B. Gershman, N. D. Sidiropoulos, "Blind spatial signature estimation via time-varying user power loading and parallel factor analysis," *IEEE Trans. Signal Processing*, vol. 53, no. 5, pp. 1697–1710, May 2005.

[J104] **S. A. Vorobyov**, A. B. Gershman and M. Wong, "Maximum likelihood direction-of-arrival estimation in unknown noise fields using sparse sensor arrays," *IEEE Trans. Signal Processing*, vol. 53, no. 1, pp. 34–43, Jan. 2005.

[J105] **S. A. Vorobyov**, A. B. Gershman, Z-Q. Luo, and N. Ma, "Adaptive beamforming with joint robustness against mismatched signal steering vector and interference nonstationarity," *IEEE Signal Processing Letters*, vol. 11, no. 2, pp. 108–111, Feb. 2004.

[J106] **S. A. Vorobyov**, A. B. Gershman, and Z.-Q. Luo, "Robust adaptive beamforming using worst-case performance optimization: A solution to the signal mismatch problem," *IEEE Trans. Signal Processing*, vol. 51, no. 2, pp. 313–324, Feb. 2003.
2004 (Senior) Best Paper Award by the IEEE Signal Processing Society. The number of citations places the paper in the top 1% within its field according to *Essential Science Indicator*.

[J107] **S. A. Vorobyov** and A. Cichocki, "Blind noise reduction for multi-sensory signals using ICA and subspace filtering with application to EEG analysis," *Biological Cybernetics*, vol. 86, no. 4, pp. 293–303, Apr. 2002.

[J108] **S. A. Vorobyov** and A. Cichocki, "Hyper radial basis function neural networks for interference cancellation with nonlinear processing of reference signal," *Digital Signal Processing:*

A Review Journal, vol. 11, no. 3, pp. 204–221, July 2001.

[J109] **S. A. Vorobyov**, A. Cichocki and Ye. V. Bodyanskiy, "Adaptive noise cancellation for multi-sensory signals," *Fluctuation and Noise Letters*, vol. 1, no. 1, pp. R13–R24, Mar. 2001.

[J110] Ye. V. Bodyanskiy and **S. A. Vorobyov**, "Recurrent neural network detecting changes in the properties of nonlinear stochastic sequences," *Automation and Remote Control*, vol. 61, no. 7, pp. 1113–1124, July 2000.

[J111] **S. A. Vorobyov**, Ye. V. Bodyanskiy and S. V. Popov, "Multi-model based adaptive control of a turbo-generator pilot plant," *Automobiles and High-Ways* , issue 12-13, pp. 221–225, 2000.

[J112] Ye. V. Bodyanskiy, **S. A. Vorobyov**, and V. A. Timofeev, "Adaptive recognition of the states of dynamical object with periodic output signal," *Pattern Recognition and Image Analysis*, vol. 9, no. 3, pp. 505–509, June 1999.

[J113] Ye. V. Bodyanskiy, **S. A. Vorobyov**, and A. Stephan, "Algorithm for adaptive identification of dynamical parametrically nonstationary objects," *Journal of Computer and System Sciences International*, vol. 38, no. 1, pp. 14–18, Jan. 1999.

[J114] **S. A. Vorobyov** and Ye. V. Bodyanskiy, "On one non-parametric algorithm for smoothing parameter control in adaptive filtering," *Engineering Simulation*, vol. 16, pp. 341–350, 1999.

[J115] **S. A. Vorobyov**, A. Ya. Mogilevskiy, S. A. Ponomarenko and A. V. Shilo, "Approaches for solving "short series" problem in detecting fractal properties of EEG and neuronal activity signals," *Radioelectronics and Informatics*, no. 1, pp. 105–109, Jan.-Mar. 1999 (in Russian).

[J116] **S. A. Vorobyov**, "The mechanisms of stochastic behavior in Hopfield networks," *Trans. of Kharkiv State Polytechnic University*, issue 70, pp. 123–129, 1999 (in Russian).

[J117] **S. A. Vorobyov** and A. V. Shilo, "Recurrent normalized range method for detecting fractal structure of stochastic series and its application to EEG analysis," *Radioelectronics and Informatics*, no. 3, pp. 162–165, July-Sept. 1998 (in Russian).

[J118] Ye. V. Bodyanskiy, **S. A. Vorobyov**, O. V. Kostyuk and L. M. Lyubchik, "Filtering and forecasting for trend-season time series using artificial neural networks," *Radioelectronics and Informatics*, no. 3, pp. 74–80, July-Sept. 1998 (in Russian).

[J119] **S. A. Vorobyov**, "Learning of artificial neural networks under stochastic conditions," *Radioelectronics and Informatics*, no. 1, pp. 88–90, Jan.-Mar. 1998 (in Russian).

[J120] Ye. V. Bodyanskiy, **S. A. Vorobyov**, I. P. Pliss and O. V. Churilova, "Monitoring and fault detection in adaptive forecasting process," *Control Systems and Devices of Automatics*, issue 107, pp. 167–175, 1998 (in Russian).

[J121] **S. A. Vorobyov**, "Non-parametric algorithm for forgetting factor control in adaptive filtering," *Radiotechnics*, issue 104, pp. 179–182, 1997 (in Russian).

[J122] Ye. V. Bodyanskiy, **S. A. Vorobyov**, N. S. Lamonova, and A. Stephan, "Detection of properties' changes in stochastic sequences using artificial neural networks," *Control Systems and Devices of Automatics*, issue 106, pp. 83–88, 1997 (in Russian).

[J123] **S. A. Vorobyov**, "Adaptive multilayer filtering of nonstationary sequences," *Control Systems and Devices of Automatics*, issue 104, pp. 94–98, 1997 (in Russian).

[J124] S. V. Yakovlev, Ye. V. Bodyanskiy, and **S. A. Vorobyov**, "On-line detection of time series properties changes for isolation of latent plundering," *Ukrainian J. Jurisprudence Sciences*, No. 1, pp. 56–62, 1996 (in Ukrainian).

Books and Book Chapters

[B1] H. Zheng, Z. Shi, **S. A. Vorobyov**, C. Zhou, and Y. Gu, "Tensorized neural networks in array signal processing," in *Machine Learning for Radar Signal Processing*, Eds. Y. Gu, Y. D. Zhang, IEEE-Wiley Press, 2025, submitted.

[B2] **S. A. Vorobyov**, "Adaptive and robust beamforming," in *Academic Press Library in Signal Processing, Vol. 3, Array and Statistical Signal Processing*, Eds. A. M. Zoubir, M. Viberg, R. Chellappa, and S. Theodoridis, Elsevier Academic Press, 2014, pp. 503–552. (ISBN 978-0-12-411597-2)

[B3] J. Gao, **S. A. Vorobyov**, and H. Jiang, "Game theory in multi-user wireless communications," in *Game Theory for Wireless Communications and Networking*, Ed. Y. Zhang and M. Guizani, Auerbach Publications, CRC Press, Taylor&Francis Group, 2011, pp. 3–25. (ISBN 978-1-4398-0889-4 (hardback))

[B4] L. B. Le, **S. A. Vorobyov**, K. T. Phan, and T. Le-Ngoc, "Recourse allocation and QoS provisioning for wireless relay networks," in *Quality of Service Architectures for Wireless Networks: Performance Metrics and Management*, Ed. S. Adibi, R. Jain, S. Parekh, and M. Tofighbakhsh, IGI Global (IDEA Group), 2010, pp. 125–150. (ISBN 978-1-61520-6803 (hardcover), ISBN 978-1-51520-681-0 (edook))

[B5] **S. A. Vorobyov**, S. A. Mar'in, and O. C. Ponomarenko, *Decision Making Theory: Classic Approaches*, Kharkov: Publisher of Kharkov State Univ., 1999, 253 pages (in Russian). (ISBN 5-7763-2716-4)

Conference Papers

[C1] M. Esfandiari, P. Pulkkinen, **S. A. Vorobyov**, and V. Koivunen, "CS-AdaBoost: One-bit compressed sensing for direction-of-arrival estimation," in *33rd European Signal Processing Conf., EUSIPCO'25*, Palermo, Italy, Sept. 8–12, 2025, submitted.

[C2] J. Kuikka, E. Ollila, and **S. A. Vorobyov**, "Multi-task generative modeling for the air channel via hierarchical GANs," *23rd IEEE Workshop Statistical Signal Processing, IEEE SSP'25*, Edinburgh, IK, June 8–11, 2025, accepted.

[C3] L. Wang, **S. A. Vorobyov**, and E. Ollila, "Robust hybrid beamforming for integrated sensing and communications via learned optimization," in *Proc. 50th IEEE Int. Conf. Acoustics, Speech, and Signal Processing, IEEE ICASSP'25*, Hyderabad, India, Apr. 6–11, 2025, pp. –.

[C4] N. Padron and **S. A. Vorobyov**, "A GNSS-IR aided multispectral satellite data fusion for meter-level wide-area volumetric soil moisture estimation," in *Proc. 50th IEEE Int. Conf. Acoustics, Speech, and Signal Processing, IEEE ICASSP'25*, Hyderabad, India, Apr. 6–11, 2025, pp. 1–5.

[C5] X. Wang, E. Ollila, and **S. A. Vorobyov**, "Robust activity detection for massive access using covariance-based matching pursuit," in *Proc. 50th IEEE Int. Conf. Acoustics, Speech, and Signal Processing, IEEE ICASSP'25*, Hyderabad, India, Apr. 6–11, 2025, pp. 1–5.

[C6] M. Esfandiari, P. Pulkkinen, **S. A. Vorobyov**, and V. Koivunen, "Adaboost-based channel estimation in one-bit millimeter-wave MIMO," in *Proc. 50th IEEE Int. Conf. Acoustics, Speech, and Signal Processing, IEEE ICASSP'25*, Hyderabad, India, Apr. 6–11, 2025, pp. 1–5.

[C7] Y. Huang, B. Li, and **S. A. Vorobyov**, "Optimal adaptive beamforming with robust sidelobe level control against the mismatches of the steering vectors," in *Proc. 32nd European Signal*

Processing Conf., EUSIPCO'24, Lyon, France, Aug. 26–30, 2024, pp. 2162–2166.

[C8] L. Lin, H. Zheng, **S. A. Vorobyov**, C. Zhou, and Z. Shi, "Sensing-aided communication channel estimation with tensor-based moving target localization," in *Proc. 49th IEEE Int. Conf. Acoustics, Speech, and Signal Processing, IEEE ICASSP'24*, Seoul, Korea, Apr. 14–19, 2024, pp. 8606–8610.

[C9] Y. Tian, X. Han, **S. A. Vorobyov**, and W. Li, "Improved proportionate least mean squares/ fourth-based channel equalization for underwater acoustic communications," in *Proc. 9th IEEE Int. Workshop Computational Advances in Multi-Sensor Adaptive Processing, IEEE CAMSAP'23*, La Cruz, Costa Rica, Dec. 10–13, 2023, pp. 141–145.

[C10] X. Wang, E. Ollila, and **S. A. Vorobyov**, "Nonnegative sparse Kruskal tensor regression," **invited paper**, in *Proc. 9th IEEE Int. Workshop Computational Advances in Multi-Sensor Adaptive Processing, IEEE CAMSAP'23*, La Cruz, Costa Rica, Dec. 10–13, 2023, pp. 441–445.

[C11] L. Zhu, **S. A. Vorobyov**, Y. Liu, D. He, and Z. Zhong, "Noise reduction via low rank tensor decomposition for MIMO ISAC systems," in *Proc. IEEE Global Commun. Conf., IEEE GLOBECOM'23*, Kuala Lumpur, Malaysia, Dec. 4–8, 2023, pp. 3891–3896.

[C12] F. Xu and **S. A. Vorobyov**, "An iterative 2D DOA estimation approach for L-shaped nested array," **invited paper**, in *Proc. 57th Annual Asilomar Conf. Signals, Systems, and Computers*, Pacific Grove, California, USA, Oct. 29–Nov. 1, 2023, pp. 1702–1706, (presented in Oct. 30–Nov. 2, 2022 in *56th Annual Asilomar Conf.*).

[C13] J. Miettinen, **S. A. Vorobyov**, E. Ollila, and X. Wang, "Correlation-based graph smoothness measures in graph signal processing," in *Proc. 31st European Signal Processing Conf., EUSIPCO'23*, Helsinki, Finland, Sept. 4–8, 2023, pp. 1848–1852.

[C14] T.T. Zhang, F. Xu, and **S. A. Vorobyov**, "Transmit energy focusing for parameter estimation in transmit beamspace slow-time MIMO radar," in *Proc. 48th IEEE Int. Conf. Acoustics, Speech, and Signal Processing, IEEE ICASSP'23*, Rhodes Island, Greece, June 4–9, 2023, pp. 1–5.

[C15] H. Zheng, C. Zhou, **S. A. Vorobyov**, and Z. Shi, "Tensorized neural layer decomposition for 2D DOA estimation," in *Proc. 48th IEEE Int. Conf. Acoustics, Speech, and Signal Processing, IEEE ICASSP'23*, Rhodes Island, Greece, June 4–9, 2023, pp. 1–5.
Top 3% of all papers accepted at IEEE ICASSP 2023

[C16] F. G. Veshki and **S. A. Vorobyov**, "Efficient online convolutional dictionary learning using approximate sparse components," in *Proc. 48th IEEE Int. Conf. Acoustics, Speech, and Signal Processing, IEEE ICASSP'23*, Rhodes Island, Greece, June 4–9, 2023, pp. 1–5.

[C17] M. Esfandiari, **S. A. Vorobyov**, and R. W. Heath Jr., "ADMM-based solution for mmWave UL channel estimation with one-bit ADCs via sparsity enforcing and Toeplitz matrix reconstruction," in *Proc. 57th IEEE Int. Conf. Communications, IEEE ICC'23*, Rome, Italy, May 28–June 1, 2023, pp. 1338–1343.

[C18] L. Zhu, Y. Liu, D. He, **S. A. Vorobyov**, and Z. Zhong, "A low-complexity noise reduction scheme for target detection in the integrated sensing and communication system," in *Proc. 57th IEEE Int. Conf. Communications, IEEE ICC'23; 5th Workshop on Integrated Sensing and Communication*, Rome, Italy, May 28–June 1, 2023, pp. 909–914.

[C19] E. Dosti, **S. A. Vorobyov**, and T. Charalambous, "A new accelerated gradient-based estimating sequence technique for solving large-scale optimization problems with composite structure," in *Proc. 61st IEEE Conference on Decision and Control, IEEE CDC'22*, Cancun,

Mexico, Dec. 6–9, 2022, pp. 7516–7521.

[C20] F. G. Veshki and **S. A. Vorobyov**, "Convolutional simultaneous sparse approximation with applications to RGB-NIR image fusion," in *Proc. 56th Annual Asilomar Conf. Signals, Systems, and Computers*, Pacific Grove, California, USA, Oct. 30–Nov. 2, 2022, pp. 872–876.

