

Ivan Markovsky's Publications



Catalan Institution for Research and Advanced Studies (ICREA)
International Centre for Numerical Methods in Engineering (CIMNE)
post address: Gran Capitàn, 08034 Barcelona, Spain
webpage: <https://imarkovs.github.io>
email: imarkovsky@cimne.upc.edu

Overview

Number of publications per category:

A	scientific monographs	2
B	articles in books	11
C	articles in journals	69
D	articles in conference proceedings	52

Number of citations as of October 21, 2022:

5330 Google Scholar (GS) h-index 30

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*. 2nd edition. Springer, 2019. isbn: 978-3-319-89619-9. doi: [10.1007/978-3-319-89620-5](https://doi.org/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](https://doi.org/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](https://doi.org/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](https://doi.org/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](https://doi.org/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](https://doi.org/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. isbn: 978-3-319-22481-7. doi: [10.1007/978-3-319-22482-4_27](https://doi.org/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. isbn: 9781482241396. doi: [10.1201/b17558-16](https://doi.org/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](https://doi.org/10.1007/978-3-319-12000-3_1).
7. I. Markovsky. "Algorithms and iterate 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](https://doi.org/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](https://doi.org/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](https://doi.org/10.1007/11666806_80).
10. A. Kukush, I. Markovsky, and S. Van Huffel. "Consistent estimation of an ellipsoid with known center". In: *Comput. Stat. (COMPSTAT)*. Ed. by J. Antoch. Physica-Verlag, 2004, pp. 1369–1376. isbn: 3-7908-1554-3. doi: [10.1007/s00211-004-0526-9](https://doi.org/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](https://doi.org/10.1007/978-94-017-3552-0_14).

C. Articles in journals (internationally peer reviewed)

1. F. Dörfler, J. Coulson, and I. Markovsky. "Bridging direct & indirect data-driven control formulations via regularizations and relaxations". In: *IEEE Trans. Automat. Contr.* (2023). doi: [10.1109/TAC.2022.3148374](https://doi.org/10.1109/TAC.2022.3148374).
2. I. Markovsky. "Data-driven simulation of generalized bilinear systems via linear time-invariant embedding". In: *IEEE Trans. Automat. Contr.* (2023). doi: [10.1109/TAC.2022.3146726](https://doi.org/10.1109/TAC.2022.3146726).
3. I. Markovsky and F. Dörfler. "Identifiability in the Behavioral Setting". In: *IEEE Trans. Automat. Contr.* (2023). doi: [10.1109/TAC.2022.3209954](https://doi.org/10.1109/TAC.2022.3209954).
4. I. Markovsky, E. Prieto-Araujo, and F. Dörfler. "On the persistency of excitation". In: *Automatica* (2023).
5. 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](https://doi.org/10.1002/acs.3380).

6. A. Fazzi, A. Kukush, and I. Markovsky. "Bias correction for Vandermonde low-rank approximation". In: *Econometrics and Statistics* (2022). doi: [10.1016/j.ecosta.2021.09.001](https://doi.org/10.1016/j.ecosta.2021.09.001).
7. I. Markovsky and F. Dörfler. "Data-driven dynamic interpolation and approximation". In: *Automatica* 135 (2022), p. 110008. doi: [10.1016/j.automatica.2021.110008](https://doi.org/10.1016/j.automatica.2021.110008).
8. 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](https://doi.org/10.1016/j.laa.2020.11.016).
9. 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. Comput. Appl. Math.* 393 (2021), p. 113499. doi: [10.1016/j.cam.2021.113499](https://doi.org/10.1016/j.cam.2021.113499).
10. 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](https://doi.org/10.1016/j.arcontrol.2021.09.005).
11. 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](https://doi.org/10.1109/TAC.2020.3046235).
12. G. Q. Carapia and I. Markovsky. "Input parameters estimation from time-varying measurements". In: *Measurement* 153 (2020), p. 107418. doi: <https://doi.org/10.1016/j.measurement.2019.107418>.
13. 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](https://doi.org/10.1016/j.csda.2019.106893).
14. 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](https://doi.org/10.1109/TIM.2019.2951865).
15. 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](https://doi.org/10.1137/19M1269919).
16. * 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](https://doi.org/10.1109/TSP.2020.2993676).
17. 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](https://doi.org/10.1109/LCSYS.2020.3003770).
18. I. Markovsky. "On the behavior of autonomous Wiener systems". In: *Automatica* 110 (2019), p. 108601. doi: <https://doi.org/10.1016/j.automatica.2019.108601>.
19. 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](https://doi.org/10.1109/TUFFC.2019.2915096).
20. A. Fazzi, N. Guglielmi, and I. Markovsky. "An ODE based method for computing the Approximate Greatest Common Divisor of polynomials". In: *Numerical algorithms* 81 (2 2018), pp. 719–740. doi: [10.1007/s11075-018-0569-0](https://doi.org/10.1007/s11075-018-0569-0).

