Ivan Markovsky's Publications

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Overview

Number of publications per category:

A	scientific monographs	2
B	articles in books	11
C	articles in journals	78
D	articles in conference proceedings	52

Number of citations as of May 15, 2025:

7838 Google Scholar (GS) h-index 35

Pdf files and computer code, implementing the methods and allowing reproducibility of the results, are available from: https://imarkovs.github.io/publications.html

A. Scientific monographs

1. **I. Markovsky**. *Low-Rank Approximation: Algorithms, Implementation, Applications*. Springer, 2019. doi: 10.1007/978-3-319-89620-5.

2. **I. Markovsky**. *Low-Rank Approximation: Algorithms, Implementation, Applications*. Springer, 2012. doi: 10.1007/978-1-4471-2227-2.

3. **I. Markovsky**, J. C. Willems, S. Van Huffel, and B. De Moor. *Exact and Approximate Modeling of Linear Systems: A Behavioral Approach*. SIAM, 2006. doi: 10.1137/1.9780898718263.

B. Articles in monographs (internationally peer reviewed)

1. **I. Markovsky**. "Dynamic measurement". In: *Data-driven filtering and control design: Methods and applications*. IET, 2019. Chap. 6, pp. 97–108. doi: 10.1049/PBCE123E_ch6.

2. **I. Markovsky** and P.-L. Dragotti. "Using structured low-rank approximation for sparse signal recovery". In: *Latent Variable Analysis and Signal Separation*. Lecture Notes in Computer Science. Springer, 2018, pp. 479–487. doi: 10.1007/978-3-319-93764-9_44.

3. **I. Markovsky**, A. Fazzi, and N. Guglielmi. "Applications of polynomial common factor computation in signal processing". In: *Latent Variable Analysis and Signal Separation*. Lecture Notes in Computer Science. Springer, 2018, pp. 99–106. doi: 10.1007/978-3-319-93764-9_10.

4. **I. Markovsky**. “System identification in the behavioral setting: A structured low-rank approximation approach”. In: *Latent Variable Analysis and Signal Separation*. Ed. by E. Vincent et al. Vol. 9237. Lecture Notes in Computer Science. Springer, 2015, pp. 235–242. doi: 10.1007/978-3-319-22482-4_27.

5. **I. Markovsky**. “Rank constrained optimization problems in computer vision”. In: *Regularization, Optimization, Kernels, and Support Vector Machines*. Ed. by A. Argyriou J. Suykens M. Signoretto. Pattern Recognition. Chapman & Hall/CRC Machine Learning, 2014. Chap. 13, pp. 293–312. doi: 10.1201/b17558-16.

6. **I. Markovsky** and K. Usevich. “Nonlinearly structured low-rank approximation”. In: *Low-Rank and Sparse Modeling for Visual Analysis*. Ed. by Yun Raymond Fu. Springer, 2014, pp. 1–22. doi: 10.1007/978-3-319-12000-3_1.

7. **I. Markovsky**. “Algorithms and literate programs for weighted low-rank approximation with missing data”. In: ed. by A. Iske et al. Vol. 3. Springer, 2011. Chap. 12, pp. 255–273. doi: 10.1007/978-3-642-16876-5_12.

8. **I. Markovsky**, A. Amann, and S. Van Huffel. “Application of filtering methods for removal of resuscitation artifacts from human ECG signals”. In: *System Identification, Environmental Modelling, and Control System Design*. Ed. by L. Wang, H. Garnier, and T. Jakeman. Springer, 2009. doi: 10.1007/978-0-85729-974-1_14.

9. **I. Markovsky** and S. Van Huffel. “On weighted structured total least squares”. In: *Large-Scale Scientific Computing*. Ed. by I. Lirkov, S. Margenov, and J. Waśniewski. Vol. 3743. Lecture Notes in Computer Science. Springer–Verlag, 2006, pp. 695–702. doi: 10.1007/11666806_80.

10. A. Kukush, **I. Markovsky**, and S. Van Huffel. “Consistent estimation of an ellipsoid with known center”. In: *Comp. Stat. (COMPSTAT)*. Ed. by J. Antoch. Physica–Verlag, 2004, pp. 1369–1376. doi: 10.1007/s00211-004-0526-9.