[C21] A. K. Kocharlakota, **S. A. Vorobyov**, and R. W. Heath Jr."Attention neural network for downlink cell-free massive MIMO power control," in *Proc. 56th Annual Asilomar Conf. Signals, Systems, and Computers*, Pacific Grove, California, USA, Oct. 30–Nov. 2, 2022, pp. 738–743.

[C22] X. Wang, E. Ollila, and **S. A. Vorobyov**, "Graph neural network sensitivity under probabilistic error model," in *Proc. 30th European Signal Processing Conf., EUSIPCO'22*, Belgrade, Serbia, Aug. 29–Sept. 2, 2022, pp. 2146–2150.

[C23] E. Dosti, **S. A. Vorobyov**, and T. Charalambous, "Generalizing Nesterov's acceleration framework by embedding momentum into estimating sequences: New algorithm and bounds," in *Proc. IEEE Int. Symposium on Information Theory, IEEE ISIT'22*, Espoo, Finland, June 26–July 1, 2022, pp. 1506–1511.

[C24] M. Esfandiari, **S. A. Vorobyov**, and R. W. Heath Jr., "Sparsity enforcing with Toeplitz matrix reconstruction method for mmWave UL channel estimation with one-bit ADCs," **invited paper**, in *Proc. 12th IEEE Workshop Sensor Array and Multichannel Signal Processing, IEEE SAM'22*, Trondheim, Norway, June 20–23, 2022, pp. 141–145.

[C25] M. Esfandiari and **S. A. Vorobyov**, "A novel angular estimation method in the presence of nonuniform noise," in *Proc. 47th IEEE Int. Conf. Acoustics, Speech, and Signal Processing, IEEE ICASSP'22*, Singapore, May 22–27, 2022, pp. 5023–5027.

[C26] Y. Huang, W.-Z. Yang, and **S. A. Vorobyov**, "Robust adaptive beamforming maximizing the worst-case SINR over distributional uncertainty sets for random INC matrix and signal steering vector," in *Proc. 47th IEEE Int. Conf. Acoustics, Speech, and Signal Processing, IEEE ICASSP'22*, Singapore, May 22–27, 2022, pp. 4918–4922.

[C27] F. G. Veshki and **S. A. Vorobyov**, "Coupled feature learning via structure convolutional sparse coding for miltimodal image fusion," in *Proc. 47th IEEE Int. Conf. Acoustics, Speech, and Signal Processing, IEEE ICASSP'22*, Singapore, May 22–27, 2022, pp. 2500–2504.

[C28] W. Shi, Y. Li, and **S. A. Vorobyov**, "Low mutual coupling sparse array design using ULA fitting," in *Proc. 46th IEEE Int. Conf. Acoustics, Speech, and Signal Processing, IEEE ICASSP'21*, Toronto, Canada, June 6–11, 2021, pp. 4610–4614.

[C29] F. Xu and **S. A. Vorobyov**, "Constrained tensor decomposition for 2D DOA estimation in transmit beamspace MIMO radar with subarrays," in *Proc. 46th IEEE Int. Conf. Acoustics, Speech, and Signal Processing, IEEE ICASSP'21*, Toronto, Canada, June 6–11, 2021, pp. 4380–4384.

[C30] M. Esfandiari and **S. A. Vorobyov**, "Enhanced standard ESPRIT for overcoming imperfections in DOA estimation," in *Proc. 46th IEEE Int. Conf. Acoustics, Speech, and Signal Processing, IEEE ICASSP'21*, Toronto, Canada, June 6–11, 2021, pp. 4375–4379.

[C31] N. Ouzir, E. Ollila, and **S. A. Vorobyov**, "Robust registration of multi-modal medical images using Huber's criterion," **invited paper**, in *Proc. 54th Annual Asilomar Conf. Signals, Systems, and Computers*, Pacific Grove, California, USA, Nov. 1–4, 2020, pp. 773–777.

[C32] Y. Jing, J. Liang, **S. A. Vorobyov**, X. Fan, and D. Zhow, "Joint design of radar transmit waveform and mismatched filter with low sidelobes," in *Proc. 28th European Signal Processing Conf., EUSIPCO'20*, Amsterdam, Netherlands, Aug. 24–28, 2020, pp. 1936–1940.

[C33] F. Xu, M. W. Morency, and **S. A. Vorobyov**, "Tensor decomposition based MIMO radar DOA estimation with special transmit beamspace matrix," in *Proc. 28th European Signal Processing Conf., EUSIPCO'20*, Amsterdam, Netherlands, Aug. 24–28, 2020, pp. 1871–1875.

[C34] F. G. Veshki, N. Ouzir, and **S. A. Vorobyov**, "Image fusion using joint sparse representations and coupled dictionary learning," in *Proc. 45th IEEE Int. Conf. Acoustics, Speech, and Signal Processing, IEEE ICASSP'20*, Barcelona, Spain, May 4–9, 2020, pp. 8344–8348.

[C35] J. Miettinen, **S. A. Vorobyov**, and E. Ollila, "Blind source separation of graph signals," in *Proc. 45th IEEE Int. Conf. Acoustics, Speech, and Signal Processing, IEEE ICASSP'20*, Barcelona, Spain, May 4–9, 2020, pp. 5645–5649.

[C36] M. Neinavaie, M. Derakhtiany, and **S. A. Vorobyov**, "A complexity efficient DMT-optimal tree pruning based sphere decoding," in *Proc. 45th IEEE Int. Conf. Acoustics, Speech, and Signal Processing, IEEE ICASSP'20*, Barcelona, Spain, May 4–9, 2020, pp. 5165–5169.

[C37] N. Ouzir, E. Ollila, and **S. A. Vorobyov**, "ML-based motion estimation in ultrasound images using heavy-tailed noise distributions," in *Proc. 8th IEEE Int. Workshop Computational Advances in Multi-Sensor Adaptive Processing, IEEE CAMSAP'19*, Guadeloupe, French West Indies, Dec. 15–18, 2019, pp. 366–370.

[C38] Y. Huang, H. Fu, **S. A. Vorobyov**, and Z.-Q. Luo, "Worst-case SINR maximization based robust adaptive beamforming problem with a nonconvex uncertainty set," in *Proc. 8th IEEE Int. Workshop Computational Advances in Multi-Sensor Adaptive Processing, IEEE CAMSAP'19*, Guadeloupe, French West Indies, Dec. 15–18, 2019, pp. 31–35.

[C39] P. Kumari, **S. A. Vorobyov**, and R. W. Heath Jr., "A combined waveform-beamforming design for millimeter-wave joint communication-radar," **invited paper**, in *Proc. 53rd Annual Asilomar Conf. Signals, Systems, and Computers*, Pacific Grove, California, USA, Nov. 3–6, 2019, pp. 1422–1426.

[C40] M. Esfandiari, **S. A. Vorobyov**, and M. Karimi, "Non-iterative subspace-based method for estimating AR model parameters in the presence of white noise with unknown variance," in *Proc. 53rd Annual Asilomar Conf. Signals, Systems, and Computers*, Pacific Grove, California, USA, Nov. 3–6, 2019, pp. 1299–1303.

[C41] M. W. Morency and **S. A. Vorobyov**, "Algebraic geometry based design for generalized sidelobe canceller," **invited paper**, in *Proc. 53rd Annual Asilomar Conf. Signals, Systems, and Computers*, Pacific Grove, California, USA, Nov. 3–6, 2019, pp. 635–639.

[C42] J. Miettinen, **S. A. Vorobyov**, and E. Ollila, "Robust least mean squares estimation of graph signals," in *Proc. 44th IEEE Int. Conf. Acoustics, Speech, and Signal Processing, IEEE ICASSP'19*, Brighton, U.K., May 12–17, 2019, pp. 5416–5420.

[C43] A.K. Kocharlakota, K. Upadhya, and **S. A. Vorobyov**, "On achievable rates for massive MIMO system with imperfect channel covariance information," in *Proc. 44th IEEE Int. Conf. Acoustics, Speech, and Signal Processing, IEEE ICASSP'19*, Brighton, U.K., May 12–17, 2019, pp. 4504–4508.

[C44] Y. Huang, **S. A. Vorobyov**, Z.-Q. Luo, "A new quadratic matrix inequality approach to robust adaptive beamforming for general-rank signal model," in *Proc. 44th IEEE Int. Conf. Acoustics, Speech, and Signal Processing, IEEE ICASSP'19*, Brighton, U.K., May 12–17, 2019, pp. 4335–4339.

[C45] Y. Huang, M. Zhou, and **S. A. Vorobyov**, "MVDR robust adaptive beamforming design with direction of arrival and generalized similarity constraints," in *Proc. 44th IEEE Int. Conf. Acoustics, Speech, and Signal Processing, IEEE ICASSP'19*, Brighton, U.K., May

12–17, 2019, pp. 4330–4334.

[C46] M. Yli-Niemi and **S. A. Vorobyov**, "Computationally efficient waveform design in spectrally dense environment," in *Proc. 10th IEEE Workshop Sensor Array and Multichannel Signal Processing, IEEE SAM'18*, Sheffield, U.K., July 8–11, 2018, pp. 277–281.

[C47] K. Upadhya, **S. A. Vorobyov**, and R. W. Heath Jr., "Low-overhead receiver-side channel tracking for mmWave MIMO," in *Proc. 43rd IEEE Int. Conf. Acoustics, Speech, and Signal Processing, IEEE ICASSP'18*, Calgary, Alberta, Canada, Apr. 15–20, 2018, pp. 4164–4168.

[C48] J. Miettinen, **S. A. Vorobyov**, and E. Ollila, "Graph error effect in graph signal processing," in *Proc. 43rd IEEE Int. Conf. Acoustics, Speech, and Signal Processing, IEEE ICASSP'18*, Calgary, Alberta, Canada, Apr. 15–20, 2018, pp. 3859–3863.

[C49] P. Kumari, **S. A. Vorobyov**, R. W. Heath Jr., "Virtual pulse design for IEEE 802.11ad-based joint communication-radar," in *Proc. 43rd IEEE Int. Conf. Acoustics, Speech, and Signal Processing, IEEE ICASSP'18*, Calgary, Alberta, Canada, Apr. 15–20, 2018, pp. 3315–3319.

[C50] Y. Li and **S. A. Vorobyov**, "Joint space-(slow) time transmission with unimodular waveforms and receive adaptive filter design for radar," in *Proc. 43rd IEEE Int. Conf. Acoustics, Speech, and Signal Processing, IEEE ICASSP'18*, Calgary, Alberta, Canada, Apr. 15–20, 2018, pp. 3276–3280.

[C51] M. I. Florea, A. Basarab, D. Kouame, and **S. A. Vorobyov**, "Restoration of ultrasound images using spatially-variat kernel deconvolution," in *Proc. 43rd IEEE Int. Conf. Acoustics, Speech, and Signal Processing, IEEE ICASSP'18*, Calgary, Alberta, Canada, Apr. 15–20, 2018, pp. 796–780.

[C52] K. Upadhya, R. W. Heath Jr., and **S. A. Vorobyov**, "Tracking abruptly changing channels in mmWave systems using overlaid data and training," in *Proc. 7th IEEE Int. Workshop Computational Advances in Multi-Sensor Adaptive Processing, IEEE CAMSAP'17*, Caracao, Dutch Antilles, Dec. 10–13, 2017, pp. 676–680.

[C53] M. I. Florea and **S. A. Vorobyov**, "A Robust FISTA-like algorithm," in *Proc. 42nd IEEE Int. Conf. Acoustics, Speech, and Signal Processing, IEEE ICASSP'17*, New Orleans, Louisiana, USA, Mar. 5–9, pp. 4521–4525.

[C54] K. Upadhya, **S. A. Vorobyov**, and M. Vehkaperä, "Time-multiplexed/superimposed pilot selection for massive MIMO pilot decontamination," in *Proc. 42nd IEEE Int. Conf. Acoustics, Speech, and Signal Processing, IEEE ICASSP'17*, New Orleans, Louisiana, USA, Mar. 5–9, pp. 3459–3463.

[C55] Y. Li and **S. A. Vorobyov**, "Efficient single/multiple unimodular waveform design with low weighted correlations," in *Proc. 42nd IEEE Int. Conf. Acoustics, Speech, and Signal Processing, IEEE ICASSP'17*, New Orleans, Louisiana, USA, Mar. 5–9, pp. 3226–3230.

[C56] K. Upadhya, **S. A. Vorobyov**, and M. Vehkaperä, "Downlink performance of superimposed pilots in massive MIMO systems in the presence of contamination," in *Proc. IEEE Global Conf. Signal and Information Processing, IEEE GlobalSIP'16*, Greater Washington, D.C., USA, Dec. 7–9, 2016, pp. 665–669.

[C57] M. W. Morency, **S. A. Vorobyov**, and G. Leus, "An ideal-theoretic criterion for localization of an unknown number of sources," in *Proc. 50th Annual Asilomar Conf. Signals, Systems, and Computers*, Pacific Grove, California, USA, Nov. 6–9, 2016, pp. 1499—1502.

[C58] Y. Li, **S. A. Vorobyov**, and Z.-S. He, "Design of multiple unimodular waveforms with low auto- and cross-correlations for radar via majorization-minimization," **invited paper**,

in *Proc. 24th European Signal Processing Conf., EUSIPCO'16*, Budapest, Hungary, Aug. 26–Sept. 2, 2016, pp. 2235–2239.

[C59] M.-Y. Cao , **S. A. Vorobyov**, and X. Mao, "Elevation and azimuth estimation in arbitrary planar mono-static MIMO radar via tensor decomposition," in *Proc. 19th IEEE Workshop Statistical Signal Processing, IEEE SSP'16*, Palma de Mallorca, Spain, June 26–29, 2016, pp. 243–247.

[C60] K. Upadhya, **S. A. Vorobyov**, and M. Vehkaperä, "Superimposed pilots: An alternative pilot structure to mitigate pilot contamination in massive MIMO," in *Proc. 41st IEEE Int. Conf. Acoustics, Speech, and Signal Processing, IEEE ICASSP'16*, Shanghai, China, Mar. 20–25, 2016, pp. 3366–3370.

[C61] Y. Li, **S. A. Vorobyov**, and Z. He, "Terrain-scattered jammer suppression in MIMO radar using space-(fast) time adaptive processing," in *Proc. 41st IEEE Int. Conf. Acoustics, Speech, and Signal Processing, IEEE ICASSP'16*, Shanghai, China, Mar. 20–25, 2016, pp. 3026–3030.

[C62] R. Gao, **S. A. Vorobyov**, and H. Zhao, "Multi-focus image fusion via coupled dictionary training," in *Proc. 41st IEEE Int. Conf. Acoustics, Speech, and Signal Processing, IEEE ICASSP'16*, Shanghai, China, Mar. 20–25, 2016, pp. 1666–1670.

