

Full List of Publications

BOOKS

- F. K. Teklehaymanot, C. Schroth, and M. Muma. *Robust Bayesian Cluster Enumeration for Real Elliptically Symmetric Distributions*. Chapter of book entitled Elliptical Distributions in Signal Processing, to appear. Springer, 2024.
- A. M. Zoubir, V. Koivunen, E. Ollila, and M. Muma. *Robust Statistics for Signal Processing*. Cambridge University Press, 2018.

PATENTS

- R. Lizio, M. Muma, T. Schäck, S. L. Viñas, and A. M. Zoubir. “Methods to estimate the blood pressure and the arterial stiffness based on photoplethysmographic (PPG) signals”. US Patent App. 17/045,715. Aug. 2021.
- R. Lizio, M. Muma, T. Schäck, S. L. Viñas, and A. M. Zoubir. “Preparations containing anthocyanins for use in the influence of cardiovascular conditions”. US Patent App. 17/049,446. Nov. 2021.

JOURNAL ARTICLES

- T. Koka, J. Machkour, and M. Muma. “False discovery rate control for Gaussian graphical models via neighborhood screening”. In: *arXiv preprint arXiv:2401.09979* (2024). Under Review.
- T. Koka, M. Muma, and Benjamin Béjar Haro. “Shuffled Multi-Channel Sparse Signal Recovery”. In: *arXiv preprint arXiv:2212.07368* (2024). Under Review.
- J. Machkour, M. Muma, and D. P. Palomar. “High-Dimensional False Discovery Rate Control for Dependent Variables”. In: *arXiv preprint arXiv:2401.15796* (2024). Under Review.
- J. Machkour, M. Muma, and D. P. Palomar. “The Terminating-Random Experiments Selector: Fast High-Dimensional Variable Selection with False Discovery Rate Control”. In: *arXiv preprint arXiv:2110.06048* (2024). Under Review.
- J. Machkour, D. P. Palomar, and M. Muma. “FDR-Controlled Portfolio Optimization for Sparse Financial Index Tracking”. In: *arXiv preprint arXiv:2401.15139* (2024). Under Review.
- C. Schroth, C. Eckrich, I. Kakouche, S. Fabian, O. von Stryk, A. M. Zoubir, and M. Muma. “Emergency Response Person Localization and Vital Signs Estimation Using Semi-Autonomous Robot Mounted SFCW Radar”. In: *IEEE Transactions on Biomedical Engineering* (2024), pp. 1–14.
- A. Taştan, M. Muma, and A. M. Zoubir. “Robust Regularized Locality Preserving Indexing for Fiedler Vector Estimation”. In: *arXiv preprint arXiv:2107.12070* (2024). Under Review.
- A. Taştan, M. Muma, and A. M. Zoubir. “Fast and Robust Sparsity-Aware Block Diagonal Representation”. In: *IEEE Transactions on Signal Processing* 72 (2023). Under Review, pp. 305–320.
- C. A. Schroth and M. Muma. “Real Elliptically Skewed Distributions and Their Application to Robust Cluster Analysis”. In: *IEEE Transactions on Signal Processing* 69.1 (June 2021), pp. 3947–3962.
- C. A. Schroth and M. Muma. “Robust M-Estimation Based Bayesian Cluster Enumeration for Real Elliptically Symmetric Distributions”. In: *IEEE Transactions on Signal Processing* 69 (Apr. 2021), pp. 3525–3540.
- A. Taştan, M. Muma, and A. M. Zoubir. “Sparsity-aware Robust Community Detection (SPARCODE)”. In: *Signal Processing* (2021), p. 108147.
- F. K. Teklehaymanot, M. Muma, and A. M. Zoubir. “Robust Bayesian Cluster Enumeration Based on the t Distribution”. In: *Signal Processing* 182 (2021), p. 107870.
- J. Machkour, M. Muma, B. Alt, and A. M. Zoubir. “A Robust Adaptive Lasso Estimator for the Independent Contamination Model”. In: *Signal Processing* 174 (Sept. 2020). Art. 107608.
- L. Carlino, D. Jin, M. Muma, and A. M. Zoubir. “Robust Distributed Cooperative RSS-based Localization for Directed Graphs in Mixed LoS/NLoS Environments”. In: *EURASIP Journal on Wireless Communications and Networking* (2019) 2019.19 (2019).
- P. Binder, M. Muma, and A. M. Zoubir. “Gravitational Clustering: A Simple, Robust and Adaptive Approach for Distributed Networks”. In: *Signal Processing* 149 (2018), pp. 36–48.
- S. Al-Sayed, J. Plata-Chaves, M. Muma, M. Moonen, and A. M. Zoubir. “Node-Specific Diffusion LMS-Based Distributed Detection Over Adaptive Networks”. In: *IEEE Transactions on Signal Processing* 66.3 (Feb. 2018), pp. 682–697.
- T. Schäck, M. Muma, M. Feng, C. Guan, and A. M. Zoubir. “Robust Nonlinear Causality Analysis of Non-Stationary Multivariate Physiological Time Series”. In: *IEEE Transactions on Biomedical Engineering* 65.6 (June 2018), pp. 1213–1225.