11. A. Kukush, **I. Markovsky**, and S. Van Huffel. “On consistent estimators in linear and bilinear multivariate errors-in-variables models”. In: *Total Least Squares and Errors-in-Variables Modeling: Analysis, Algorithms and Applications*. Ed. by S. Van Huffel and P. Lemmerling. Kluwer, 2002, pp. 155–164. doi: 10.1007/978-94-017-3552-0_14.

C. Articles in journals (internationally peer reviewed)

1. F. Kaviani, **I. Markovsky**, and H. Ossareh. “Uncertainty Quantification of Data-Driven Output Predictors in the Output Error Setting”. In: *IEEE Trans. Automat. Contr.* (2026).

2. C. Verhook, **I. Markovsky**, S. Haesaert, and R. Toth. “The behavioral approach for LPV data-driven representations”. In: *IEEE Trans. Automat. Contr.* (2026).

3. M. Alsalti, **I. Markovsky**, V. G. Lopez, and M. A. Müller. “Data-based system representations from irregularly measured data”. In: *IEEE Trans. Automat. Contr.* 70 (2025), pp. 143–158. doi: 10.1109/TAC.2024.3423053.

4. A. Fazzi, K. Usevich, and **I. Markovsky**. “Implementation improvements and extensions of an ODE-based algorithm for structured low-rank approximation”. In: *Calcolo* 60.2 (2025). doi: 10.1007/s10092-024-00623-y.

5. A. Fazzi, A. Kukush, and **I. Markovsky**. “Bias correction for Vandermonde low-rank approximation”. In: *Econometrics and Statistics* 31 (2024), pp. 38–48. doi: 10.1016/j.ecosta.2021.09.001.

6. **I. Markovsky**, M. Alsalti, V. G. Lopez, and M. A. Müller. “Identification from data with periodically missing output samples”. In: *Automatica* 169 (2024), p. 111869. doi: 10.1016/j.automatica.2024.111869.

7. **I. Markovsky** and H. Ossareh. “Finite-data nonparametric frequency response evaluation without leakage”. In: *Automatica* 159 (2024), p. 111351. doi: 10.1016/j.automatica.2023.111351.

8. J. Wang, L. Hemelhof, **I. Markovsky**, and P. Patrinos. “A trust-region method for data-driven iterative learning control of nonlinear systems”. In: *Control Systems Letters* 8 (2024), pp. 1847–1852. doi: 10.1109/LCSYS.2024.3417805.

9. F. Dörfler, J. Coulson, and **I. Markovsky**. “Bridging direct & indirect data-driven control formulations via regularizations and relaxations”. In: *IEEE Trans. Automat. Contr.* 68 (2 2023), pp. 883–897. doi: 10.1109/TAC.2022.3148374.

10. A. Fazzi and **I. Markovsky**. “Addition and intersection of linear time-invariant behaviors”. In: *IFAC Journal of Systems and Control* 26 (2023), p. 100233. doi: 10.1016/j.ifacsc.2023.100233.

11. A. Fazzi and **I. Markovsky**. “Distance problems in the behavioral setting”. In: *European Journal of Control* 74 (2023), p. 100832. doi: 10.1016/j.ejcon.2023.100832.

12. **I. Markovsky**. “Data-driven simulation of generalized bilinear systems via linear time-invariant embedding”. In: *IEEE Trans. Automat. Contr.* 68 (2 2023), pp. 1101–1106. doi: 10.1109/TAC.2022.3146726.

13. **I. Markovsky** and F. Dörfler. “Identifiability in the behavioral setting”. In: *IEEE Trans. Automat. Contr.* 68 (3 2023), pp. 1667–1677. doi: 10.1109/TAC.2022.3209954.

14. **I. Markovsky**, L. Huang, and F. Dörfler. “Data-driven control based on behavioral approach: From theory to applications in power systems”. In: *IEEE Control Systems Magazine* 43 (5 2023), pp. 28–68. doi: 10.1109/MCS.2023.3291638.

