Publication List

Mateusz Michałek

October 16, 2021

All my publications are available on arXiv.

1. Paul Breiding, Reuven Hodges, Christian Ikenmeyer, Mateusz Michałek, *Equations for GL-invariant families of polynomials*, to appear in Vietnam Journal of Mathematics, arXiv preprint `https://arxiv.org/abs/2110.06608` (2021).

2. Lek-Heng Lim, Mateusz Michałek, Yang Qi, *Best k-layer neural network approximations*, to appear in Constructive Approximation, arXiv preprint `https://arxiv.org/abs/1907.01507` (2021).

3. Mateusz Michałek, Leonid Monin, Jarosław Wiśniewski, *Maximum likelihood degree and space of orbits of a $\mathbb{C}^*$ action*, to appear in SIAM Journal on Applied Algebra and Geometry, arXiv preprint `https://arxiv.org/abs/2004.07735` (2020).

4. Matthias Christandl, Fulvio Gesmundo, Mateusz Michałek, Jeroen Zuiddam, *Border rank non-additivity for higher order tensors*, to appear in SIAM Journal on Matrix Analysis and Applications, arXiv preprint `https://arxiv.org/abs/2007.05458` (2020).

5. Khazhgali Kozhasov, Mateusz Michałek, Bernd Sturmfels, *Positivity Certificates via Integral Representations*, to appear in Facets of Algebraic Geometry: A Volume in Honour of William Fulton's 80th Birthday (2020) `https://arxiv.org/abs/1908.04191`

6. Laura Colmenarejo, Francesco Galuppi, Mateusz Michałek, *Toric geometry of path signature varieties*, Advances in Applied Mathematics **121**, (2020). `https://doi.org/10.1016/j.aam.2020.102102`

7. Takayuki Hibi, Michał Lasoń, Kazunori Matsuda, Mateusz Michałek, Martin Vodička, *Gorenstein graphic matroids*, to appear in Israel Journal of Mathematics (2020) `https://arxiv.org/abs/1905.05418`

8. Amanda Cameron, Rodica Dinu, Mateusz Michałek, Tim Seynnaeve, *Flag matroids: algebra and geometry*, to appear in Interactions with Lattice Polytopes, A. Kasprzyk and B. Nill eds., Springer (2020) `https://arxiv.org/abs/1811.00272`

9. Pietro De Poi, Emilia Mezzetti, Mateusz Michałek, Rosa Maria Miró-Roig, Eran Nevo, *Circulant matrices and Galois-Togliatti systems*, Journal of Pure and Applied Algebra **224**, no. 11, (2020).
https://doi.org/10.1016/j.jpaa.2020.106404

10. Hang Huang, Mateusz Michałek, Emanuele Ventura, *Vanishing Hessian, wild forms and their border VSP*, Mathematische Annalen **378**, (2020), 1505-1532.
https://doi.org/10.1007/s00208-020-02080-8

11. Yang Qi, Mateusz Michałek, Lek-Heng Lim, *Complex best r-term approximations almost always exist in finite dimensions*, Applied and Computational Harmonic Analysis **49**, no. 1, (2020), 180-207.
https://doi.org/10.1016/j.acha.2018.12.003

12. Azeem Khadam, Mateusz Michałek, Piotr Zwiernik, *Secant varieties of toric varieties arising from simplicial complexes*, Linear Algebra and its Applications **588**, (2020), 428-457.
https://doi.org/10.1016/j.laa.2019.12.008

13. Corey Harris, Mateusz Michałek and Emre Can Sertöz, *Computing images of polynomial maps*, Advances in Computational Mathematics **45**, no. 5, (2019), 2845-2865.
https://doi.org/10.1007/s10444-019-09715-8.