21. 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](https://doi.org/10.1137/15M1018265).
22. * I. Markovsky. "A missing data approach to data-driven filtering and control". In: *IEEE Trans. Automat. Contr.* 62 (4 Apr. 2017), pp. 1972–1978. issn: 1558–2523. doi: [10.1109/TAC.2016.2591178](https://doi.org/10.1109/TAC.2016.2591178).
23. I. Markovsky and G. Mercère. "Subspace identification with constraints on the impulse response". In: *Int. J. Contr.* 90 (8 2017), pp. 1728–1735. doi: [10.1080/00207179.2016.1219922](https://doi.org/10.1080/00207179.2016.1219922).
24. K. Usevich and I. Markovsky. "Variable projection methods for approximate (greatest) common divisor computations". In: *Theoretical Computer Science* 681 (2017), pp. 176–198. doi: [10.1016/j.tcs.2017.03.028](https://doi.org/10.1016/j.tcs.2017.03.028).
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26. K. Usevich and I. Markovsky. "Adjusted least squares fitting of algebraic hypersurfaces". In: *Linear Algebra Appl.* 502 (2016), pp. 243–274. doi: [10.1016/j.laa.2015.07.023](https://doi.org/10.1016/j.laa.2015.07.023).
27. 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](https://doi.org/10.1016/j.conengprac.2015.07.001).
28. * I. Markovsky. "Comparison of adaptive and model-free methods for dynamic measurement". In: *IEEE Signal Proc. Lett.* 22.8 (2015), pp. 1094–1097. doi: [10.1109/LSP.2014.2388369](https://doi.org/10.1109/LSP.2014.2388369).
29. I. Markovsky and R. Pintelon. "Identification of linear time-invariant systems from multiple experiments". In: *IEEE Trans. Signal Process.* 63.13 (2015), pp. 3549–3554. doi: [10.1109/TSP.2015.2428218](https://doi.org/10.1109/TSP.2015.2428218).
30. M. Ishteva, K. Usevich, and I. Markovsky. "Factorization approach to structured low-rank approximation with applications". In: *SIAM J. Matrix Anal. Appl.* 35.3 (2014), pp. 1180–1204. doi: [10.1137/130931655](https://doi.org/10.1137/130931655).
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34. S. Rhode, K. Usevich, I. Markovsky, and F. Gauterin. "A Recursive Restricted Total Least-squares Algorithm". In: *IEEE Trans. Signal Process.* 62.21 (2014), pp. 5652–5662. doi: [10.1109/TSP.2014.2350959](https://doi.org/10.1109/TSP.2014.2350959).
35. 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](https://doi.org/10.1016/j.automatica.2014.04.010).
36. K. Usevich and I. Markovsky. "Variable projection for affinely structured low-rank approximation in weighted 2-norms". In: *J. Comput. Appl. Math.* 272 (2014), pp. 430–448. doi: [10.1016/j.cam.2013.04.034](https://doi.org/10.1016/j.cam.2013.04.034).
37. I. Markovsky. "A software package for system identification in the behavioral setting". In: *Control Eng. Practice* 21 (2013), pp. 1422–1436. doi: [10.1016/j.conengprac.2013.06.010](https://doi.org/10.1016/j.conengprac.2013.06.010).