15. **I. Markovsky**, E. Prieto-Araujo, and F. Dörfler. “On the persistency of excitation”. In: *Automatica* (2023), p. 110657. doi: 10.1016/j.automatica.2022.110657.

16. A. Fazzi, B. Grossmann, G. Mercère, and **I. Markovsky**. “MIMO System Identification Using Common Denominator and Numerators with Known Degrees”. In: *International Journal of Adaptive Control and Signal Processing* 36.4 (2022), pp. 870–881. doi: 10.1002/acs.3380.

17. **I. Markovsky** and F. Dörfler. “Data-driven dynamic interpolation and approximation”. In: *Automatica* 135 (2022), p. 110008. doi: 10.1016/j.automatica.2021.110008.

18. A. Fazzi, N. Guglielmi, and **I. Markovsky**. “A gradient system approach for Hankel structured low-rank approximation”. In: *Linear Algebra Appl.* 623 (2021), pp. 236–257. doi: 10.1016/j.laa.2020.11.016.

19. A. Fazzi, N. Guglielmi, and **I. Markovsky**. “Generalized algorithms for the approximate matrix polynomial GCD of reducing data uncertainties with application to MIMO system and control”. In: *J. Comp. Appl. Math.* 393 (2021), p. 113499. doi: 10.1016/j.cam.2021.113499.

20. **I. Markovsky** and F. Dörfler. “Behavioral systems theory in data-driven analysis, signal processing, and control”. In: *Annual Reviews in Control* 52 (2021), pp. 42–64. doi: 10.1016/j.arcontrol.2021.09.005.

21. V. Mishra and **I. Markovsky**. “The Set of Linear Time-Invariant Unfalsified Models with Bounded Complexity is Affine”. In: *IEEE Trans. Automat. Contr.* 66 (9 2021), pp. 4432–4435. doi: 10.1109/TAC.2020.3046235.

22. G. Q. Carapia and **I. Markovsky**. “Input parameters estimation from time-varying measurements”. In: *Measurement* 153 (2020), p. 107418. doi: 10.1016/j.measurement.2019.107418.

23. G. Q. Carapia, **I. Markovsky**, R. Pintelon, P. Csurcsia, and D. Verbeke. “Bias and covariance of the least squares estimate in a structured errors-in-variables problem”. In: *Comput. Statist. Data Anal.* 144 (2020), p. 106893. doi: 10.1016/j.csda.2019.106893.

24. G. Q. Carapia, **I. Markovsky**, R. Pintelon, P. Csurcsia, and D. Verbeke. “Experimental validation of a data-driven step input estimation method for dynamic measurements”. In: *IEEE Transactions on Instrumentation and Measurement* 69 (7 2020), pp. 4843–4851. doi: 10.1109/TIM.2019.2951865.

25. T. Liu, **I. Markovsky**, T.-K. Pong, and A. Takeda. “A hybrid penalty method for a class of optimization problems with multiple rank constraints”. In: *SIAM J. Matrix Anal. Appl.* 41 (3 2020), pp. 1260–1283. doi: 10.1137/19M1269919.

26. **I. Markovsky**, T. Liu, and A. Takeda. “Data-driven structured noise filtering via common dynamics estimation”. In: *IEEE Trans. Signal Process.* 68 (1 2020), pp. 3064–3073. doi: 10.1109/TSP.2020.2993676.

27. V. Mishra, **I. Markovsky**, and B. Grossmann. “Data-Driven Tests for Controllability”. In: *Control Systems Letters* 5 (2 2020), pp. 517–522. doi: 10.1109/LCSYS.2020.3003770.

28. **I. Markovsky**. “On the behavior of autonomous Wiener systems”. In: *Automatica* 110 (2019), p. 108601. doi: 10.1016/j.automatica.2019.108601.

29. M. Zhang, **I. Markovsky**, C. Schretter, and J. D’hooge. “Compressed Ultrasound Signal Reconstruction using a Low-rank and Joint-sparse Representation Model”. In: *Transactions on Ultrasonics, Ferroelectrics, and Frequency Control* 66 (7 2019), pp. 1232–1245. doi: 10.1109/TUFFC.2019.2915096.