- F. K. Teklehaymanot, M. Muma, and A. M. Zoubir. “Bayesian Cluster Enumeration Criterion for Unsupervised Learning”. In: *IEEE Transactions Signal Processing* 66.20 (Oktober 2018), pp. 5392–5406.
- T. Schäck, M. Muma, and A. M. Zoubir. “Signal Processing Projects at Technische Universität Darmstadt: How to engage undergraduate students in signal processing practice”. In: *IEEE Signal Processing Magazine* 34.1 (Jan. 2017), pp. 16–30.
- P. Binder, M. Muma, and A. M. Zoubir. “Robust and Adaptive Diffusion-based Classification in Distributed Networks”. In: *EURASIP Journal on Advances in Signal Processing: Advances in adaptive filtering theory and applications to acoustic and speech signal processing* 2016.1 (2016), pp. 1–13.
- M. Muma and A. M. Zoubir. “Bounded Influence Propagation τ -Estimation: A New Robust Method for ARMA Models”. In: *IEEE Transactions on Signal Processing* 65.7 (Dezember 2016), pp. 1712–1727.
- T. Schäck, M. Muma, W. Alkhalidi, and A. M. Zoubir. “A procedure to locate the eyelid position in noisy videokeratographic images”. In: *EURASIP Journal on Advances in Signal Processing: Nonlinear signal and image processing - a Special Issue in honour of Giovanni L. Sicuranza on his seventy-fifth birthday* 2016.1 (2016), p. 136.
- A. Kelava, M. Muma, M. Deja, J. Y. Dagdagan, and A. M. Zoubir. “A new approach for the quantification of synchrony of multivariate non-stationary psychophysiological variables during emotion eliciting stimuli”. In: *Frontiers in Psychology* 5 (Jan. 2015).
- W. Sharif, M. Muma, and A. M. Zoubir. “Robustness Analysis of Spatial Time-Frequency Distributions Based on the Influence Function”. In: *IEEE Transactions on Signal Processing* 61.8 (2013), pp. 1958–1971.
- A. M. Zoubir, V. Koivunen, Y. Chakhchoukh, and M. Muma. “Robust Estimation in Signal Processing”. In: *IEEE Signal Processing Mag.* 29.4 (2012), pp. 61–80.
- M. Muma, D. R. Iskander, and M. J. Collins. “The Role of Cardiopulmonary Signals in the Dynamics of the Eye’s Wavefront Aberrations”. In: *IEEE Transactions on Biomedical Engineering* 57.2 (2010), pp. 373–383.