[C63] K. Upadhya and **S. A. Vorobyov**, "An array processing approach to pilot decontamination for massive MIMO," in *Proc. 6th IEEE Int. Workshop Computational Advances in Multi-Sensor Adaptive Processing, IEEE CAMSAP'15*, Cancun, Mexico, Dec. 13–16, 2015, pp. 465–468.

[C64] H. Fang, **S. A. Vorobyov**, and H. Jiang, "Permutation enhanced parallel reconstruction for compressive sampling," in *Proc. 6th IEEE Int. Workshop Computational Advances in Multi-Sensor Adaptive Processing, IEEE CAMSAP'15*, Cancun, Mexico, Dec. 13–16, 2015, pp. 405–408. **Finalist of the Best Student Paper Contest.**

[C65] W. Zhang, **S. A. Vorobyov**, and L. Guo, "DOA estimation in MIMO radar with broken sensors by difference co-array processing," in *Proc. 6th IEEE Int. Workshop Computational Advances in Multi-Sensor Adaptive Processing, IEEE CAMSAP'15*, Cancun, Mexico, Dec. 13–16, 2015, pp. 333–336.

[C66] L. Qin, **S. A. Vorobyov**, and Z. Dong, "An OFDM-based waveform separation approach for MIMO-SAR," in *Proc. 6th IEEE Int. Workshop Computational Advances in Multi-Sensor Adaptive Processing, IEEE CAMSAP'15*, Cancun, Mexico, Dec. 13–16, 2015, pp. 125–128.

[C67] M. W. Morency and **S. A. Vorobyov**, "An algebraic approach to rank-constrained beamforming," in *Proc. 6th IEEE Int. Workshop Computational Advances in Multi-Sensor Adaptive Processing, IEEE CAMSAP'15*, Cancun, Mexico, Dec. 13–16, 2015, pp. 17–20.
1st Prise Best Student Paper Award!

[C68] M. W. Morency and **S. A. Vorobyov**, "Partially adaptive transmit beamforming for search free 2D DOA estimation in MIMO radar," in *Proc. 23rd European Signal Processing Conf., EUSIPCO'15*, Nice, France, Aug. 31–Sept. 4, 2015. pp. 2676–2680.

[C69] M. Shaghaghi and **S. A. Vorobyov**, "Subspace leakage analysis of sample data covariance matrix," in *Proc. 40th IEEE Int. Conf. Acoustics, Speech, and Signal Processing, IEEE ICASSP'15*, Brisbane, Australia, Apr. 19–24, 2015, pp. 3447–3451.

[C70] Y. Li, **S. A. Vorobyov**, and Z. He, "Joint hot and cold clutter mitigation in the transmit beamspace-based MIMO radar," in *Proc. 40th IEEE Int. Conf. Acoustics, Speech, and Signal Processing, IEEE ICASSP'15*, Brisbane, Australia, Apr. 19–24, 2015, pp. 2334–2338.

[C71] J. Steinwandt, **S. A. Vorobyov**, and M. Haardt, "Secrecy rate maximization for information and energy transfer in MIMO beamforming networks," in *Proc. 48th Annual Asilomar Conf. Signals, Systems, and Computers*, Pacific Grove, California, USA, Nov. 2–5, 2014, pp. 1989–1993.

[C72] M. A. Girnyk, M. Vehkapera, and **S. A. Vorobyov**, "On the optimal relay design for multi-antenna cognitive two-way AF relay networks," in *Proc. 48th Annual Asilomar Conf. Signals, Systems, and Computers*, Pacific Grove, California, USA, Nov. 2–5, 2014, pp. 1579–1583.

[C73] A. Hassanien, **S. A. Vorobyov**, Y.-S. Yoon, and J.-Y. Park, "Two-stage based design for phased-MIMO radar with improved coherent transmit processing gain," in *Proc. 15th IEEE Workshop Signal Processing Advances in Wireless Communications, IEEE SPAWC'14*, Toronto, Canada, June 22–25, 2014, pp. 45–49.

[C74] J. Steinwandt, **S. A. Vorobyov**, and M. Haardt, "Joint beamforming and transmit design for the non-regenerative MIMO broadcast relay channel," in *Proc. 8th IEEE Workshop Sensor Array and Multichannel Signal Processing, IEEE SAM'14*, A Coruna, Spain, June 22–25, 2014, pp. 169–172.

[C75] Y. Li, **S. A. Vorobyov**, and A. Hassanien, "Robust beamforming for jammers suppression in MIMO radar," **invited paper**, in *Proc. IEEE Radar Conf.*, Cincinnati, OH, USA, May 19–23, 2014, pp. 629–634.

[C76] J. Steinwandt, **S. A. Vorobyov**, and M. Haardt, "Secrecy rate maximization for MIMO Gaussian wiretap channels with multiple eavesdroppers via slternating matrix POTDC," in *Proc. 39th IEEE Int. Conf. Acoustics, Speech, and Signal Processing, IEEE ICASSP'14*, Florence, Italy, May 4–9, 2014, pp. 5686–5690.

[C77] A. Khabbazibasmenj and **S. A. Vorobyov**, "Generalized quadratically constrained quadratic programming for signal processing," in *Proc. 39th IEEE Int. Conf. Acoustics, Speech, and Signal Processing, IEEE ICASSP'14*, Florence, Italy, May 4–9, 2014, pp. 7629–7633.

[C78] Y. Li, **S. A. Vorobyov**, and V. Koivunen, "Generalized ambiguity function for the MIMO radar with correlated waveforms," in *Proc. 39th IEEE Int. Conf. Acoustics, Speech, and Signal Processing, IEEE ICASSP'14*, Florence, Italy, May 4–9, 2014, pp. 5302–5306.

[C79] Y. Li, **S. A. Vorobyov**, and A. Hassanien, "MIMO radar capability on powerful jammers suppression," in *Proc. 39th IEEE Int. Conf. Acoustics, Speech, and Signal Processing, IEEE ICASSP'14*, Florence, Italy, May 4–9, 2014, pp. 5277–5281.

[C80] J. Gao, **S. A. Vorobyov**, and H. Jiang, "Efficient jamming strategies on a MIMO Gaussian channel with known target signal covariance," in *Proc. 39th IEEE Int. Conf. Acoustics, Speech, and Signal Processing, IEEE ICASSP'14*, Florence, Italy, May 4–9, 2014, pp. 5700–5704.

[C81] A. Hassanien, **S. A. Vorobyov**, Y.-S. Yoon, and J.-Y. Park, "Root-MUSIC-based source localization using transmit array interpolation in MIMO radar with arbitrary planar arrays," in *Proc. 5th IEEE Int. Workshop Computational Advances in Multi-Sensor Adaptive Processing, IEEE CAMSAP'13*, The Friendly Island, Saint Martin, Dec. 15–18, 2013, pp. 396–399.

[C82] M. Shaghaghi and **S. A. Vorobyov**, "Iterative root-MUSIC algorithm for DOA estimation," **invited paper**, in *Proc. 5th IEEE Int. Workshop Computational Advances in Multi-Sensor Adaptive Processing, IEEE CAMSAP'13*, The Friendly Island, Saint Martin, Dec. 15–18, 2013, pp. 53–56.

[C83] J. Zhang, **S. A. Vorobyov**, A. Khabbazibasmenj, and M. Haardt, "Sum rate maximization in multi-operator two-way relay networks with a MIMO AF relay via POTDC," **invited**

paper, in *Proc. 21st European Signal Processing Conf., EUSIPCO'13*, Marrakech, Morocco, Sept. 9–13, 2013.

[C84] A. Khabbazibasmenj, M. A. Girnyk, **S. A. Vorobyov**, M. Vehkaperä, and L. K. Rasmussen, "On the optimal precoding for MIMO Gaussian wire-tap channels," in *Proc. 10th Int. Sympos. Wireless Commun. Systems, ISWCS'2013*, Ilmenau, Germany, Aug. 27–30, 2013, pp. 356–359.

[C85] A. Hassanien, **S. A. Vorobyov**, and J.-Y. Park, "Joint transmit array interpolation and transmit beamforming for source localization in MIMO radar with arbitrary arrays," in *Proc. 38th IEEE Int. Conf. Acoustics, Speech, and Signal Processing, IEEE ICASSP'13*, Vancouver, BC, Canada, May 26–31, 2013, pp. 4139–4143.

[C86] A. Khabbazibasmenj and **S. A. Vorobyov**, "Two-way relay beamforming design: Proportional fair and max-min rate fair approaches using POTDC," in *Proc. 38th IEEE Int. Conf. Acoustics, Speech, and Signal Processing, IEEE ICASSP'13*, Vancouver, BC, Canada, May 26–31, 2013, pp. 4997–5001.

[C87] A. Hassanien, M. W. Morency, A. Khabbazibasmenj, **S. A. Vorobyov**, J.-Y. Park, and S.-J. Kim, "Two-dimensional transmit beamforming for MIMO radar with sparse symmetric arrays," in *Proc. IEEE Radar Conf.*, Ottawa, ON, Canada, Apr. 29–May 3, 2013.

[C88] J. Gao, J. Zhang, **S. A. Vorobyov**, H. Jiang, and M. Haardt, "Power allocation/beamforming for decode-and-forward MIMO two-way relaying: Relay optimization and network optimization," in *Proc. IEEE Global Telecommunications Conf., IEEE GLOBECOM'12*, Anaheim, CA, USA, Dec. 3–7, 2012.

[C89] A. Khabbazibasmenj, **S. A. Vorobyov**, A. Hassanien, and M. W. Morency, "Transmit beamspace design for direction finding in colocated MIMO radar with arbitrary receive array and even number of waveforms," in *Proc. 46th Annual Asilomar Conf. Signals, Systems, and Computers*, Pacific Grove, California, USA, Nov. 4–7, 2012, pp. 1307–1311. **Finalist of Student Paper Contest.**

[C90] H. Fang, **S. A. Vorobyov**, H. Jiang, and O. Taheri, "2D signal compression via parallel compressed sensing with permutations," in *Proc. 46th Annual Asilomar Conf. Signals, Systems, and Computers*, Pacific Grove, California, USA, Nov. 4–7, 2012, pp. 1925–1929.

[C91] M. Shaghaghi and **S. A. Vorobyov**, "Correlogram for undersampled data: Bias and variance analysis," in *Proc. 37th IEEE Int. Conf. Acoustics, Speech, and Signal Processing, IEEE ICASSP'12*, Kyoto, Japan, Mar. 25–30, 2012, pp. 3513–3516.

[C92] O. Taheri and **S. A. Vorobyov**, "Decimated least mean squares for frequency sparse channel estimation," in *Proc. 37th IEEE Int. Conf. Acoustics, Speech, and Signal Processing, IEEE ICASSP'12*, Kyoto, Japan, Mar. 25–30, 2012, pp. 3181–3184.

[C93] A. Khabbazibasmenj, **S. A. Vorobyov**, F. Roemer, and M. Haardt, "Polynomial-time DC (POTDC) for sum-rate maximization in two-way AF MIMO relaying," in *Proc. 37th IEEE Int. Conf. Acoustics, Speech, and Signal Processing, IEEE ICASSP'12*, Kyoto, Japan, Mar. 25–30, 2012, pp. 2889–2892.

[C94] J. Zhang, F. Roemer, M. Haardt, A. Khabbazibasmenj, and **S. A. Vorobyov**, "Sum rate maximization for multi-pair two-way relaying with single-antenna amplify and forward relays," in *Proc. 37th IEEE Int. Conf. Acoustics, Speech, and Signal Processing, IEEE ICASSP'12*, Kyoto, Japan, Mar. 25–30, 2012, pp. 2477–2480. **Runner-up Best Student Paper Award.**

[C95] A. Hassanien, **S. A. Vorobyov**, M. Saachi, and M. Naghizadeh, "A computationally efficient

algorithm for high quality separation of simultaneous sources in seismology," in *Proc. 37th IEEE Int. Conf. Acoustics, Speech, and Signal Processing, IEEE ICASSP'12*, Kyoto, Japan, Mar. 25–30, 2012, pp. 1241–1244.

[C96] A. Khabbazibasmenj and **S. A. Vorobyov**, "A computationally efficient robust adaptive beamforming for general-rank signal models with positive semi-definitness constraint," in *Proc. 4th IEEE Int. Workshop Computational Advances in Multi-Sensor Adaptive Processing, IEEE CAMSAP'11*, San Juan, Puerto Rico, Dec. 13–16, 2011, pp. 185–188.

[C97] M. F. A. Ahmed and **S. A. Vorobyov**, "Power control for collaborative beamforming in wireless sensor networks," **invited paper**, in *Proc. 45th Annual Asilomar Conf. Signals, Systems, and Computers*, Pacific Grove, California, USA, Nov. 6–9, 2011, pp. 99–103.

[C98] A. E. Geyer, **S. A. Vorobyov**, and N. C. Beaulieu, "Equivalent codes and optimality of orthogonal space-time block codes," in *Proc. 45th Annual Asilomar Conf. Signals, Systems, and Computers*, Pacific Grove, California, USA, Nov. 6–9, 2011, pp. 1559–1563.

[C99] J. Gao, **S. A. Vorobyov**, and H. Jiang, "Mixed strategy Nash equilibrium in two-user resource allocation games," in *Proc. IEEE Int. Symposium on Information Theory, IEEE ISIT'11*, St. Petersburg, Russia, July 31–Aug. 5, 2011, pp. 2632–2636.

[C100] Z. Chen, C.-X. Wang, X. Hong, J. Thompson, **S. A. Vorobyov**, and D. Yuan, "Cross-layer interference mitigation for cognitive radio MIMO systems," in *Proc. 45th IEEE Int. Conf. Communications, IEEE ICC'11*, Kyoto, Japan, June 5–9, 2011.

[C101] M. Shaghaghi and **S. A. Vorobyov**, "Improved model-based spectral compressive sensing via nested least squares," in *Proc. 36th IEEE Int. Conf. Acoustics, Speech, and Signal Processing, IEEE ICASSP'11*, Prague, Czech Republic, May 22–27, 2011, pp. 3904–3907.

[C102] X. Gong, **S. A. Vorobyov**, and C. Tellambura, "Joint bandwidth and power allocation in cognitive radio networks under fading channel," in *Proc. 36th IEEE Int. Conf. Acoustics, Speech, and Signal Processing, IEEE ICASSP'11*, Prague, Czech Republic, May 22–27, 2011, pp. 2976–2679.

[C103] O. Taheri and **S. A. Vorobyov**, "Sparse channel estimation with l_p-norm and reweighted l_1-norm penalized least mean squares," in *Proc. 36th IEEE Int. Conf. Acoustics, Speech, and Signal Processing, IEEE ICASSP'11*, Prague, Czech Republic, May 22–27, 2011, pp. 2864–2867.

[C104] A. Hassanien and **S. A. Vorobyov**, "Subspace-based direction finding using transmit energy focussing in MIMO radar with colocated antennas," in *Proc. 36th IEEE Int. Conf. Acoustics, Speech, and Signal Processing, IEEE ICASSP'11*, Prague, Czech Republic, May 22–27, 2011, pp. 2788–2791.