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31. N. Guglielmi and **I. Markovsky**. “An ODE based method for computing the distance of co-prime polynomials to common divisibility”. In: *SIAM Journal on Numerical Analysis* 55 (3 2017), pp. 1456–1482. doi: 10.1137/15M1018265.

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37. **I. Markovsky**. “An application of system identification in metrology”. In: *Control Eng. Practice* 43 (2015), pp. 85–93. doi: 10.1016/j.conengprac.2015.07.001.

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45. K. Usevich and **I. Markovsky**. “Optimization on a Grassmann manifold with application to system identification”. In: *Automatica* 50 (2014), pp. 1656–1662. doi: 10.1016/j.automatica.2014.04.010.

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79. M. Lemmon, K. He, and **I. Markovsky**. “Supervisory Hybrid Systems”. In: *IEEE Control Systems Magazine* 19.4 (Aug. 1999), pp. 42–55. doi: 10.1109/37.777788.

D. Articles in conference proceedings (internationally peer reviewed)

1. **I. Markovsky**. “The Behavioral Toolbox”. In: *Proc. of Machine Learning Research*. Vol. 242. 2024, pp. 130–141.

2. J. Wang, L. Hemelhof, **I. Markovsky**, and P. Patrinos. “A trust-region method for data-driven iterative learning control of nonlinear systems”. In: *Proc of the Conf. on Decision and Control*. 2024.

3. L. Hemelhof, **I. Markovsky**, and P. Patrinos. “Data-Driven Output Matching of Output-Generalized Bilinear and Linear Parameter-Varying systems”. In: *Proc of the European Control Conf.* 2023, pp. 1525–1530. doi: 10.23919/ECC57647.2023.10178404.

4. Antonio Fazzi, Nicola Guglielmi, **Ivan Markovsky**, and Konstantin Usevich. “Common dynamic estimation via structured low-rank approximation with multiple rank constraints”. In: *Proc of the 19th IFAC Symp. on System Identification*. Vol. 54. 2021, pp. 103–107. doi: 10.1016/j.ifacol.2021.08.342.

5. **I. Markovsky**. “System theory without transfer functions and state-space? Yes, it’s possible!” In: *Proc of the 60th IEEE Conf. on Decision and Control*. 2021. doi: 10.1109/CDC45484.2021.9682958.

6. V. Mishra, **I. Markovsky**, A. Fazzi, and P. Dreesen. “Data-Driven Simulation for NARX Systems”. In: *Proc. of the European Association for Signal Processing*. 2021. doi: 10.23919/EUSIPCO54536.2021.9616226.

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8. D. Verbeke and **I. Markovsky**. “Line spectral estimation with palyndromic kernels”. In: *Proc. of the Int. Conf. on Acoustics, Speech, and Signal Processing*. Barcelona, 2020, pp. 5960–5963. doi: 10.1109/ICASSP40776.2020.9053514.

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10. A. Fazzi, N. Guglielmi, and **I. Markovsky**. “Computing common factors of matrix polynomials with applications in system and control theory”. In: *Proc. of the IEEE Conf. on Decision and Control*. Nice, France, Dec. 2019, pp. 7721–7726. doi: 978-1-7281-1397-5/19/.

11. **I. Markovsky**, T. Liu, and A. Takeda. “Subspace methods for multi-channel sum-of-exponentials common dynamics estimation”. In: *Proc. of the IEEE Conf. on Decision and Control*. 2019, pp. 2672–2675. doi: 978-1-7281-1397-5/19.

12. K. Usevich and **I. Markovsky**. “Software package for mosaic-Hankel structured low-rank approximation”. In: *Proc. of the IEEE Conf. on Decision and Control*. Nice, France, Dec. 2019, pp. 7165–7170. doi: 978-1-7281-1397-5/19/.

13. S. Formentin and **I. Markovsky**. “A comparison between structured low-rank approximation and correlation approach for data-driven output tracking”. In: *Proc. of the IFAC Symp. on System Identification*. 2018, pp. 1068–1073. doi: 10.1016/j.ifacol.2018.09.052.

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