IN CONFERENCE PROCEEDINGS

- J. Emrich, A Gargano, T. Koka, and M. Muma. “Physiology-Informed ECG Delineation Based on Peak Prominence”. In: Under Review. 2024.
- J. Machkour, A. Breloy, M. Muma, D. P. Palomar, and F. Pascal. “Sparse PCA with false discovery rate controlled variable selection”. In: *Proc. 49th International Conference on Acoustics, Speech, and Signal Processing (ICASSP), arXiv preprint arXiv:2401.08375*. 2024.
- J. Machkour, M. Muma, and D. P. Palomar. “FDR-Controlled Sparse Index Tracking with Autoregressive Stock Dependency Models”. In: Under Review. 2024.
- J. Emrich, T. Koka, S. Wirth, and M. Muma. “Accelerated Sample-Accurate R-Peak Detectors Based on Visibility Graphs”. In: *Proc. 31st European Signal Processing Conference (EUSIPCO)*. 2023, pp. 1090–1094.
- J. Machkour, M. Muma, and D. P. Palomar. “False Discovery Rate Control for Fast Screening of Large-Scale Genomics Biobanks”. In: *Proc. IEEE Statistical Signal Processing Workshop (SSP)*. 2023, pp. 666–670.
- J. Machkour, M. Muma, and D. P. Palomar. “The Informed Elastic Net for Fast Grouped Variable Selection and FDR Control in Genomics Research”. In: *2023 IEEE 9th International Workshop on Computational Advances in Multi-Sensor Adaptive Processing (CAMSAP)*. IEEE. 2023, pp. 466–470.
- F. Scheidt, J. Machkour, and M. Muma. “Solving FDR-Controlled Sparse Regression Problems with Five Million Variables on a Laptop”. In: *2023 IEEE 9th International Workshop on Computational Advances in Multi-Sensor Adaptive Processing (CAMSAP)*. IEEE. 2023, pp. 116–120.
- A. Taştan, M. Muma, E. Ollila, and A. M. Zoubir. “Sparsity-Aware Block Diagonal Representation for Subspace Clustering”. In: *Proc. 31st European Signal Processing Conference (EUSIPCO)*. 2023, pp. 1594–1598.
- M. El-Hindi, M. Muma, and A. M. Zoubir. “Semi-Supervised Online Speaker Diarization using Vector Quantization with Alternative Codebooks”. In: *Proc. 30th European Signal Processing Conference (EUSIPCO)*. Oct. 2022, pp. 464–468.
- T. Koka and M. Muma. “Fast and Sample Accurate R-Peak Detection for Noisy ECG Using Visibility Graphs”. In: *Proc. 44th Annual International Conference of the IEEE Engineering in Medicine & Biology Society (EMBC)*. 2022, pp. 121–126.
- J. Machkour, M. Muma, and D. P. Palomar. “False Discovery Rate Control for Grouped Variable Selection in High-Dimensional Linear Models Using the T-Knock Filter”. In: *Proc. 30th European Signal Processing Conference (EUSIPCO)*. 2022, pp. 892–896.
- A. Taştan, M. Muma, and A. M. Zoubir. “Eigenvalue-Based Block Diagonal Representation and Application to p-Nearest Neighbor Graphs”. In: *Proc. 30th European Signal Processing Conference (EUSIPCO)*. 2022, pp. 1761–1765.
- S. Vlaski, C. Schroth, M. Muma, and A. M. Zoubir. “Robust and Efficient Aggregation for Distributed Learning”. In: *Proc. 30th European Signal Processing Conference (EUSIPCO)*. 2022, pp. 817–821.
- A. Taştan, M. Muma, and A. M. Zoubir. “Robust Spectral Clustering: A Locality Preserving Feature Mapping Based on M-estimation”. In: *Proc. 29th European Signal Processing Conference (EUSIPCO)*. Aug. 2021, pp. 851–855.