14. Mateusz Michałek, Tim Seynnaeve, Frank Verstraete, *A tensor version of the quantum Wielandt theorem*, SIAM Journal on Matrix Analysis and Applications **40**, (2019),1125-1130.
https://epubs.siam.org/doi/pdf/10.1137/18M1227664

15. Lukas Katthaen, Mateusz Michałek, Ezra Miller, *When is a polynomial ideal binomial after an ambient automorphism?*, Foundations of Computational Mathematics **19**, (2019),1363-1385.
https://doi.org/10.1007/s10208-018-9405-0

16. Mateusz Michałek and Yaroslav Shitov, *Quantum version of Wielandt's Inequality revisited*, IEEE Transactions on Information Theory **65**, no. 8, (2019), 5239-5242.
https://doi.org/10.1109/TIT.2019.2897772

17. Akihiro Higashitani, Katharina Jochemko and Mateusz Michałek, *Arithmetic aspects of symmetric edge polytopes*, Mathematika **65**, no. 3, (2019), 763-784.
https://doi.org/10.1112/S0025579319000147

18. Jarosław Buczyński, Tadeusz Januszkiewicz, Joachim Jelisiejew, Mateusz Michałek, *Constructions of k-regular maps using finite local schemes*, Journal of the European Mathematical Society **21**, no. 6, (2019), 1775-1808.
http://dx.doi.org/10.4171/JEMS/873

19. Mateusz Michałek, Emanuele Ventura, *Phylogenetic complexity of the Kimura 3-parameter model*, Advances in Mathematics **343**, (2019), 640-680.
https://doi.org/10.1016/j.aim.2018.11.021

20. Matthias Beck, Christian Haase, Akihiro Higashitani, Johannes Hofscheier, Katharina Jochemko, Lukas Katthän, and Mateusz Michałek, *Smooth centrally symmetric polytopes in dimension 3 are IDP*, Annals of Combinatorics **23**, no. 2, (2019), 255-262. http://dx.doi.org/10.1007/s00026-019-00418-x

21. Mateusz Michałek, Hyunsuk Moon, *Spaces of Sums of Powers and Real Rank Boundaries*, Contributions to Algebra and Geometry **59**, no. 4, (2018), 645-663. http://dx.doi.org/10.1007/s13366-018-0388-4.

22. Mateusz Michałek, Alexander Perepechko, Hendrik Süss, *Flexible affine cones and flexible coverings*, Mathematische Zeitschrift **290**, no. 3-4, (2018), 1457-1478. http://dx.doi.org/10.1007/s00209-018-2069-2.

23. Joseph Landsberg, Mateusz Michałek, *A* $2n^2-\log(n)-1$ *lower bound for the border rank of matrix multiplication*, International Mathematics Research Notices **2018**, no. 15, (2018), 4722-4733. http://dx.doi.org/10.1093/imrn/rnx025

24. Thomas Kahle, Mateusz Michałek, *Obstructions to combinatorial formulas for plethysm*, Electronic Journal of Combinatorics **25** no. 1, (2018). http://www.combinatorics.org/ojs/index.php/eljc/article/view/v25i1p41

25. Joseph Gubeladze, Mateusz Michałek, *The poset of rational cones*, Pacific Journal of Mathematics **292**, (2018), 103-115. http://dx.doi.org/10.2140/pjm.2018.292.103

26. Akihiro Higashitani, Mario Kummer, Mateusz Michałek, *Interlacing Ehrhart Polynomials of Reflexive Polytopes*, Selecta Mathematica **23** no. 4, (2017), 2977–2998. http://dx.doi.org/10.1007/s00029-017-0350-6

27. Joseph Landsberg, Mateusz Michałek, *Abelian tensors*, Journal de Mathématiques Pures et Appliquées **108** no. 3, (2017), 333–371. http://dx.doi.org/10.1016/j.matpur.2016.11.004

28. Marta Casanellas, Jesus Fernandez-Sanchez, Mateusz Michałek, *Local equations for equivariant evolutionary models*, Advances in Mathematics **315**, (2017), 285–323. https://doi.org/10.1016/j.aim.2017.05.003