[C105] A. Khabbazibasmenj, A. Hassanien, and **S. A. Vorobyov**, "Transmit beamspace design for direction finding in colocated MIMO radar with arbitrary receive array," in *Proc. 36th IEEE Int. Conf. Acoustics, Speech, and Signal Processing, IEEE ICASSP'11*, Prague, Czech Republic, May 22–27, 2011, pp. 2784–2787.

[C106] X. Gong, **S. A. Vorobyov**, and C. Tellambura, "Admission control-based joint bandwidth and power allocation in multi-user DF relay networks," in *Proc. 44th Annual Asilomar Conf. Signals, Systems, and Computers*, Pacific Grove, California, USA, Nov. 7–10, 2010, pp. 1723–1727.

[C107] A. Khabbazibasmenj, **S. A. Vorobyov**, and A. Hassanien, "Robust adaptive beamforming via estimation of steering vector based on semidefinite relaxation," in *Proc. 44th Annual Asilomar Conf. Signals, Systems, and Computers*, Pacific Grove, California, USA, Nov. 7–

10, 2010, pp. 1102–1106.

[C108] O. Taheri and **S. A. Vorobyov**, "Empirical risk minimization-based analysis of segmented compressed sampling," in *Proc. 44th Annual Asilomar Conf. Signals, Systems, and Computers*, Pacific Grove, California, USA, Nov. 7–10, 2010, pp. 233–235.

[C109] A. Hassanien, **S. A. Vorobyov**, A. B. Gershman, and M. Ruebsamen, "Estimating the parameters of a moving target in MIMO radar with widely separated antennas," **invited paper**, in *Proc. 6th IEEE Workshop Sensor Array and Multichannel Signal Processing, IEEE SAM'10*, Israel, Oct. 4–7, 2010, pp. 57–60.

[C110] A. Hassanien and **S. A. Vorobyov**, "Why the phased-MIMO radar outperforms the phased-array and MIMO radars," **invited paper**, in *Proc. 18th European Signal Processing Conf., EUSIPCO'10*, Aalborg, Denmark, Aug. 23–27, 2010, pp. 1234–1238.

[C111] Z. Chen, C.-X. Wang, X. Hong, J. Thompson, **S. A. Vorobyov**, and X. Ge, "Interference modeling for cognitive radio networks with power and contention control," in *Proc. IEEE Wireless Comm. and Network. Conf., IEEE WCNC'10*, Sydney, Australia, Apr. 18–21, 2010.

[C112] Y. Ko, M. Ardakani, and **S. A. Vorobyov**, "Power allocation strategies across N orthogonal channels for singe-relay networks at both source and relay," in *Proc. 17th Int. Conf. Telecommun., ICT'2010*, Doha, Quatar, Apr. 4–7, 2010, pp. 481–486. **Runner-up Best Paper Award.**

[C113] X. Gong, **S. A. Vorobyov**, and C. Tellambura, "Joint bandwidth and power allocation in wireless multi-user decode-and-forward relay networks," in *Proc. 35th IEEE Int. Conf. Acoustics, Speech, and Signal Processing, IEEE ICASSP'10*, Dallas, Texas, Mar. 14–19, 2010, pp. 2498–2501.

[C114] J. Gao, **S. A. Vorobyov**, and H. Jiang, "Pareto-optimal solutions of Nash bargaining resource allocation games with spectral mask and total power constraints," in *Proc. 35th IEEE Int. Conf. Acoustics, Speech, and Signal Processing, IEEE ICASSP'10*, Dallas, Texas, Mar. 14–19, 2010, pp. 3146–3149.

[C115] A. Hassanien and **S. A. Vorobyov**, "Direction finding for MIMO radar with colocated antennas using transmit beamspace preprocessing," **invited paper**, in *Proc. 3rd IEEE Int. Workshop on Computational Advances in Multi-Sensor Adaptive Processing, IEEE CAMSAP'09*, Aruba, Dutch Antilles, Dec. 13–16, 2009, pp. 181–184.

[C116] A. Khabbazibasmenj and **S. A. Vorobyov**, "Power allocation in decode-and-forward cooperative networks via SEP minimization," in *Proc. 3rd IEEE Int. Workshop on Computational Advances in Multi-Sensor Adaptive Processing, IEEE CAMSAP'09*, Aruba, Dutch Antilles, Dec. 13–16, 2009, pp. 328–331.

[C117] O. Taheri and **S. A. Vorobyov**, "Segmented compressed sampling for analog-to-information conversion," in *Proc. 3rd IEEE Int. Workshop on Computational Advances in Multi-Sensor Adaptive Processing, IEEE CAMSAP'09*, Aruba, Dutch Antilles, Dec. 13–16, 2009, pp. 113–116.

[C118] Y. Ko, **S. A. Vorobyov**, and M. Ardakani, "Spectrum efficient cooperative relaying based on outage-multiplexing tradeoff analysis," in *Proc. 43rd Annual Asilomar Conf. Signals, Systems, and Computers*, Pacific Grove, California, USA, Nov. 1–4, 2009, pp. 1513–1517.

[C119] M. F. A. Ahmed and **S. A. Vorobyov**, "Node selection for sidelobe control in collaborative beamforming for wireless sensor networks," in *Proc. 10th IEEE Workshop Signal Processing Advances in Wireless Communications, IEEE SPAWC'09*, Perugia, Italy, June 21–24, 2009, pp. 519–523.

[C120] Y. Ko, **S. A. Vorobyov**, and M. Ardakani, "How much multiuser diversity gain is required over large-scale fading?" in *Proc. 43rd IEEE Int. Conf. Communications, IEEE ICC'09*, Dresden, Germany, June 14–18, 2009.

[C121] T. K. Phan, L. Le, **S. A. Vorobyov**, and T. Le-Ngoc, "Centralized and distributed power allocation in multi-user wireless relay networks," in *Proc. 43rd IEEE Int. Conf. Communications, IEEE ICC'09*, Dresden, Germany, June 14–18, 2009.

[C122] Z. Chen, **S. A. Vorobyov**, C.-X. Wang, and J. Thompson, "Nash bargaining over MIMO interference systems," in *Proc. 43rd IEEE Int. Conf. Communications, IEEE ICC'09*, Dresden, Germany, June 14–18, 2009.

[C123] A. Hassanien and **S. A. Vorobyov**, "Transmit/receive beamforming for MIMO radar with colocated antennas," in *Proc. 34th IEEE Int. Conf. Acoustics, Speech, and Signal Processing, IEEE ICASSP'09*, Taipei, Taiwan, Apr. 19–24, 2009, pp. 2089–2092.

[C124] J. Gao, **S. A. Vorobyov**, and H. Jiang, "Game theory for precoding in a multi-user system: Bargaining for overall benefits," in *Proc. 34th IEEE Int. Conf. Acoustics, Speech, and Signal Processing, IEEE ICASSP'09*, Taipei, Taiwan, Apr. 19–24, 2009, pp. 2361–2364.

[C125] J. Gao, **S. A. Vorobyov**, and H. Jiang, "Game theoretic solutions for precoding strategies over interference channels," in *Proc. IEEE Global Telecommunications Conf., IEEE GLOBECOM'08*, New Orleans, LA, USA, Nov. 30–Dec. 4, 2008.

[C126] T. K. Phan, T. Le-Ngoc, **S. A. Vorobyov**, and C. Tellambura, "Power allocation in wireless relay networks: A geometric programming based approach," in *Proc. IEEE Global Telecommunications Conf., IEEE GLOBECOM'08*, New Orleans, LA, USA, Nov. 30–Dec. 4, 2008.

[C127] A. Hassanien and **S. A. Vorobyov**, "New results on robust adaptive beamspace preprocessing," in *Proc. 5th IEEE Workshop Sensor Array and Multichannel Signal Processing, IEEE SAM'08*, Darmstadt, Germany, July 21–23, 2008, pp. 315–319.

[C128] T. K. Phan, **S. A. Vorobyov**, N. D. Sidiropoulos, and C. Tellambura, "Spectrum sharing in wireless networks: A QoS-aware secondary multicast approach with worst user performance optimization," in *Proc. 5th IEEE Workshop Sensor Array and Multichannel Signal Processing, IEEE SAM'08*, Darmstadt, Germany, July 21–23, 2008, pp. 23–27.

[C129] M. F. A. Ahmed and **S. A. Vorobyov**, "Beampattern random behavior in wireless sensor networks with Gaussian distributed sensor nodes," in *Proc. Canadian Conf. Electrical and Computer Engineering, CCECE'2008*, Niagara Falls, ON, Canada, May 4–7, 2008, pp. 257–260.

[C130] A. Hassanien, **S. A. Vorobyov**, and K. M. Wong, "Robust adaptive beamforming using sequential quadratic programming," in *Proc. 33rd IEEE Int. Conf. Acoustics, Speech, and Signal Processing, IEEE ICASSP'08*, Las Vegas, Nevada, USA, Mar. 30–Apr. 4, 2008, pp. 2345–2348.

[C131] **S. A. Vorobyov**, "Robust multiuser detection based on probability constrained optimization of the MMSE receiver," in *Proc. 33rd IEEE Int. Conf. Acoustics, Speech, and Signal Processing, IEEE ICASSP'08*, Las Vegas, Nevada, USA, Mar. 30–Apr. 4, 2008, pp. 2677–2680.

[C132] M. F. A. Ahmed and **S. A. Vorobyov**, "Performance characteristics of collaborative beamforming for wireless sensor networks with Gaussian distributed sensor nodes," in *Proc. 33rd IEEE Int. Conf. Acoustics, Speech, and Signal Processing, IEEE ICASSP'08*, Las Vegas, Nevada, USA, Mar. 30–Apr. 4, 2008, pp. 3249–3252.

[C133] T. K. Phan, **S. A. Vorobyov**, and C. Tellambura, "Linear precoders for OSTBC MIMO

systems with correlated Rayleigh fading channels based on convex optimization," in *Proc. 2nd IEEE Int. Workshop on Computational Advances in Multi-Sensor Adaptive Processing, IEEE CAMSAP'07*, Virgin Islands, USA, Dec. 12–14, 2007, pp. 221–224.

[C134] I. Wajid, A. B. Gershman, **S. A. Vorobyov**, and Y. A. Karanouh, "Robust multi-antenna broadcasting with imperfect channel state information," in *Proc. 2nd IEEE Int. Workshop Computational Advances in Multi-Sensor Adaptive Processing, IEEE CAMSAP'07*, Virgin Islands, USA, Dec. 12–14, 2007, pp. 213–216.

[C135] T. K. Phan, **S. A. Vorobyov**, C. Tellambura, and T. Le-Ngoc, "Power control for wireless cellular systems via D.C. programming," in *Proc. 14th IEEE Workshop Statistical Signal Processing, IEEE SSP'07*, Madison, WI, USA, Aug. 26–29, 2007, pp. 507–511.

[C136] L. Li, **S. A. Vorobyov**, and A. B. Gershman, "Adaptive resource allocation in MIMO communication systems using low rate channel feedback," in *Proc. 8th IEEE Workshop Signal Processing Advances in Wireless Communications, IEEE SPAWC'07*, Helsinki, Finland, June 17–20, 2007.

[C137] T. K. Phan, **S. A. Vorobyov**, and C. Tellambura, "Precoder design for space-time coded MIMO systems with correlated Rayleigh fading channels," in *Proc. Canadian Conf. Electrical and Computer Engineering, CCECE'2007*, Vancouver, BC, Canada, Apr. 22–26, 2007, pp. 329–332.

[C138] **S. A. Vorobyov**, A. B. Gershman, and Y. Rong, "On the relationship between the worst-case optimization-based and probability-constrained approaches to robust adaptive beamforming," in *Proc. 32nd IEEE Int. Conf. Acoustics, Speech, and Signal Processing, IEEE ICASSP'07*, Honolulu, Hawaii, USA, Apr. 15–20, 2007, vol. 2, pp. 977–980.

[C139] **S. A. Vorobyov**, Y. C. Eldar, and A. B. Gershman, "Parameter estimation in linear models based on outage probability minimization," **invited paper**, in *Proc. 40th Annual Asilomar Conf. Signals, Systems, and Computers*, Pacific Grove, California, USA, Oct. 29–Nov. 1, 2006, pp. 1415–1419.

[C140] **S. A. Vorobyov**, Y. C. Eldar, and A. B. Gershman, "Probabilistically-constrained estimation of random parameters with unknown distribution," in *Proc. 4th IEEE Workshop Sensor Array and Multichannel Signal Processing, IEEE SAM'06*, Waltham, Massachusetts, USA, July 12–14, 2006, pp. 404–408.

[C141] **S. A. Vorobyov**, Y. Rong, and A. B. Gershman, "Robust minimum variance adaptive beamformers and multiuser MIMO receivers: From worst-case to probabilistically constrained designs," **invited paper**, in *Proc. 31st IEEE Int. Conf. Acoustics, Speech, and Signal Processing, IEEE ICASSP'06*, Toulouse, France, May 14–19, 2006, vol. 5, pp. 977–980.

[C142] **S. A. Vorobyov**, Y. C. Eldar, A. Nemirovski, and A. B. Gershman, "Probability-constrained approach to estimation of random Gaussian parameters," in *Proc. 1st IEEE Int. Workshop Computational Advances in Multi-Sensor Adaptive Processing, IEEE CAMSAP'05*, Puerto Vallarta, Mexico, Dec. 13–15, 2005, pp. 101–104.

[C143] **S. A. Vorobyov**, "Reduced complexity blind unitary prewhitening with application to blind source separation," in *Proc. 1st IEEE Int. Workshop Computational Advances in Multi-Sensor Adaptive Processing, IEEE CAMSAP'05*, Puerto Vallarta, Mexico, Dec. 13–15, 2005, pp. 181–184.

[C144] **S. A. Vorobyov**, Y. Rong, and A. B. Gershman, "Robust adaptive beamforming using probability-constrained optimization," in *Proc. 13th IEEE Workshop Statistical Signal Processing, IEEE SSP'05*, Bordeaux, France, July 17–20, 2005, pp. 934–939.

[C145] Y. Rong, **S. A. Vorobyov**, and A. B. Gershman, "Robust linear receiver design for multi-access space-time block coded MIMO systems using stochastic optimization," in *Proc. 13th IEEE Workshop Statistical Signal Processing, IEEE SSP'05*, Bordeaux, France, July 17–20, 2005, pp. 65–70.

[C146] Y. Rong, **S. A. Vorobyov**, and A. B. Gershman, "Combining error-correction coding and cutoff rate maximization based precoding," in *Proc. ITG/IEEE Workshop Smart Antennas, WSA'2005*, Duisburg, Germany, Apr. 4–5, 2005.