38. * I. Markovsky and K. Usevich. "Structured low-rank approximation with missing data". In: *SIAM J. Matrix Anal. Appl.* 34.2 (2013), pp. 814–830. doi: [10.1137/120883050](https://doi.org/10.1137/120883050).
39. F. Le, I. Markovsky, C. Freeman, and E. Rogers. "Recursive identification of Hammerstein systems with application to electrically stimulated muscle". In: *Control Eng. Practice* 20.4 (2012), pp. 386–396. doi: [10.1016/j.conengprac.2011.08.001](https://doi.org/10.1016/j.conengprac.2011.08.001).
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41. F. Le, I. Markovsky, C. Freeman, and E. Rogers. "Identification of electrically stimulated muscle models of stroke patients". In: *Control Eng. Practice* 18.4 (2010), pp. 396–407. doi: [10.1016/j.conengprac.2009.12.007](https://doi.org/10.1016/j.conengprac.2009.12.007).
42. I. Markovsky. "Bibliography on total least squares and related methods". In: *Statistics and Its Interface* 3 (2010), pp. 329–334.
43. I. Markovsky. "Closed-loop data-driven simulation". In: *Int. J. Contr.* 83.10 (2010), pp. 2134–2139. doi: [10.1080/00207179.2010.508093](https://doi.org/10.1080/00207179.2010.508093).
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46. * I. Markovsky. "Structured low-rank approximation and its applications". In: *Automatica* 44.4 (2008), pp. 891–909. doi: [10.1016/j.automatica.2007.09.011](https://doi.org/10.1016/j.automatica.2007.09.011).
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48. * I. Markovsky and P. Rapisarda. "Data-driven simulation and control". In: *Int. J. Contr.* 81.12 (2008), pp. 1946–1959. doi: [10.1080/00207170801942170](https://doi.org/10.1080/00207170801942170).
49. A. Kukush, I. Markovsky, and S. Van Huffel. "Estimation in a linear multivariate measurement error model with a change point in the data". In: *Comput. Statist. Data Anal.* 52.2 (2007), pp. 1167–1182. doi: [10.1016/j.csda.2007.06.010](https://doi.org/10.1016/j.csda.2007.06.010).
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52. M. Schuermans, I. Markovsky, and S. Van Huffel. "An adapted version of the element-wise weighted TLS method for applications in chemometrics". In: *Chemometrics and Intelligent Laboratory Systems* 85.1 (2007), pp. 40–46. doi: [10.1016/j.chemolab.2006.04.003](https://doi.org/10.1016/j.chemolab.2006.04.003).
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55. A. Kukush, I. Markovsky, and S. Van Huffel. "Consistency of the structured total least squares estimator in a multivariate errors-in-variables model". In: *J. Statist. Plann. Inference* 133.2 (2005), pp. 315–358. doi: [10.1016/j.jspi.2003.12.020](https://doi.org/10.1016/j.jspi.2003.12.020).
56. I. Markovsky and B. De Moor. "Linear dynamic filtering with noisy input and output". In: *Automatica* 41.1 (2005), pp. 167–171. doi: [10.1016/j.automatica.2004.08.014](https://doi.org/10.1016/j.automatica.2004.08.014).
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62. M. Schuermans, I. Markovsky, P. Wentzell, and S. Van Huffel. "On the equivalence between total least squares and maximum likelihood PCA". In: *Analytica Chimica Acta* 544.1–2 (2005), pp. 254–267. doi: [10.1016/j.aca.2004.12.059](https://doi.org/10.1016/j.aca.2004.12.059).
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65. I. Markovsky, A. Kukush, and S. Van Huffel. "Consistent least squares fitting of ellipsoids". In: *Numerische Mathematik* 98.1 (2004), pp. 177–194. doi: [10.1007/s00211-004-0526-9](https://doi.org/10.1007/s00211-004-0526-9).
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68. A. Kukush, I. Markovsky, and S. Van Huffel. "Consistent fundamental matrix estimation in a quadratic measurement error model arising in motion analysis". In: *Comput. Statist. Data Anal.* 41.1 (2002), pp. 3–18. doi: [10.1016/S0167-9473\(02\)00068-3](https://doi.org/10.1016/S0167-9473(02)00068-3).
69. 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](https://doi.org/10.1109/37.777788).

D. Articles in conference proceedings (internationally peer reviewed)

1. I. Markovsky. "Learning Kalman filtering with Lego mindstorms". In: *International Symposium on Mathematical Theory of Networks and Systems*. 2022.
2. Antonio Fazzi, Nicola Guglielmi, Ivan Markovsky, and Konstantin Usevich. "Common dynamic estimation via structured low-rank approximation with multiple rank constraints". In: *19th IFAC Symposium on System Identification*. Vol. 54. 2021, pp. 103–107. doi: [10.1016/j.ifacol.2021.08.342](https://doi.org/10.1016/j.ifacol.2021.08.342).
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