29. Mateusz Michałek, Christopher Miller, *Examples of* k*-regular maps and interpolation spaces*, Linear Algebra and its Applications **530**, (2017), 94–108. https://dx.doi.org/10.1016/j.laa.2017.05.003

30. Mateusz Michałek, Hyunsuk Moon, Bernd Sturmfels, Emanuele Ventura, *Real Rank Geometry of Ternary Forms*, Annali di Matematica Pura ed Applicata **169** no. 3, (2017), 1025–1054. http://dx.doi.org/10.1007/s10231-016-0606-3

31. Joseph Landsberg, Mateusz Michałek, *On the geometry of border rank algorithms for matrix multiplication and other tensors with symmetry*, SIAM Journal on Applied Algebra and Geometry **1** no. 1 (2017), 2–19.
http://dx.doi.org/10.1137/16M1067457

32. Mateusz Michałek, Emanuele Ventura, *Finite phylogenetic complexity and combinatorics of tables*, Algebra & Number Theory **11** no. 1 (2017), 235-252.
http://dx.doi.org/10.2140/ant.2017.11.235

33. Mateusz Michałek, *Finite phylogenetic complexity of $\mathbb{Z}_p$ and invariants for $\mathbb{Z}_3$* , European Journal of Combinatorics **59** (2017), 169-186.
http://dx.doi.org/10.1016/j.ejc.2016.08.007

34. Michał Lasoń, Mateusz Michałek, *Non-normal very ample polytopes - constructions and examples*, Experimental Mathematics **26** no. 2 (2017), 130-127.
http://dx.doi.org/10.1080/10586458.2015.1128370

35. Winfried Bruns, Joseph Gubeladze, Mateusz Michałek, *Quantum jumps of normal polytopes*, Discrete and Computational Geometry **56** no. 1 (2016), 181-215.
http://dx.doi.org/10.1007/s00454-016-9773-7

36. Mateusz Michałek, Rosa-Maria Miró-Roig, *Smooth monomial Togliatti systems of cubics*, Journal of Combinatorial Theory, Series A **143** (2016), 66-87.
http://dx.doi.org/10.1016/j.jcta.2016.05.004

37. Mateusz Michałek, Bernd Sturmfels, Caroline Uhler, Piotr Zwiernik, *Exponential varieties*, Proceedings of London Mathematical Society **112** no. 1 (2016), 27-56.
http://dx.doi.org/10.1112/plms/pdv066

38. Thomas Kahle, Mateusz Michałek, *Plethysm and lattice point counting*, Foundations of Computational Mathematics **16** no. 5 (2016), 1241-1261.
http://dx.doi.org/10.1007/s10208-015-9275-7

39. Weronika Buczyńska, Jarosław Buczyński, Mateusz Michałek, *Hackbusch Conjecture on tensor formats*, Journal de Mathématiques Pures et Appliquées **104** (2015) no. 4, 749–761.
http://dx.doi.org/10.1016/j.matpur.2015.05.002

40. Mateusz Michałek, Luke Oeding, Piotr Zwiernik, *Secant cumulants and toric geometry*, International Mathematics Research Notices **2015** no. 12 (2015) 4019-4063.
http://dx.doi.org/10.1093/imrn/rnu056

41. Laurent Manivel, Mateusz Michałek, *Secants of minuscule and cominuscule minimal orbits*, Linear Algebra and its Applications **481** (2015) 288–312.
http://dx.doi.org/10.1016/j.laa.2015.04.027

42. Matthias Beck, Jessica Delgado, Joseph Gubeladze, Mateusz Michałek, *Very ample and Koszul segmental fibrations*, Journal of Algebraic Combinatorics **42** (2015) no. 1,