[C147] Y. Rong, **S. A. Vorobyov**, and A. B. Gershman, "On average one bit per subcarrier channel state information feedback in OFDM wireless communication systems," in *Proc. IEEE Global Telecommunications Conf., IEEE GLOBECOM'04*, Dallas, Texas, USA, Nov. 29–Dec. 3, 2004, vol. 6, pp. 4011–4015.

[C148] Y. Rong, **S. A. Vorobyov**, and A. B. Gershman, "The impact of imperfect one bit per subcarrier channel state information feedback on adaptive OFDM wireless communication systems," in *Proc. 60th IEEE Vehicular Technology Conf., IEEE VTC'04 Fall*, Los Angeles, CA, USA, Sept. 26–29, 2004, vol. 1, pp. 626–630.

[C149] Y. Rong, **S. A. Vorobyov**, and A. B. Gershman, "Linear OFDM precoder design for multiuser wireless communications using cutoff rate optimization," in *Proc. 12th European Signal Processing Conf., EUSIPCO'04*, Vienna, Austria, Sept. 7–10, 2004, pp. 2071–2074.

[C150] Y. Rong, **S. A. Vorobyov**, and A. B. Gershman, "A robust linear receiver for uplink multi-user MIMO systems based on probability-constrained optimization and second-order cone programming," in *Proc. 3rd IEEE Workshop Signal Array and Multichannel Signal Processing, IEEE SAM'04*, Barcelona, Spain, July 18–21, 2004, pp. 153–157.

[C151] **S. A. Vorobyov**, Y. Rong, N. D. Sidiropoulos, and A. B. Gershman, "Robust fitting of multilinear models with application to blind multiuser receivers: Iterative weighted median filtering approach," in *Proc. 5th IEEE Workshop Signal Processing Advances in Wireless Communications, IEEE SPAWC'04*, Lisboa, Portugal, July 11–14, 2004, pp. 478–482.

[C152] **S. A. Vorobyov**, Y. Rong, N. D. Sidiropoulos, and A. B. Gershman, "Robust iterative fitting of multilinear models based on linear programming," in *Proc. 29th IEEE Int. Conf. Acoustics, Speech, and Signal Processing, IEEE ICASSP'04*, Montreal, Quebec, Canada, May 17–21, 2004, vol. 2, pp. 113–116.

[C153] Y. Rong, **S. A. Vorobyov**, and A. B. Gershman, "A robust linear receiver for multi-access space-time block coded MIMO systems based on probability-constrained optimization," *Proc. IEEE 59th Vehicular Technology Conf., IEEE VTC'04 Spring*, Milan, Italy, May 17–19, 2004, vol. 1, pp. 118–122.

[C154] Y. Rong, **S. A. Vorobyov**, A. B. Gershman, and N. D. Sidiropoulos, "Deterministic Cramer-Rao bound for symmetric PARAFAC model with application to blind spatial signature estimation," in *Proc. 3rd IEEE Int. Symposium Signal Processing and Information Technology, IEEE ISSPIT'03*, Darmstadt, Germany, Dec. 14–17, 2003, pp. 111–114.

[C155] A. B. Gershman, Z.-Q. Luo, S. Shahbazpanahi, and **S. A. Vorobyov**, "Robust adaptive beamforming using worst-case performance optimization," **invited paper**, in *Proc. 37th Annual Asilomar Conf. Signals, Systems, and Computers*, Pacific Grove, California, USA, Nov. 9–12, 2003, vol. 2, pp. 1353–1357.

[C156] Y. Rong, **S. A. Vorobyov**, A. B. Gershman, and N. D. Sidiropoulos, "Blind spatial signature estimation using time-varying user power loading and parallel factor analysis," in *Proc. IEEE 58th Vehicular Technology Conf., IEEE VTC'03 Fall*, Orlando, USA, Oct. 4–9,

2003, vol. 1, pp. 79–83.

[C157] **S. A. Vorobyov**, A. B. Gershman, Z.-Q. Luo, and N. Ma, "Adaptive beamforming with joint robustness against signal steering vector errors and interference nonstationarity," in *Proc. 28th IEEE Int. Conf. Acoustics, Speech, and Signal Processing, IEEE ICASSP'03*, Hong Kong, Apr. 6–10, 2003, vol. 5, pp. 345-348; (Presented in *12th IEEE Workshop Statistical Signal Processing, IEEE SSP'03*, St. Louis, Missouri, USA, Sept. 28–Oct. 1, 2003).

[C158] **S. A. Vorobyov**, A. B. Gershman, and K. M. Wong, "Direction of arrival estimation in sparse arrays in the presence of unknown colored block-correlated noise field," in *Proc. 2nd IEEE Workshop Sensor Array and Multichannel Signal Processing, IEEE SAM'02*, Washington DC, USA, Aug. 4–6, 2002, pp. 204–208.

[C159] H. Tang, A. B. Gershman, K. M. Wong, and **S. A. Vorobyov**, "Blind adaptive beamforming for cyclostationary signals with robustness against cycle frequency mismatch," in *Proc. 2nd IEEE Workshop Sensor Array and Multichannel Signal Processing, IEEE SAM'02*, Washington DC, USA, Aug. 4–6, 2002, pp. 18–22.

[C160] **S. A. Vorobyov**, A. B. Gershman, and Z.-Q. Luo, "Robust adaptive beamforming using worst-case performance optimization via second-order cone programming," in *Proc. 27th IEEE Int. Conf. Acoustics, Speech, and Signal Processing, IEEE ICASSP'02*, Orlando, Florida, USA, May 13–17, 2002, vol. 3, pp. 2901–2904.

[C161] **S. A. Vorobyov**, A. B. Gershman, and Z.-Q. Luo, "An application of second-order cone programming to robust adaptive beamforming," in *Proc. 5th Int. Conf. Optimization: Techniques and Applications, ICOTA'2001*, Hong Kong, Dec. 15–17, 2001, vol. 1, pp. 308–315.

[C162] **S. A. Vorobyov** and A. Cichocki, "Self-excited oscillations and period doubling condition in Hopfield neural networks", in *Proc. 2nd IEEE Int. Conf. Control of Oscillations and Chaos, IEEE COC'2000*, St. Petersburg, Russia, July 5–7, 2000, vol. 1, pp. 197–200.

[C163] A. Cichocki and **S. A. Vorobyov**, "Application of ICA for automatic noise and interference cancellation in multisensory biomedical signals," **invited talk**, in *Proc. 2nd Int. Workshop Independent Component Analysis and Blind Signal Separation, ICA'2000*, Helsinki, Finland, June 19–22, 2000, pp. 621–626.

[C164] A. Cichocki, **S. A. Vorobyov**, and T. Rutkowski, "Nonlinear interference cancellation using neural networks," in *Proc. Int. Symposium Nonlinear Theory and its Applications, NOLTA'1999*, Hawaii, USA, Nov. 28–Dec. 2, 1999, vol. 2, pp. 875–878.

[C165] Ye. V. Bodyanskiy, **S. A. Vorobyov**, and A. Stephan, "Detection of NARMA-sequence order using recurrent artificial neural networks," in *Proc. European Control Conf., ECC'1999*, Karlsruhe, Germany, Aug. 31–Sept. 4, 1999.

[C166] Ye. V. Bodyanskiy and **S. A. Vorobyov**, "Artificial neural network for analysis of nonstationary sequences spectral decomposition," in *Proc. 6th Saint Petersburg Symposium Adaptive Systems Theory*, `dedicated to the memory of Ya.Z. Tsypkin`, St. Petersburg, Russia, Sept. 7–9, 1999, vol. 1, p. 218 & vol. 2, pp. 33–37.

[C167] **S. A. Vorobyov** and I. Skrypnik, "Atomic radial basis function network and its application in process fault diagnosis," in *Proc. 7th Turkish Symposium Artificial Intelligence & Neural Networks*, Ankara, Turkey, June 24–26, 1998, pp. 252–259.

[C168] Ye. V. Bodyanskiy, **S. A. Vorobyov**, and N. S. Lamonova "Artificial neural network for activation function nonlinearity parameter adjustment," in *Proc. 7th Turkish Symposium Artificial Intelligence and Neural Networks.*, Ankara, Turkey, June 24–26, 1998, pp. 244–251.

[C169] K.-H. Kerntopf, N. S. Lamanova, **S. A. Vorobyov**, and J. Polyanska, "Simple adaptive controller for objects with constraints," in *Proc. 42nd Int. Symposium Informatics and Automation in the Age of the Information Society*, Ilmenau, Germany, Sept. 22–25, 1997, vol. 3, pp. 667–672.

[C170] Ye. V. Bodyanskiy, **S. A. Vorobyov**, and I. P. Pliss, "Artificial neural network and learning algorithms for analysis of nonstationary multiharmonic stochastic sequences,"**invited talk**, in *Proc. Computer Modelling Conference*, Belgorod, Russia, Oct. 3–6, 1998, pp. 3–8 (in Russian).

[C171] **S. A. Vorobyov**, T. Naumec, and T. Putyatina, "Application of neural networks for adaptive control of nonlinear objects," in *Proc. 4th Int. Conf. Theory and Technology of Information Broadcasting, Telecasting and Processing*, Kharkov, Ukraine, Sept. 28–30, 1998, p. 155 (in Russian).

[C172] Ye. V. Bodyanskiy and **S. A. Vorobyov**, "Artificial neural network and learning algorithms for identification of nonlinear nonstationary stochastic objects," in *Proc. 5th Ukrainian Conf. Automatic Control, Avtomatika'1998*, vol. 3, Kyiv, Ukraine, May 15–18, 1998, pp. 351–355 (in Russian).

[C173] Ye. V. Bodyanskiy, **S. A. Vorobyov**, and N. S. Lamonova, "Mathematical modeling of fault detections in active systems using artificial neural networks," in *Proc. Conf. Ergonomics in Automobiles*, Kharkov, Ukraine, Nov. 18–20, 1997, pp. 17–19 (in Russian).

[C174] **S. A. Vorobyov** and N. S. Lamonova, "Adaptive abrupt changes detection in stochastic sequences using artificial neural networks," in *Proc. 3rd Int. Conf. Theory and Technology of Information Broadcasting, Telecasting and Processing"*, Tuapse, Russia, Sept. 16–18, 1997, p. 173 (in Russian).

[C175] **S. A. Vorobyov** and N. S. Lamonova, "Application of neural networks for fault detection," in *Proc. Int. Conf. Electronics and Youth in XXI Century*, Kharkov, Ukraine, Apr. 22–24, 1997, p. 243 (in Russian).

[C176] Ye. V. Bodyanskiy, **S. A. Vorobyov**, and I. P. Pliss, "Adaptive fault detection in dynamical systems with periodic output signal," in *Proc. 3rd Ukrainian Conf. Automatic Control, Avtomatika'1996*, Sevastopol, Ukraine, Sept. 9–14, 1996, vol. 1, pp. 58–59 (in Russian).

[C177] A. V. Belogurova, Ye. V. Bodyanskiy, **S. A. Vorobyov**, and I. P. Pliss, "A new method for ECG analysis based on fault detection in rhythm," in *Proc. Int. Conf. MicroCAD-Systems*, Kharkov, Ukraine, May 30–31, 1996, vol. 1, p. 29 (in Russian).

[C178] **S. A. Vorobyov** and S. A. Suharev, "Adaptive algorithm for filter forgetting factor control with application to maneuvered plane tracking," in *Proc. 22th Conf. Gagarin's Lectures*, Moscow, Russia, Apr. 2–6, 1996, vol. 4, pp. 41–42 (in Russian).

[C179] **S. A. Vorobyov**, "Generalized filtering of stochastic processes," in *Proc. 1st Int. Conf. Theory and Technology of Information Broadcasting, Telecasting and Processing*, Tuapse, Russia, Sept. 18–21, 1995, p. 57 (in Russian).

[C180] **S. A. Vorobyov**, "Generalized adaptive prediction of one-dimensional stochastic processes," in *Proc. 2nd Ukrainian Conf. of Young Scientists. Mathematics*, Kyiv, Ukraine, May 16–18, 1995, vol. 1, pp. 33–40 (in Russian).

[C181] Ye. V. Bodyanskiy and **S. A. Vorobyov**, "Adaptive forecasting of time series under structural uncertainty," in *Proc. 1st Ukrainian Conf. Automatic Control, Avtomatika'1994*, Kyiv, Ukraine, May 18–23, 1994, vol. 1, p.49 (in Russian).

Conference Tutorials, Invited Talks and Presentations

[P1] **S. A. Vorobyov** and M. I. Florea, "Accelerated majorization based optimization for large-scale signal processing: Some new theoretical concepts and applications," in *6th Int. Conf. Continuous Optimization, ICCOPT'2019*, Berlin, Germany, Aug. 5–8, 2019.

[P2] M. I. Florea, A. Basarab, D. Kouamé, and **S. A. Vorobyov**, "Computationally efficient spatially variant deconvolution in ultrasound imaging," in *IEEE Intern. Ultrasonics Symposium, IUS'2018*, Kobe, Japan, Oct. 22–25, 2018.

[P3] K. Upadhya, **S. A. Vorobyov**, and M. Vehkaperä, "Improved channel estimation for massive MIMO systems using hybrid pilots with pilot anchoring ," **invited talk**, in *21st Int. ITG Workshop on Smart Antennas, WSA'2017*, Berlin, Germany, Mar. 15–17, 2017.

[P4] **S. A. Vorobyov** and M. Lops, "Tradeoffs in MIMO radar," **tutorial**, in *8th IEEE Sensor Array and Multichannel Signal Processing Workshop, SAM'14*, A Coruna, Spain, June 22—25, 2014.

[P5] **S.A. Vorobyov**, "Robust adaptive beamforming: Evolution of approaches, analysis and comparison," **invited semi-plenary talk**, in *156th Meeting of the Acoustic Society of America*, Miami, FL, USA, Nov. 10–14, 2008; **Abstract** in *The Journal of the Acoustic Society of America*, vol. 124, no. 4, pt. 2, Oct. 2008, pp. 2522-–2523.

[P6] A. B. Gershman, Y. Rong, S. Shahbazpanahi, and **S. A. Vorobyov**, "From robust adaptive beamformers to robust multi-user MIMO receivers," **invited talk**, in *Workshop Robust Signal Processing and Stochastic Eigen-Analysis*, MIT, USA, Oct. 14–15, 2005.

[P7] **S. A. Vorobyov**, A. B. Gershman, and Z.-Q. Luo, "Robust MVDR beamforming using worst-case performance optimization," **invited talk**, in *10th Workshop Adaptive Sensor Array Processing*, Lincoln Laboratory, MIT, Boston, Cambridge, Massachusetts, USA, Mar. 12–14, 2002.

[P8] **S. A. Vorobyov** and Ye. V. Bodyanskiy, "Adaptive algorithm for state recognition of dynamical systems with periodic output signal," in *1st Int. Conf. Control of Oscillations and Chaos, COC'1997*, St. Petersburg, Russia, Aug. 27–29, 1997.