- D. Jin, F. Yin, M. Fauß, M. Muma, and A. M. Zoubir. “Exploiting Sparsity for Robust Sensor Network Localization in Mixed LOS/NLOS Environments”. In: *Proc. 45th International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*. virtual Conference. IEEE, Mai 2020, pp. 5915–5919.
- F. Ruppel, M. Muma, and A. M. Zoubir. “Globally Optimal Robust Matrix Completion Based on M-estimation”. In: *Proc. IEEE 30th International Workshop on Machine Learning for Signal Processing (MLSP 2020)*. Sept. 2020.
- A. Taştan, M. Muma, and A. M. Zoubir. “An Unsupervised Approach for Graph-based Robust Clustering of Human Gait Signatures”. In: *2020 IEEE Radar Conference*. Sept. 2020.
- L. Dawel, A.-K. Seifert, M. Muma, and A. M. Zoubir. “A Robust Genetic Algorithm for Feature Selection and Parameter Optimization in Radar-based Gait Analysis”. In: *Proc. 8th International Workshop on Computational Advances in Multi-Sensor Adaptive Processing (CAMSAP)*. Dezember 2019.
- M. Fauß, M. Muma, F. K. Teklehaymanot, and A. M. Zoubir. “Robust Detection for Cluster Analysis”. In: *Proc. 44th IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*. Mai 2019.
- M. Gözl, M. Muma, T. Halme, A. M. Zoubir, and V. Koivunen. “Spatial Inference in Sensor Networks using Multiple Hypothesis Testing and Bayesian Clustering”. In: *Proc. 27th European Signal Processing Conference (EUSIPCO)*. Sept. 2019.
- T. Hasija, M. Gözl, M. Muma, P. J. Schreier, and A. M. Zoubir. “Source Enumeration and Robust Voice Activity Detection in Wireless Acoustic Sensor Networks”. In: *Proc. 54th Asilomar Conference on Signals, Systems and Computers*. 2019.
- M. Muma, W.-J. Zeng, and A. M. Zoubir. “Robust M-Estimation Based Matrix Completion”. In: *Proc. 44th IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*. Mai 2019.
- Y. Zhang, F. K. Teklehaymanot, M. Muma, and A. M. Zoubir. “Distributed Robust Bayesian Cluster Enumeration Criterion for Unsupervised Learning”. In: *Proc. 8th International Workshop on Computational Advances in Multi-Sensor Adaptive Processing (CAMSAP)*. Dezember 2019.
- L. K. Hamaidi, M. Muma, and A. M. Zoubir. “Robust Distributed Sparsity-Constrained Non-Negative Source Separation and Multi-Speaker Voice Activity Detection for Speech Enhancement in Wireless Acoustic Sensor Networks”. In: *Proc. 2nd International Conference on Signals and Systems (ICSigSys)*. 2018.
- T. Schäck, M. Muma, and A. M. Zoubir. “Hands-on in Signal Processing Education at Technische Universität Darmstadt”. In: *Proc. 43rd IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*. 2018.
- F. K. Teklehaymanot, M. Muma, and A. M. Zoubir. “Diffusion-Based Bayesian Cluster Enumeration in Distributed Sensor Networks”. In: *Proc. IEEE Statistical Signal Processing Workshop (SSP)*. 2018.
- F. K. Teklehaymanot, M. Muma, and A. M. Zoubir. “Novel Bayesian Cluster Enumeration Criterion for Cluster Analysis With Finite Sample Penalty Term”. In: *Proc. 43rd IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*. 2018.
- F. K. Teklehaymanot, A.-K. Seifert, M. Muma, M. G. Amin, and A. M. Zoubir. “Bayesian Target Enumeration and Labeling Using Radar Data of Human Gait”. In: *Proc. 26th European Signal Processing Conference (EUSIPCO)*. 2018.
- L. K. Hamaidi, M. Muma, and A. M. Zoubir. “Multi-Speaker Voice Activity Detection by An Improved Multiplicative Non-Negative Independent Component Analysis With Sparseness Constraints”. In: *Proc. 42nd IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*. 2017.
- L. K. Hamaidi, M. Muma, and A. M. Zoubir. “Robust Distributed Multi-Speaker Voice Activity Detection Using Stability Selection for Sparse Non-Negative Feature Extraction”. In: *Proc. 25th IEEE European Signal Processing Conference (EUSIPCO)*. 2017, pp. 171–175.
- J. Machkour, B. Alt, M. Muma, and A. M. Zoubir. “The Outlier-Corrected-Data-Adaptive Lasso: A New Robust Estimator for the Independent Contamination Model”. In: *Proc. 25th European Signal Processing Conference (EUSIPCO)*. März 2017, pp. 1699–1703.
- T. Schäck, Y. Safi Harb, M. Muma, and A. M. Zoubir. “Computationally Efficient Algorithm for Photoplethysmography-Based Atrial Fibrillation Detection Using Smartphones”. In: *Proc. 39th Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC)*. July 2017, pp. 104–108.
- T. Schäck, M. Muma, and A. M. Zoubir. “Computationally efficient heart rate estimation during physical exercise using photoplethysmographic signals”. In: *Proc. 25th European Signal Processing Conference (EUSIPCO)*. 2017, pp. 2478–2481.
- F. Teklehaymanot, M. Muma, and A. M. Zoubir. “Adaptive Diffusion-Based Track Assisted Multi-Object Labeling in Distributed Camera Networks”. In: *Proc. 25th European Signal Processing Conference (EUSIPCO)*. 2017.
- F. K. Teklehaymanot, M. Muma, and A. M. Zoubir. “Adaptive Diffusion-Based Track Assisted Multi-Object Labeling in Distributed Camera Networks”. In: *Proc. 25th IEEE European Signal Processing Conference (EUSIPCO)*. 2017, pp. 2363–2367.
- F. Scheidt, D. Jin, M. Muma, and A. M. Zoubir. “Fast and Accurate Cooperative Localization in Wireless Sensor Networks”. In: *Proc. 24th European Signal Processing Conference (EUSIPCO)*. Apr. 2016.
- F. K. Teklehaymanot, M. Muma, J. Liu, and A. M. Zoubir. “In-network Adaptive Cluster Enumeration for Distributed Classification/labeling”. In: *Proc. 24th European Signal Processing Conference (EUSIPCO)*. Apr. 2016.