165–182.
http://dx.doi.org/10.1007/s10801-014-0577-7

43. Mateusz Michałek, *Toric varieties in phylogenetics*, Dissertationes Mathematicae **511** (2015), 3–86.
http://dx.doi.org/10.4064/dm511-0-1

44. Marta Casanellas, Jesus Fernandez-Sanchez, Mateusz Michałek, *Low degree equations for phylogenetic group-based models*, Collectanea Mathematica **66** (2015), no. 2, 203–225.
http://dx.doi.org/10.1007/s13348-014-0120-0

45. Michał Lasoń, Mateusz Michałek, *On the toric ideal of a matroid*, Advances in Mathematics **259** (2014), 1–12.
http://dx.doi.org/10.1016/j.aim.2014.03.004

46. Laurent Manivel, Mateusz Michałek, *Effective constructions in plethysms and Weintraub's conjecture*, Algebras and Representation Theory (2014), 1–11.
http://dx.doi.org/10.1007/s10468-012-9402-y

47. Mateusz Michałek, *Toric geometry of the 3-Kimura model for any tree*, Advances in Geometry **14** (2014), no. 1, 11-30.
http://dx.doi.org/10.1515/advgeom-2013-0018

48. Mateusz Michałek, *Constructive degree bounds for group-based models*, Journal of Combinatorial Theory, Series A **120** (2013), no. 7, 1672–1694.
http://dx.doi.org/10.1016/j.jcta.2013.06.003

49. Weronika Buczyńska, Jarosław Buczyński, Kaie Kubjas, Mateusz Michałek, *On the graph labellings arising from phylogenetics*, Central European Journal of Mathematics 11.9 (2013), 1577-1592.
http://dx.doi.org/10.2478/s11533-013-0263-3

50. Mateusz Michałek, *Birational maps between Calabi–Yau manifolds associated to webs of quadrics* Journal of Algebra 370 (2012), 186-197.
http://dx.doi.org/10.1016/j.jalgebra.2012.07.019

51. Maria Donten-Bury, Mateusz Michałek, *Phylogenetic invariants for group-based models*, Journal of Algebraic Statistics **3** (2012), no. 1, 44-63.
http://dx.doi.org/10.18409/jas.v3i1.15

52. Mateusz Michałek, *Geometry of phylogenetic group-based models*, Journal of Algebra **339** (2011), no. 1, 339–356.
http://dx.doi.org/10.1016/j.jalgebra.2011.05.016

53. Michał Lasoń, Mateusz Michałek, *On the full, strongly exceptional collections on toric varieties with Picard number three* Collectanea Mathematica 62, no. 3 (2011), 275-296.
http://dx.doi.org/10.1007/s13348-011-0044-x

54. Mateusz Michałek, *Family of counterexamples to King's conjecture* Comptes Rendus Mathematique 349, no. 1 (2011), 67-69.
http://dx.doi.org/10.1016/j.crma.2010.11.027

55. Mateusz Michałek, *A short proof of Combinatorial Nullstellensatz* The American Mathematical Monthly 117, no. 9 (2010), 821-823.
https://doi.org/10.4169/000298910X521689

56. Noga Alon, Jarosław Grytczuk, Michał Lasoń, Mateusz Michałek, *Splitting necklaces and measurable colorings of the real line* Proceedings of the American Mathematical Society 137.5 (2009), 1593-1599.
https://doi.org/10.1090/S0002-9939-08-09699-8

57. Arijit Dey, Michał Lasoń, Mateusz Michałek, *Derived category of toric varieties with Picard number three* Le Matematiche 64(2) (2009), 99–116.
http://www.dmi.unict.it/ojs/index.php/lematematiche/article/viewArticle/759

Under review:

1. Paul Breiding, Fulvio Gesmundo, Mateusz Michałek, Nick Vannieuwenhoven, *Algebraic compressed sensing*, arXiv preprint https://arxiv.org/abs/2108.13208, (2021).