[P9] Ye.V. Bodyanskiy, **S. A. Vorobyov**, and A. Stephan, "Adaptive search of autoregression model order," in *15th IMACS World Congress Scientific Computation, Modeling and Applied Mathematics*, Berlin, Germany, Aug. 24–29, 1997.

Editorials and Technical Reports

[R1] H. Chen, **S. A. Vorobyov**, H. C. So, F. Ahmad, F. Porikli, "Introduction to the special issue on tensor decomposition for signal processing and machine learning," *IEEE J. Selected Topics in Signal Processing*, vol. 15, no. 3, pp. 433–437, Apr. 2021.

[R2] E. Aboutanios, A. Hassanien, A. El-Keyi, Y. Nasser, and **S. A. Vorobyov**, "Editorial: Advances in DOA estimation and source localization," *International Journal of Antennas and Propagation*, vol. 2017, Article ID 1352598, 3 pages.

[R3] **S. A. Vorobyov**, S. Cui, Y. C. Eldar, W.-K. Ma, and W. Utschick, "Editorial: Optimization techniques in wireless communications," *EURASIP Journal on Wireless Communications and Networking*, vol. 2009, Article ID 567416, 2 pages.

[R4] Ye. V. Bodyanskiy, **S. A. Vorobyov**, and N. S. Lamonova, "Fault detection in nonlinear dynamic systems using neural networks," Deposited with National Scientific Technical Library

of Ukraine, *Report No. 18*, Kyiv, Jan. 12, 1998, pp. 1–8 (in Russian).

[R5] G. A. Matusovskiy, O. M. Gorodinskiy, Ye. V. Bodyanskiy, I. P. Pliss, and **S.A. Vorobyov**, "Operational approach for organizations of interaction between jurists," *Ukrainian J. Jurisprudence Sciences*, No. 1(8), pp. 200–203, 1997 (in Ukrainian).

[R6] **S. A. Vorobyov** and I. P. Pliss, "Adaptive diagnosis of dynamic objects with harmonic output signal," Deposited with Ukrainian Institute of Scientific, Technical and Economic Information, *Report No. 130*, Kyiv, Nov. 18, 1996, pp. 1–14 (in Russian).

[R7] Ye. V. Bodyanskiy and **S. A. Vorobyov**, "Adaptive algorithm for fault detection in stochastic sequences," Deposited with National Scientific Technical Library of Ukraine, *Report No. 527*, Kyiv, Feb. 2, 1996, pp. 1–10 (in Russian).

[R8] **S. A. Vorobyov** and Ye. V. Bodyanskiy, "On one adaptive filtering algorithm," Deposited with National Scientific Technical Library of Ukraine, *Report No. 528*, Kyiv, Feb. 2, 1996, pp. 1–17 (in Russian).

[R9] **S. A. Vorobyov**, "Multi-step multi-model forecasting of stochastic sequences," Deposited with National Scientific Technical Library of Ukraine, *Report No. 1279*, Kyiv, May 26, 1995, pp. 1-10 (in Russian).

[R10] Ye. V. Bodyanskiy and **S. A. Vorobyov**, "An approach to adaptive forecasting of time series," Deposited with National Scientific Technical Library of Ukraine, *Report No. 1067*, Kyiv, June 3, 1994, pp. 1–17 (in Russian).

INVITED TALKS

(1) "Optimal robust adaptive beamforming design problems with nonconvex and/or convex uncertainty sets," IEEE Signal Processing Society Webinar, Sept. 24, 2024.

(2) "Twenty-five years of advances in beamforming: From convex and nonconvex optimization to learning techniques," IEEE Signal Processing Society Webinar, July 7, 2023.

(3) "Accelerated majorization based optimization for large-scale signal processing: Some new theoretical concepts and applications," 6th International Conference on Continuous Optimization, Mathematical Programming for Signal Processing, Berlin, Germany, Aug. 7, 2019.

(4) "MmWave channel estimation and tracking, hybrid beamforming," Ilmenau University of Technology, Inmenau, Germany, International Research Seminar on Mobile Communications speaker, Nov. 30, 2018.

(5) "Chanel estimation and pilot decontamination in massive MIMO," University of Alberta, Canada, Seminar on ECE Dept. invited speaker, Apr. 9, 2018.

(6) "An algebraic approach to rank-constrained semi-definite programs with sum-of-squares constraints," Helsinki region, Algorithms Seminar, Finland, Mar. 29, 2018.

(7) "Image compression via parallel compressed sensing with permutation and segmented compressed sampling," University of Toulouse, Toulouse, France, IRIT Seminar, Mar. 13, 2018.

(8) "mmWave communications: Channel estimation and tracking, hybrid beamforming," invited talk in DELTA Winter School, Ruka, Finland, Feb. 14, 2018.

(9) "Channel estimation and pilot decontamination in massive MIMO," invited talk in DELTA Winter School, Ruka, Finland, Feb. 14, 2018.

(10) "Tutorial on transmit beamspace MIMO radar," University of Texas at Austin, USA, Seminar on ECE Dept. invited speaker, Mar. 3, 2017.

(11) "Freedom of transmitter optimization in radar and communication and some related topics" University of Texas at Austin, USA, Seminar on ECE Dept. invited speaker, Mar. 1, 2017.

(12) "Transmit beamspace in MIMO radar," Universidad de Sevilla, Sevilla, Spain, International Seminar on Electronics and Telecommunications invited speaker, July 7, 2016.

(13) "Massive MIMO pilot decontamination," Universidad de Sevilla, Sevilla, Spain, International Seminar on Electronics and Telecommunications invited speaker, July 6, 2016.

(14) "Analog to information conversion," Universidad de Sevilla, Sevilla, Spain, International Seminar on Electronics and Telecommunications invited speaker, July 6, 2016.

(15) "Improved DOA estimation with small sample size and its subspace leakage analysis," Ilmenau University of Technology, Inmenau, Germany, International Research Seminar on Mobile Communications speaker, Dec. 19, 2014.

(16) "Advances in active MIMO sensing," distinguished lecturer in ELLIIT Distinguished Lecture Series, Linkoping University, Sweden, Oct. 13, 2014.

(17) "Subspace leakage analysis and frequency estimation with small sample size," invited lecturer in Mini-Workshop on Signal Processing and Big Data, Aalto University, Finland, Aug. 8, 2014.

(18) "Advances in MIMO radar," distinguished lecture in the State Key Laboratory of Acoustics, Chinese Academy of Sciences, Beijing, China, July 11, 2014.

(19) "Tradeoffs in MIMO radar," tutorial talk in Sensor Array and Multichannel Signal Processing Workshop given together with Prof. Marco Lops, A Coruna, Spain, June 22, 2014.

(20) "Robust beamforming for jammers suppression for MIMO radar," invited talk in a Session in Radar Conference, Cincinnati, OH, USA, May 20, 2014.

(21) "Efficiency and security analysis in multi-user communication systems," invited speaker in International seminars on Modern Methods in Systems Research, Kharkiv National University of Radio and Electronics, Kharkiv, Ukraine, Mar. 5, 2014.

(22) "Iterative root-MUSIC algorithm for DOA estimation," invited talk in a Session in Computational Advances in Multi-Sensor Adaptive Processing Workshop, The Friendly Island, Saint Martin, Dec. 16, 2013.

(23) "Sum rate maximization in multi-operator two-way relay networks with a MIMO AF relay via POTDC," invited talk in a Session in European Signal Processing Conference, Marrakesh, Morocco, Sept. 12, 2013.

(24) "Modern engineering is computational engineering," Installation Lecture at Aalto University, Espoo, Finland, Mar. 6, 2013.

(25) "Analog-to-information conversion," invited talk in GETA Winter School on Compressive Sensing, Ruka, Finland, Feb. 12, 2013.

(26) "Power control for collaborative beamforming in wireless sensor networks," invited talk in a Session in Asilomar Conference on Signals, Systems, and Computers, Pacific Grove, California, USA, Nov. 7, 2011.

(27) "Resource allocation games under power constraints," NOKIA, Helsinki, Finland, NOKIA International Research Seminar speaker, Aug. 12, 2011.

(28) "Segmented compressed sampling for analog-to-information conversion," Aalto University, Helsinki, Finland, International Research Seminar in Signal Processing speaker, Aug. 11, 2011.

(29) "Segmented compressed sampling for analog-to-information conversion," Ilmenau University

of Technology, Inmenau, Germany, International Research Seminar on Mobile Communications speaker, July 14, 2011.

(30) "Cooperative resource allocation games under spectral mask and total power constraints," Ilmenau University of Technology, Ilmenau, Germany, International Research Seminar on Mobile Communications speaker, Dec. 15, 2010.

(31) "Transmit energy focusing in MIMO radar aka phased-MIMO radar: beampattern analysis, SINR improvement, and direction finding," Ilmenau University of Technology, Ilmenau, Germany, International Research Seminar on Mobile Communications speaker, Dec. 8, 2010.

(32) "Why the phased-MIMO radar outperforms the phased-array and MIMO radars," invited speaker in the Session on Waveform diversity in European Signal Processing Conference, Aalborg, Denmark, Aug. 26, 2010.

(33) "Transmit energy focusing in MIMO radar aka phased-MIMO radar and its use for direction finding," invited speaker in Aalborg University, Aalborg, Denmark, Aug. 23, 2010.

(34) "Multi-link collaborative beamforming with sidelobe control capabilities in wireless sensor networks," invited speaker in International seminars on Modern Methods in Systems Research, Kharkiv National University of Radio and Electronics, Kharkiv, Ukraine, Aug. 17, 2010.

(35) "Direction finding for MIMO radar with colocated antennas using transmit beamspace preprocessing," invited speaker in the Session on MIMO radar in CAMSAP'09 Conference, Aruba, Dutch Antilles, Dec. 15, 2009.

(36) "Phased MIMO radar: A tradeoff between phased-array and MIMO radar," University of Waterloo, Waterloo, Ontario, Canada, Nortel Networks Distinguished Seminar Series speaker, Dec. 11, 2009.

(37) "Phased MIMO radar," Darmstadt University of Technology, International Research Seminar on Communication Systems speaker, Jun. 17, 2009.

(38) "Cooperative games in multi-user systems: Nash bargaining for overall benefits," Kharkiv National University of Radioelectronics, Faculty of Computer Science, International Research Seminar on Computer Science speaker, Dec. 25, 2008.

(39) "Robust estimation of parameters," Kharkiv National University of Radioelectronics, Faculty of Computer Science, International Research Seminar on Computer Science speaker, Dec. 19, 2008.

(40) "Robust adaptive beamforming: Evolution of approaches, analysis and comparison," Keynote speaker in the Session on Underwater Acoustic and Signal Processing in Acoustics: Robust Array Processing in 156th Meeting of the Acoustic Society of America, Miami, Nov. 12, 2008.

(41) "Resource allocation in wireless networks via convex optimization," the University of Twente, Twente, Netherland, Colloquium speaker, June 16, 2008.

(42) "Resource allocation in wireless networks," Ilmenau University of Technology, Inmenau, Germany, International Research Seminar on Mobile Communications speaker, June 13, 2008.

(43) "Blind unitary prewhitening," Ilmenau University of Technology, Inmenau, Germany, International Research Seminar on Mobile Communications speaker, June 13, 2008.

(44) "Optimization in communication networks: from convex to non-convex approaches with practical applications," Royal Institute of Technology (KTH), Stockholm, Sweeden, International Research Seminar speaker, Oct. 18, 2007.

(45) "Multi-linear data arrays: Algorithms and applications," University Collage London, London, UK, Colloquium speaker, June 28, 2007.

(46) "Robust adaptive beamforming," Joint Reserach Institute on Signal Processing Heriot-Watt University and the University of Edinburgh, Edinburgh, Scotland, Colloquium speaker, June 4, 2007.

(47) "Precoder design for space-time coded MIMO systems with correlated Rayleigh fading channels," Ilmenau University of Technology, Inmenau, Germany, International Research Seminar on Mobile Communications speaker, May 24, 2007.

(48) "Performance and capacity analysis for OSTBC MIMO systems with receive antenna selection," Ilmenau University of Technology, Inmenau, Germany, International Research Seminar on Mobile Communications speaker, May 24, 2007.

(49) "Robust adaptive beamforming and applications," University of Waterloo, Waterloo, Ontario, Canada, Nortel Networks Distinguished Seminar Series speaker, Mar. 7, 2007.

(50) "Robust adaptive beamforming," Dresden University of Technology, Dresden, Germany, Colloquium speaker, Mar. 2, 2007.

(51) "Adaptive OFDM techniques with one-bit-per-subcarrier channel state feedback," McMaster University, Hamilton, Ontario, Canada, Dept. of Electrical and Computer Engineering Colloquium speaker, Nov. 16, 2006.

(52) "Parameter estimation in linear models based on outage probability minimization," Invited speaker in Asilomar'06 Conference, Pacific Grove, California, USA, Oct. 30, 2006.

(53) "Robust minimum variance adaptive beamformers and multiuser MIMO receivers: From worst-case to probabilistically constrained designs," invited speaker in the Session on Optimization in Signal Processing in ICASSP'06 Conference, Toulouse, France, May 15, 2006.

(54) "Probabilistically-constrained estimators," Technion, Haifa, Israel, Dept. of Electrical Engineering Colloquium speaker, Feb. 9, 2005.

(55) "Application of ICA for automatic noise and interference cancellation in multisensory biomedical signals," invited speaker in ICA'2000 Conference, Helsinki, Finland, Jun. 19, 2000.

TEACHING EXPERIENCE

(1) *Convex Optimization*; Falls 2022, 2023, 2024; Instructor; Dept. of Information and Communications Engineering, Aalto University, Espoo, Finland; (ELEC-E5424 graduate course; 33 participants in 2022; 38 participants in 2023; 35 participants in 2024).

(2) *Large Scale Data Analysis*, Winter 2016, 2017, 2019, 2020, 2021, 2022, 2023, 2024; Instructor; Dept. of Information and Communications Engineering, Aalto University, Espoo, Finland; (ELEC-E5490 graduate course; started in 2016).

(3) *Introduction to Estimation, Detection, and Learning*; Winter 2020, 2021, 2022; Falls 2023, 2024; Instructor; Dept. of Information and Communications Engineering, Aalto University, Espoo, Finland; (ELEC-C5310 undergraduate course; started in 2020, 26 participants in 2023, 34 participants in 2024).

(4) *Convex Optimization I and II*, Falls 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021; Instructor; Dept. of Signal Processing and Acoustics, Aalto University, Espoo, Finland; (S-88.4400 in years 2013 and 2014 and ELEC-E5420 since 2015 graduate course; 14 participants in 2013, 11 participants in 2014, 14 participants in 2015, 28 participants in 2016, 17 partic-

ipants in 2017, 31 participants in 2018, 48 participants in 2019, 34 participants in 2020, 37 participants in 2021).