- P. Binder, M. Muma, and A. M. Zoubir. “Robust and Computationally Efficient Diffusion-Based Classification in Distributed Networks”. In: *Proc. 40th IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*. Brisbane, Australia, Dezember 2015, pp. 3432–3436.
- S. Chouvardas, M. Muma, L. K. Hamaidi, S. Theodoridis, and A. M. Zoubir. “Distributed Robust Labeling of Audio Sources in Heterogeneous Wireless Sensor Networks”. In: *Proc. 40th IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*. Dezember 2015, pp. 5783–5787.
- D. Kalus, M. Muma, and A. M. Zoubir. “Distributed Robust Change Point Detection for Autoregressive Processes with an Application to Voice Activity Detection”. In: *Proc. 40th IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*. Dezember 2015, pp. 3906–3910.
- M. Martinez-Camara, M. Muma, A. M. Zoubir, and M. Vetterli. “A New Robust and Efficient Estimator for Ill-Conditioned Linear Inverse Problems”. In: *Proc. 40th IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*. Dezember 2015, pp. 3422–3426.
- T. Schäck, C. Sledz, M. Muma, and A. M. Zoubir. “A new method for heart rate monitoring during physical exercise using photoplethysmographic signals”. In: *Proc. 23rd European Signal Processing Conference (EUSIPCO)*. Nice, France, Aug. 2015, pp. 2666–2670.
- F. K. Teklehaymanot, M. Muma, B. Béjar-Haro, P. Binder, A. M. Zoubir, and M. Vetterli. “Robust Diffusion-Based Unsupervised Object Labelling in Distributed Camera Networks”. In: *Proc. 12th IEEE AFRICON*. Apr. 2015.
- J. Y. Dagdagan, M. Muma, and A. M. Zoubir. “Robust testing for stationarity in the presence of outliers”. In: *Proc. 39th IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*. Mai 2014, pp. 3464–3468.
- M. Muma. “Robust model order selection for ARMA models based on the bounded innovation propagation τ -estimator”. In: *Proc. IEEE Workshop on Statistical Signal Processing (SSP)*. Gold Coast, Australia, June 2014.
- S. Vlaski, M. Muma, and A. M. Zoubir. “Robust Bootstrap Methods with an Application to Geolocation in Harsh LOS/NLOS environments”. In: *Proc. 39th IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*. Florence, Italy, Mai 2014.
- B. Han, M. Muma, M. Feng, and A. M. Zoubir. “An Online Approach for ICP Forecasting Based on Signal Decomposition and Robust Statistics”. In: *Proc. 38th IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*. Vancouver, Canada, Mai 2013, pp. 6239–6243.
- M. Muma, Y. Cheng, F. Roemer, M. Haardt, and A. M. Zoubir. “Robust source number enumeration for R-dimensional arrays in case of brief sensor failures”. In: *Proc. 37th IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*. Kyoto, Japan, März 2012, pp. 3709–3712.
- F. Strasser, M. Muma, and A. M. Zoubir. “Motion Artefact Removal in ECG Signals Using Multi-Resolution Thresholding”. In: *Proc. 20th European Signal Processing Conference (EUSIPCO)*. Bucharest, Romania, Aug. 2012, pp. 899–903.
- M. Muma and A. M. Zoubir. “Robust Model Selection for Corneal Height Data Based on Tau Estimation”. In: *Proc. 36th IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*. Prague, Czech Republic, Mai 2011, pp. 4096–4099.
- M. Muma, U. Hammes, and A. M. Zoubir. “Robust Semiparametric Amplitude Estimation of Sinusoidal Signals: The Multi-Sensor Case”. In: *Proc. 3rd IEEE Int. Workshop on Computational Advances in Multi-Sensor Adaptive Processing (CAMSAP)*. Aruba, Dutch Antilles, Dezember 2009, pp. 41–44.

OPEN ACCESS SOFTWARE (PEER REVIEWED)

- J. Machkour, S. Tien, D. P. Palomar, and M. Muma. *tlars: The T-LARS Algorithm: Early-Terminated Forward Variable Selection*. <https://cran.r-project.org/package=tlars>. 2022.
- J. Machkour, S. Tien, D. P. Palomar, and M. Muma. *TRexSelector: T-Rex Selector: High-Dimensional Variable Selection & FDR Control*. <https://cran.r-project.org/package=TRexSelector>. 2022.

OPEN ACCESS DATASETS

- Christian A. Schroth, Christian Eckrich, Stefan Fabian, Oskar von Stryk, Abdelhak M. Zoubir, and Michael Muma. *Multi-Person Localization and Vital Sign Estimation Radar Dataset*. IEEE Dataport, 2023.

CITATION METRICS¹

Taken from <https://scholar.google.de/citations?user=liTQko4AAAAJ&hl=de> (visited on March 7th 2024):

- Citations: 1442
- h-index: 15
- i10-index: 32

¹Personal note: Please do not judge a scientist based on citation metrics. Some of the best researchers that I know are not particularly well cited. Take the time and read the work to make up your opinion.