2. Julian Vill, Mateusz Michałek, Alexander Taveira Blomenhofer, *Ideals of Spaces of Degenerate Matrices*, arXiv preprint https://arxiv.org/pdf/2106.00735.pdf, (2021).

3. Roser Homs, Joachim Jelisiejew, Mateusz Michałek, Tim Seynnaeve, *Bounds on complexity of matrix multiplication away from CW tensors*, arXiv preprint https://arxiv.org/pdf/2103.12598.pdf, (2021).

4. Michał Lasoń, Mateusz Michałek, *A note on seminormality of cut polytopes*, arXiv preprint https://arxiv.org/abs/2012.07907, (2020).

5. Laurent Manivel, Mateusz Michałek, Leonid Monin, Tim Seynnaeve, Martin Vodička, *Complete quadrics: Schubert calculus for Gaussian models and semidefinite programming*, arXiv preprint https://arxiv.org/abs/2011.08791 (2020).

6. Michał Lasoń, Mateusz Michałek, *On algebraic properties of matroid polytopes*, arXiv preprint https://arxiv.org/abs/2005.08359, (2020).

7. Joseph Landsberg, Mateusz Michałek, *Towards finding hay in a haystack: explicit tensors of border rank greater than* $2.02m$ *in* $\mathbb{C}^m \otimes \mathbb{C}^m \otimes \mathbb{C}^m$, arXiv preprint https://arxiv.org/abs/1912.11927 (2019).

8. Alessio D'Ali, Emanuele Delucchi, Mateusz Michałek, *Many faces of symmetric edge polytopes*, arXiv preprint https://arxiv.org/abs/1910.05193 (2019).

9. Adam Czapliński, Mateusz Michałek, Tim Seynnaeve, *Uniform matrix product states from an algebraic geometer's point of view*, arXiv preprint https://arxiv.org/abs/1904.07563 (2019).

Other:

1. Oberwolfach report 'Symetric Edge Polytopes'

2. Oberwolfach report 'Can local cohomology prevent injections?'

3. Mateusz Michałek, Bernd Sturmfels, *Tensoren und ihre Zerlegungen*, Forschungsbericht 2018 MPI MiS
   https://www.mpg.de/11715171/mpi_mis_jb_2018

4. Mateusz Michałek, *Review of the book "Geometry and Complexity Theory" by JM Landsberg*, Bulletin of the American Mathematical Society - invited review.
   https://doi.org/10.1090/bull/1661

5. Jarosław Buczyński, Mateusz Michałek, Elisa Postinghel, *Introduction to "Schubert varieties, equivariant cohomology and characteristic classes, IMPANGA15 volume"*, to appear in EMS Ser. Congr. Rep., Eur. Math. Soc., 2018.
   https://www.ems-ph.org/books/book.php?proj_nr=226

6. Mateusz Michałek, *Selected Topics on Toric Varieties*, Proceedings of the MSJ SI 2015.
   https://doi.org/10.2969/aspm/07710207

7. Oberwolfach report 'Normal and Very Ample Polytopes – old and new open problems'
   http://dx.doi.org/10.4171/OWR/2017/44

8. Oberwolfach report No. 19/2016 'Toric structures in nontoric varieties'
   http://dx.doi.org/10.4171/OWR/2016/19

9. Mateusz Michałek, *Notes on Kebekus' lectures on differential forms on singular spaces*, Impanga Lecture Notes: Contributions to algebraic geometry, 375-388, EMS Ser. Congr. Rep., Eur. Math. Soc., 2012
   www.impan.pl/~pragacz/kebmich1.pdf

10. Translation of the book by M. Atiyah and I. Macdonald, *Introduction to commutative algebra* from English to Polish, jointly with Wojciech Lubawski.

Books:

1. Mateusz Michałek, Bernd Sturmfels, *Invitation to Nonlinear Algebra*, in progress https://personal-homepages.mis.mpg.de/michalek/book.html