(5) *Convex Optimization*; Winters 2011, 2012; Instructor; Dept. of Electrical and Computer Engineering, University of Alberta, Edmonton, AB, Canada; (ECE740 graduate course; 9 participants in 2011 and 10 participants in 2012). Evaluations: 4.8 out of 5.
Also taught in Ilmenau University of Technology, Germany in Summer 2011 (17 participants)

(6) *Statistical and Adaptive Signal Processing*; Winters 2008, 2009, and 2010; Instructor; Dept. of Electrical and Computer Engineering, University of Alberta, Edmonton, AB, Canada; (ECE740 graduate course; 12 participants in 2008, 12 participants in 2009, 17 participants in 2010). Evaluations: 4.8 out of 5.

(7) *Discrete Time Signals and Systems*; Falls 2010, 2011, 2012; Instructor; Dept. of Electrical and Computer Engineering, University of Alberta, Edmonton, AB, Canada; (EE338 undergraduate course; 50 participants in 2010 and 53 participants in 2011). Evaluations: 4.6 out of 5.

(8) *Digital Communications*; Winters 2007, 2008, and 2009; Instructor; Dept. of Electrical and Computer Engineering, University of Alberta, Edmonton, AB, Canada; (EE485 undergraduate course; 14 participants in 2007, 15 participants in 2008, 17 participants in 2009). Evaluations: 4.1 out of 5.

(9) *Numerical Analysis for Electrical and Computer Engineers*; Winters 2008, 2009, 2010, 2011, and 2012; Instructor; Dept. of Electrical and Computer Engineering, University of Alberta, Edmonton, AB, Canada; (EE231 undergraduate course; 79 participants in 2008, 81 participants in 2009, 80 participants in 2010, 79 participants in 2011, and 75 participants in 2012). Evaluations: 4.1 out of 5.

(10) *Digital Signal Processing*; Fall 2007; Instructor; Dept. of Electrical, Electronic, and Computer Engineering, Heriot-Watt University, UK; (graduate course; 55 participants).

(11) *Computer Hardware*; Fall 2007; Instructor; Dept. of Electrical, Electronic, and Computer Engineering; Heriot-Watt University, UK; (graduate course; 11 participants).

(12) *Technical Communication in Computer and Electrical Engineering*; Fall 2006; Second Instructor; Dept. of Electrical and Computer Engineering, University of Alberta, Edmonton, AB, Canada; (EE200 undergraduate course; 30 participants).

(13) *MIMO Communication and Space-Time Coding*; Fall 2005; Second Instructor, Communication Systems Group, Darmstadt University of Technology, Darmstadt, Germany; (graduate course; 17 participants).

(14) *Advanced Algorithms for Smart Antenna Systems*; Spring 2005 and 2006; Instructor; Communication Systems Group, Darmstadt University of Technology, Darmstadt, Germany; (graduate course; 12 participants in 2005 and 14 participants in 2006).

(15) *Decision Making Theory*; Fall 1998; Instructor; Dept. of Artificial Intelligence and Information Systems, Kharkov National University of Radioelectronics, Kharkov, Ukraine; (graduate course; 24 participants).

(16) *Introduction to Programming*; Fall 1998; Instructor; Dept. of Electrotechnics, Kharkov State Automobiles and High-ways University, Kharkov, Ukraine; (undergraduate course; about 150 participants).

(17) *Electrotechnics and Electrical Machines*; Spring 1998; Instructor; Dept. of Electrotechnics, Kharkov State Automobiles and High-ways University, Kharkov, Ukraine; (undergraduate course; 75 participants).

(18) *Automatic Control*; Fall 1997; Instructor; Dept. of Technical Cybernetics, Kharkov National University of Radioelectronics, Kharkov, Ukraine; (undergraduate course; 79 participants).

(19) *Real-Time Control Systems*; Spring 1997; Instructor; Dept. of Technical Cybernetics, Kharkov National University of Radioelectronics, Kharkov, Ukraine; (graduate course; 22 participants).

(20) *Exploitation of Control Systems*; Fall 1996; Second Instructor; Dept. of Technical Cybernetics, Kharkov National University of Radioelectronics, Kharkov, Ukraine; (graduate course; 22 participants).

STUDENTS ADVISED

Ph.D.

(1) **Kameswara Atchutaram Kocharlakota**, Doctor of Science, 01/18 – 12/24, "Resource Optimization for Massive MIMO Systems," Aalto University, Finland.

(2) **Endrit Dosti**, Doctor of Science, 09/19 – 09/24, "Advances and New Applications of Spectral Analysis," Aalto University, Finland.

(3) **Majdoddin Esfandiari**, Doctor of Science, 02/19 – 10/23, "Advances and New Applications of Spectral Analysis," Aalto University, Finland.

(4) **Farshad G. Veshki**, Doctor of Science, 05/19 – 06/23, "Methods for Convolutional Sparse Coding and Coupled Feature Learning with Applications to Image Fusion," Aalto University, Finland.

(5) **Mihai Iulian Florea**, Doctor of Science, 11/14 – 10/18, "Constructing Accelerated Algorithms for Large-Scale Optimization: Framework, Algorithms, and Applications," Aalto University, Finland.

(6) **Yongzhe Li**, Doctor of Science, 10/14 – 10/18, "Advances and New Opportunities in MIMO Radar: Theoretical Analysis and Algorithms," Aalto University, Finland.

(7) **Karthik Upadhya**, Doctor of Science, 09/14 – 08/18, "Channel Estimation in Large-Scale Multi-Antenna Systems for 5G and Beyond: Novel Pilot Structures and Algorithms," Aalto University, Finland.

(8) **Mahdi Shaghaghi**, Ph.D., 09/09 – 11/14, "Parameter Estimation in Low-Rank Models from Small Sample Size and Undersampled Data: DOA and Spectrum Estimation," University of Alberta, Canada.

(9) **Jie Gao**, Ph.D., 09/09 – 12/13, "Efficiency and Security Analysis in Multi-User Wireless Communication Systems: Cooperation, Competition and Malicious behavior," (co-supervised with Prof. Hai Jiang), University of Alberta, Canada.

(10) **Arash Khabbazibasmenj**, Ph.D., 05/09 – 07/13, "Generalized Quadratically Constrained Quadratic Programming and Its Applications in Array Processing and Cooperative Communications," University of Alberta, Canada.

(11) **Omid Taheri**, Ph.D., 09/07 – 11/12, "Signal Processing for Sparse Discrete Time Systems," University of Alberta, Canada.

(12) **Mohammed F.A. Ahmed**, Ph.D., 09/06 – 04/11, "Collaborative Beamforming for Wireless Sensor Networks," University of Alberta, Canada.

(13) **Zengmao Chen**, Ph.D., 11/07 – 04/11, "Interference Modelling and Management for Cogni-

tive Radio Networks," (co-supervised with Profs. Cheng-Xiang Wang and John Thompson), Hariot-Watt University and University of Edinburgh, U.K.

(14) **Yue Rong**, Ph.D., 11/02 – 11/05, "Advanced Algorithms for Multi-Antenna and Multi-Carrier Communication Systems," (co-supervised with Prof. A.B. Gershman), Darmstadt University of Technology, Germany.

M.Sc.

(1) **Juho Kuikka**, M.Sc. 08/23 – 07/24, "Generative Multi-task Learning for the Air Channel via Hierarchical GANs," (co-supervised with Prof. E. Ollila), Aalto University, Finland.

(2) **Nicolas Padron**, M.Sc. 08/23 – 07/24, "Soil Moisture Estimation with GNSS Interferometric Reflectometry and Multispectral Satellite Model," Aalto University, Finland.

(3) **Markus Yli-Niemi**, M.Sc. 09/17 – 11/18, "Computationally Efficient Algorithms for Radar Signal Design in Spectrally Busy Environment," Aalto University, Finland.

(4) **Farshad G. Veshki**, M.Sc. 09/16 – 09/18, "Supervised Coupled Dictionary Learning for Multi-Focus Image Fusion," (co-supervised with Prof. M. Elmusrati of University of Vaasa), Aalto University, Finland.

(5) **Matthew W. Morency**, M.Sc. 08/13 – 08/15, "Algebraic and Adaptive MIMO Radar," Aalto University, Finland.

(6) **Yongzhe Li**, M.Sc. 03/13 – 10/14, "Ambiguity Function of the Transmit Beamspace-Based MIMO Radar," Aalto University, Finland.

(7) **Hao Fang**, M.Sc. 05/11 – 06/13, "Parallel Sampling and Reconstruction with Permutation in Multidimensional Compressed Sensing," (co-supervised with Prof. H. Jiang), University of Alberta, Canada.

(8) **Xiaowen Gong**, M.Sc. 09/08 – 07/10, "Joint Bandwidth and Power Allocation in Wireless Communication Networks," (co-supervised with Prof. C. Tellambura), University of Alberta, Canada.

(9) **Jie Gao**, M.Sc. 09/07 – 08/09, "Cooperative Linear Precoding for Spectrum Sharing in Multi-User Wireless Systems: Game Theoretic Approach," (co-supervised with Prof. H. Jiang), University of Alberta, Canada.

(10) **Khoa T. Phan**, M.Sc. 05/06 – 05/08, "Resource Allocation in Wireless Networks via Convex Programming," (co-supervised with Prof. C. Tellambura), University of Alberta, Canada.

(11) **Liang Li**, M.Sc., 5/06 - 12/06, "Adaptive MIMO Systems with Low-Rate Feedback" (co-supervised with Prof. A.B. Gershman), Darmstadt University of Technology, Germany.

(12) **Yasser Karanouh**, M.Sc., 11/05 - 11/06, "Robust Algorithms for Broadcasting with Imperfect CSI" (co-supervised with Prof. A.B. Gershman), Darmstadt University of Technology, Germany.

(13) **Muhammad Waseem**, M.Sc., 10/05 - 9/06, "Joint Cannel Estimation and Decoding in MIMO Systems" (co-supervised with Prof. A.B. Gershman), Darmstadt University of Technology, Germany.

(14) **Yue Rong**, M.Sc., 5/02 – 10/03, "Blind Signal Spatial Signature Estimation Using PARAFAC Model" (co-supervised with Prof. A.B. Gershman), Duisburg-Essen University, Germany.

PROJECTS

(1) "Towards Scalable and AI-based Solutions for Beyond 5G Radio Access Networks", PI; NSF and Academy of Finland Grant, USA and Finland, (557,647 EUR), Period: 1/23 – 12/25

(2) "Massive and Sparse Antenna Array Processing for Millimeter-wave Communications", PI; Academy of Finland Grant, Finland, (544,008 EUR), Period: 1/19 – 12/21.

(3) "Multiple Waveforms Design for Radar Co-existance", PI; SAAB Funded, Sweden-Finland, (57,000 EUR), Period: 06/18 – 08/18.

(4) "Transmit Beamspace for Active Compressive Sensing and Communication with Multiple Waveforms", PI; Academy of Finland Grant, Finland, (458,301 EUR), Period: 9/16 – 8/20.

(5) "Topics in MIMO Radar", CI, (PI: Prof. V. Koivunen); Finnish Defence Agency, Finland, Period: 9/14 – 12/15.

(6) "Phased-MIMO Radar", PI; NSERC Discovery Grant - Individual, Canada, (125,000 CAD), Period: 4/12 – 3/17 (interrupted 8/14).

(7) "Phased-MIMO Radar: Transmit Beamspace, Transmit-Receive Beamforming, Parameter Estimation, and Applications", PI; NSERC Accelerator Supplements - Individual, Canada, (120,000 CAD), Period: 4/12 – 3/15 (interrupted 8/14).

(8) "2D Sparse Array Optimization Algorithms for Multiple Transmit Beam and Multiple Receive Beam Radar", PI; Samsung Thales Co., Ltd., Korea, (148,000 CAD), Period: 5/12 – 7/14.

(9) "Robust Adaptive Beamforming for Multi-Antenna Systems", PI; NSERC Discovery Grant - Individual, Canada, (115,000 CAD), Period: 4/07 – 3/12.

(10) "Robust Parameter Estimation Using Stochastic Programming and Applications for Wireless Systems", PI; Alberta Ingenuity New Faculty Award, Canada, (300,000 CAD), Period: 9/07 - 8/11.

(11) "Intelligent Signal Processing for Ubiquitous High-Capacity, Heterogeneous, Scalable Wireless Networks", CI (and 4 others); NSERC Strategic Project, (589,500 CAD - 20%), Period: 11/07 - 10/10.

(12) "Space-Time Processing for Smart Antennas in Wireless Communications", CI, (PI: Prof. A.B. Gershman); Alexander von Humboldt Foundation and German Ministry of Education and Research, joint project with Dept. of Communication Systems, Duisburg-Essen University and Fraunhofer Institute, Duisburg, Germany; Period: 3/02 –5/05.

PROFESSIONAL SOCIETIES AND SERVICE

Memberships: *IEEE Member* since 2002, elevated to *Senior Member* in 2005, and *Fellow* in 2018
EURASIP Member since 2005
Professional Engineer of Alberta, Canada since 2009.

IEEE Technical Committee Member:

Signal Processing for Communication and Networking (SPCOM) Technical Committee, IEEE Signal Processing Society (2010 - 2016).

Sensor Array and Multi-Channel Signal Processing (SAM) Technical Committee, IEEE Signal Processing Society (2007 - 2012)

Editorship:

Senior Area Editor: IEEE Signal Processing Letters (2016 - 2020)

Associate Editor: IEEE Trans. Signal Processing (2006 - 2010)
IEEE Signal Processing Letters (2007 - 2009)

Leading Guest Editor: Special Issue on "Optimization Techniques in Wireless Communications" of EURASIP Journal on Wireless Communications and Networking, 2009

Guest Editor: Special Issue on "Advances in DOA Estimation and Source Localization" of International Journal of Antennas and Propagation, 2017

Guest Editor: Special Issue on "Tensor Decomposition for Signal Processing and Machine Learning" of IEEE Journal on Selected Topics in Signal Processing, 2020-2021

Conference Organizer:

Technical co-Chair, IEEE 4th Int. Workshop on Computational Advances in Multi-Sensor Adaptive Processing (CAMSAP), San Juan, Puerto Rico, Dec. 13–16, 2011.

Track Chair, 45th Annual Asilomar Conf. Signals, Systems, and Computers, Pacific Grove, California, USA, Nov. 6–9, 2011.

Tutorial Chair, 10th Int. Sympos. Wireless Commun. Systems (ISWCS), Ilmenau, Germany, Aug. 27–30, 2013.

Technical co-Chair, IEEE 10th Sensor Array and Multichannel Signal Processing Workshop (SAM), Manchester, UK, 2018.

General co-Chair, 31st European Signal Processing Conference (EUSIPCO), Helsinki, Finland, Sept. 4–8, 2023.

Technical co-Chair, IEEE 9th Int. Workshop on Computational Advances in Multi-Sensor Adaptive Processing (CAMSAP), Los Suenos, Costa Rico, Dec. 10–13, 2023.

Special Session Organizer: Special session on Convex Optimization Techniques for Beamforming and MIMO Signal Processing, 1st IEEE Int. Workshop on Computational Advances in Multi-Sensor Adaptive Processing (IEEE CAMSAP'05), Dec. 13-15, Puerto Vallarta, Mexico; Special session on Global Optimization and Applications to Signal Processing and Communications, 2nd IEEE Int. Workshop on Computational Advances in Multi-Sensor Adaptive Processing (IEEE CAMSAP'07), Dec. 12-14 2007, Virgin Islands, USA.

Reviews for Funding Organizations: Natural Sciences and Engineering Research Council of Canada (NSERC); Israel Science Foundation (ISF), Israel; Belgian Reserach Council; Chilean National Science and Technology Commission (CONICYT); The Research Foundation – Flanders (FWO), Belgium; The Icelandic Research Fund, Iceland.

Book Reviews: for Cambridge Press.

Reviewer: for IEEE Proceeding; IEEE Signal Processing Magazine; IEEE Transactions on Signal Processing; IEEE Signal Processing Magazine; IEEE Journal of Selected Topics in Signal Processing; IEEE Transactions on Audio, Speech and language Processing; IEEE Signal Processing Letters; EURASIP Signal Processing; Journal of Applied Signal Processing; Digital Signal Processing; IEEE Transactions on Aerospace and Electronic Systems; IEEE Aerospace and Electronics Systems Magazine; IEEE Transactions on Communications; IEEE Transactions on Wireless Communications; IEEE Journal of Selected Areas in Communications; IEEE Communications Letters; IEEE Transactions on Multimedia; IEEE Transactions on Ultrasonic, Ferroelectric, and Frequency Control; IEEE Transactions on Green Communications and Networking; Elsevier Neurocomputing;

EURASIP Journal on Wireless Communications and Networking; IEEE Transactions on Vehicular Technology; IEEE Transactions on Neural Networks; IEEE Transactions on Geoscience and Remote Sensing; IET Signal Processing; Elsevier International Journal of Electronics and Communications; Journal of the Acoustical Society of America; Neurocomputing.

Conference Program/Technical Committee Member: IEEE CAMSAP 2005, Puerto Vallarta, Mexico; IEEE IWCMC, 2007, Honolulu, Hawaii, USA; IEEE CAMSAP 2007, Virgin Islands, USA; 21st IEEE CCECE 2008, Niagara Falls, Ontario, Canada; 5th IEEE SAM 2008, Darmstadt, Germany; IEEE IWCMC 2008, Chania, Crete Island, Greece; IEEE CCECE 2009, St. Johns Island, Canada; IEEE IWCMC 2009, Leipzig, Germany; IEEE CAMSAP 2009, Aruba, Dutch Antilles; 25th Queen's Biennial Symposium on Communications, 2010, Kingston, ON, Canada; IEEE ICASSP 2011 Prague, Czech Republic; IEEE ICC 2011, Kyoto, Japan; IEEE IWCMC 2011, Istambul, Turkey; IEEE PIMRC 2011, Toronto, ON, Canada; IEEE SPAWC 2011, San Francisco, CA, USA; IEEE GLOBECOM 2011, Asilomar 2011, Asilomar, CA, USA; 4th IEEE CAMSAP 2011, San Juan, Puerto Rico; IEEE ICC 2012, Ottawa, Canada; IEEE WCNC 2012, Paris, France; 37th IEEE ICASSP 2012, Kyoto, Japan; IEEE VTC 2012, Quebec City, Canada; IEEE SAM 2012, Hoboken, NJ, USA; IEEE SPAWC 2012, Cesme, Turkey; IEEE CWIT 2013, Toronto, Ontario, Canada; IEEE Radar Conference 2013, Ottawa, Ontario, Canada; 38th IEEE ICASSP 2013, Vancouver, British Columbia, Canada; 14th IEEE SPAWC 2013, Darmstadt, Germany; 52nd IEEE Conf. Decision and Control 2013, Florence, Italy; 21st EUSIPCO, Marrakech, Morocco, 2013; 5th IEEE CAMSAP, The Friendly Island, Saint Martin, 2013; 39th IEEE ICASSP 2014, Florence, Italy; IEEE CCECE 2014, Toronto, Canada; 22nd EUSIPCO 2014, Lisbon, Portugal; 8th IEEE SAM 2014, A Coruna, Spain; 15th IEEE SPAWC 2014, Toronto, Ontario, Canada; IEEE BlackSeaCom 2014, Kishenev, Moldova; IEEE Globecom 2014, Austin, TX, USA; IEEE ICC 2015, London, UK; 40th IEEE ICASSP 2015, Brisbane, Australia; IEEE ICUWB 2015, Montreal, Canada; IEEE Globecom 2015, San Diego, CA, USA; 3rd Intern. Workshop Compressed Sensing Theory and its Applications to Radar, Sonar and Remote Sensing 2015, Pisa, Italy; IEEE SPAWC 2015, Stockholm, Sweden; IEEE GlobalSIP 2015, Orlando, Florida, USA; IEEE ICASSP 2016, Shanghai, China; AusCTW 2016, Melbourne, Victoria, Australia; IEEE ICC 2016, Kuala Lumpur, Malaysia; IEEE Globecom 2016, Washington DC, DC, USA; IEEE ICASSP 2017, New Orleans, USA; IEEE ICC 2017, Paris, France; IEEE SPAWC 2017, Sapporo, Japan; IEEE GLOBECOM 2017, Singapore; IEEE CAMSAP 2017, Caracao, Dutch Antilles; IEEE ICC 2018, Kansas City, MO, USA; IEEE ICASSP 2018, Calgary, Alberta, Canada; IEEE SAM 2018, Sheffield, UK; 26th EUSIPCO 2018, Rome, Italy; IEEE SPAWC 2018, Kalamata, Greece; and other conferences.

Conference Session Chair: IEEE ISSPIT 2003, Darmstadt, Germany; 60th IEEE VTC 2004 Fall, Los Angeles, CA; IEEE CAMSAP 2005, Puerto Vallarta, Mexico; IEEE CAMSAP 2007, Virgin Islands, USA; IEEE ICASSP 2007 Hawaii, USA; IEEE CCECE 2008, Niagara Falls, Canada; IEEE ICASSP 2008, Las Vegas, USA; IEEE CAMSAP 2010, Aruba Island, the Netherlands; IEEE ICASSP 2011, Prague, Czech Republic; Asilomar 2011, Asilomar, CA, USA; 38th IEEE ICASSP 2013, Vancouver, British Columbia, Canada; 5th IEEE CAMSAP, The Friendly Island, Saint Martin, 2013; 39th IEEE ICASSP 2014, Florence, Italy; IEEE BlackSeaCom 2014, Kishenev, Moldova; 8th IEEE SAM 2014, A Coruna, Spain; 48th Asilomar 2014, Pacific Grove, California, USA; 6th IEEE CAMSAP 2015, Cancun, Mexico; 41st IEEE ICASSP 2016, Shanghai, China; IEEE ICASSP 2017, New Orleans, USA; and other conferences.

Reviewer for Conferences: IEEE ICASSP 2002, Orlando, FL; IEEE ICASSP 2003, Hong Kong; IEEE ISSPIT 2003, Darmstadt, Germany; IEEE ICASSP 2004, Montreal, Canada; IEEE GLOBECOM 2004, Dallas, TX; EUSIPCO 2004, Vienna, Austria; IEEE ICASSP 2005, Philadelphia, PN; IEEE SPAWC 2005, New York, NY; IEEE VTC 2005 Fall, Dallas, TX; IEEE CAMSAP 2005,

Puerto Vallarta, Mexico; IEEE ICASSP 2006, Toulouse, France, IEEE ICC 2006, Istanbul, Turkey; EUSIPCO 2006, Florence, Italy; IEEE VTC 2006 Fall, Montreal, Quebec, Canada; IEEE PIMRC 2006, Helsinki, Finland; ICARCV 2006, Singapore; ISSPA 2007, Sharjah, United Arab Emirates; IEEE ICASSP 2007, Hawaii, USA; EUSIPCO 2007, Poznan, Poland; IEEE IWCMC 2007, Honolulu, Hawaii, USA; ISCIT 2008, Sydney, Australia; IEEE ICC 2008, Beijing, China; EUSIPCO 2008, Lausanne, Switzerland; IEEE IWCMC 2008, Crete Island, Greece; IEEE GLOBECOM 2008, New Orleans, LA, USA; IEEE ISCAS 2009, Taipei, Taiwan; IEEE CCECE 2009, St. Johns Island, Canada; IEEE IWCMC 2009, Leipzig, Germany; IEEE ICASSP 2009, Taipei, Taiwan; IEEE CAMSAP 2009, Aruba, Dutch Antilles; IEEE GLOBECOM 2009, Honolulu, Hawaii, USA; Queen's Biennial Symposium on Communications 2010, Kingston, ON, Canada; IEEE ICC 2010, Cape Town, South Africa; IEEE WCNC 2010, Sydney, Australia; IEEE ISCAS, 2010, Paris, France; IEEE VTC 2010, Taipei, Taiwan; IEEE ICASSP 2010, Dallas, TX, USA; IEEE SECON 2010, Boston, Massachusetts, USA; IEEE GLOBECOM, 2010, Miami, Florida, USA; IEEE ICASSP 2011, Prague, Czech Republic; IEEE ICC 2011, Kyoto, Japan; IEEE PIMRC 2011, Toronto, ON, Canada; IEEE SPAWC 2011, San Francisco, CA, USA; Asilomar 2011, Asilomar, CA, USA; 4th IEEE CAMSAP 2011, San Juan, Puerto Rico; IEEE IWCMC 2011, Istambul, Turkey; IEEE GLOBECOM 2011, Houston, TX, USA; IEEE ICC 2012, Ottawa, Canada; IEEE WCNC 2012, Paris, France; ACC 2012, Montreal, Canada, IEEE ICC 2012, Ottawa, Canada, IEEE WCNC 2012, Paris, France, 37th IEEE ICASSP 2012, Kyoto, Japan; IEEE VTC 2012, Quebec City, Canada; IEEE SAM 2012, Hoboken, NJ, USA; IEEE SPAWC 2012, Cesme, Turkey; IEEE CWIT 2013, Toronto, Ontario, Canada; IEEE Radar Conference 2013, Ottawa, Ontario, Canada; 38th IEEE ICASSP 2013, Vancouver, British Columbia, Canada; 14th IEEE SPAWC 2013, Darmstadt, Germany; 52nd IEEE Conf. Decision and Control 2013, Florence, Italy; 21st EUSIPCO, Marrakech, Morocco, 2013; 5th IEEE CAMSAP, The Friendly Island, Saint Martin, 2013; 39th IEEE ICASSP 2014, Florence, Italy; IEEE CCECE 2014, Toronto, Canada; 22nd EUSIPCO 2014, Lisbon, Portugal; 8th IEEE SAM 2014, A Coruna, Spain; 15th IEEE SPAWC 2014, Toronto, Ontario, Canada; IEEE BlackSeaCom 2014, Kishenev, Moldova; IEEE Globecom 2014, Austin, TX, USA; IEEE ICC 2015, London, UK; IEEE ICASSP 2015, Brisbane, Australia; IEEE ICUWB 2015, Montreal, Canada; IEEE Globecom 2015, San Diego, CA, USA; CoSeRa 2015, Pisa, Italy; IEEE SPAWC 2015, Stockholm, Sweden; IEEE GlobalSIP 2015, Orlando, Florida, USA; IEEE ISSPIT 2015, Abu Dhabi, UAE; IEEE ICASSP 2016, Shanghai, China; AusCTW 2016, Melbourne, Victoria, Australia; IEEE ICC 2016, Kuala Lumpur, Malaysia; IEEE Globecom 2016, Washington DC, DC, USA; IEEE ICCSN 2016, Beijing, China; IEEE ICASSP 2017, New Orleans, USA; IEEE ICC 2017, Paris, France; IEEE SPAWC 2017, Sapporo, Japan; IEEE GLOBECOM 2017, Singapore; IEEE CAMSAP 2017, Caracao, Dutch Antilles; IEEE ICC 2018, Kansas City, MO, USA; IEEE ICASSP 2018, Calgary, Alberta, Canada; IEEE SAM 2018, Sheffield, UK; 26th EUSIPCO 2018, Rome, Italy; IEEE SPAWC 2018, Kalamata, Greece; IEEE ICC 2019, Shanghai, China; IEEE ICASSP 2019, Brighton, UK; IEEE SPAWC 2019, Cannes, France; 27th EUSIPCO 2019, A Coruna, Spain; IEEE CAMSAP 2019, Guadeloupe, West Indies; IEEE GlobalSIP 2019, Ottawa, Canada; IEEE ICASSP 2020, Barcelona, Spain; 28th EUSIPCO 2020, Amsterdam, Netherlands; IEEE Radar Conf. 2020, Florence, Italy; Asilomar CSSC 2020, Pacific Grove, CA, USA; IEEE ICASSP 2021, Toronto, Canada; IEEE ICC 2021, Montreal, Canada; 29th EUSIPCO 2021, Dublin, Ireland; IEEE SPAWC 2021, Lucca, Italy; Asilomar CSSC 2021, Pacific Grove, CA, USA; IEEE ICASSP 2022, Singapore; 30th EUSIPCO 2022, Belgrade, Serbia; IEEE SPAWC 2022, Oulu, Finland; Asilomar CSSC 2022, Pacific Grove, CA, USA; IEEE SAM 2022, Trondheim, Norway; IEEE SPAWC 2022, Oulu, Finland; IEEE ICASSP 2023, Rhodes Island, Greece; IEEE ICC 2023, Rome, Italy; 31st EUSIPCO 2023, Helsinki, Finland; IEEE CAMSAP 2023, Costa Rica; IEEE ICASSP 2024, Seoul, Korea; ANTS 2024, Konstanz, Germany; IEEE ICMLCN 2024, Stockholm, Sweden; IEEE ICC 2024, Denver, CO, USA; IEEE ICASSP 2025, Hyderabad, India; Asilomar CSSC 2025, Pacific Grove, CA, USA;

33st EUSIPCO 2025, Palermo, Italy.

To isolate mathematics from the practical demands of the sciences is to invite the sterility of a cow shut away from the bulls.

– Pafnutiy L. Chebyshov –

Problems worthy to attack prove their worth by hitting back.

– Piet Hein –

Noise proves nothing. Often a hen who has laid an egg cackles as if she had laid an asteroid.

– Mark Twain –

It's unbecoming to be famous.
Celebrity does not exalt;
There is no need to hoard your writings
And to preserve them in a vault.

To give your all – this is creation,
And not-to deafen and eclipse.
How shameful, when you have no meaning,
To be on everybody's lips!

Try not to live as a pretender,
But so to manage your affairs
That you are loved by wide expanses,
And hear the call of future years.

...

– Boris Pasternak –