

Professional history of [Jarosław Buczyński](#)

Employments

- **Oct 2016 - ...** Associate professor (profesor nadzwyczajny, profesor IMPAN), at [Institute of Mathematics, Polish Academy of Sciences](#), Poland. Partially affiliated with [Faculty of Mathematics, Informatics, and Mechanics, University of Warsaw](#), Poland.
- **Sep 2016 - Oct 2016** Visitor at [The Fields Institute for Research in Mathematical Sciences](#), Toronto, Canada, under the programme [Combinatorial Algebraic Geometry](#).
- **Sep 2011 - Sept 2016**. Assistant professor (adiunkt), a joint position at [Institute of Mathematics, Polish Academy of Sciences](#) and [Faculty of Mathematics, Informatics, and Mechanics, University of Warsaw](#), Poland.
- **Oct 2014 - Nov 2014**. Visitor at [Simons Institute](#), University of California, Berkeley, CA, USA under the program "[Algorithms and Complexity in Algebraic Geometry](#)".
- **Sep 2008 - Jan 2012**. Marie Curie International Outgoing Fellowship, employed by [Institut Fourier, Grenoble](#), France: Outgoing phase at [Texas A&M University, College Station, TX](#), USA; Return phase at Institut Fourier.
- **Sep 2010 - Jan 2011** and **Jun 2011 - Jan 2012** Postdoc at [Institut Fourier, Grenoble](#), France (return phase of Marie Curie IOF); supervised by [Laurent Manivel](#).
- **Apr 2011 - Jun 2011**. Visitor at [Institut Mittag-Leffler](#), Djursholm near Stockholm, Sweden under the program "[Algebraic Geometry with a view towards applications](#)".
- **Jan 2011 - Apr 2011**. Break for family reasons, Weronika had a job in Stockholm, Sweden.
- **Sep 2008 - Aug 2010**. Research assistant at [Texas A&M University, College Station, TX](#), USA (outgoing phase of Marie Curie IOF); supervised by [Joseph M. Landsberg](#).
- **Sep 2007 - Aug 2008**. Postgraduate Research Assistant at [Institute of Mathematics, Statistics & Actuarial Science, University of Kent, Canterbury](#), UK; supervised by [Gavin Brown](#).
- **Oct 2003 - Feb 2008**. PhD studies at [Faculty of Mathematics, Informatics, and Mechanics, University of Warsaw](#), Poland; advisor: [Jarosław Wiśniewski](#); thesis: "[Algebraic Legendrian varieties](#)"; graduated with distinction.
- **Sep 2003 - Jul 2004**. [Marie Curie Fellowship](#) at [Warwick Mathematics Institute, Coventry](#), UK.
- **Oct 1998 - Sep 2003**. Master studies at [College of Inter-Faculty Individual Studies in Mathematics and Natural Sciences](#); advisor: [Jarosław Wiśniewski](#); MSc degree thesis "[Legendrian subvarieties in projective space](#)"; graduated Summa Cum Laude.

Grants, awards and projects

- **Aug 2018 - Jul 2023**. [Complex contact manifolds and geometry of secants \(Zespólone rozmaitości kontaktowe i geometria siecznych\)](#); a grant SONATA BIS, awarded by NCN. I am the principal investigator.
- **Jan 2014 - Sep 2019**. [Algebraic Geometry: Varieties and Structures \(Geometria Algebraiczna: rozmaitości i struktury\)](#); a grant MAESTRO, awarded by NCN. I am an investigator; the director is Jarosław Wiśniewski.
- **Nov 2014 - Oct 2017**. Scholarship for outstanding young scientists, an award of Ministry of Science and Higher Education of Poland.

- **Jul 2014 - Jan 2018.** Morphisms and diagonals of Mori Dream Spaces, phylogenetics, and applications of Cox rings (Morfizmy i przekątne "wymarzonych przestrzeni Mori'ego", filogenetyka oraz zastosowania pierścieni Coxa); a grant SONATA, awarded by NCN. I am the principal investigator.
- **Jan 2013 - Dec 2015.** ["Computational complexity, generalised Waring type problems and tensor decompositions" \("Złożoność obliczeniowa, uogólnione problemy typu Waringa oraz rozkładanie tensorów"\)](#); a project within ["Canaletto"](#), the executive program for scientific and technological cooperation between **Italy and Poland**; I am the coordinator of Polish team.
- **Jan 2013 - Dec 2013.** ["Scholarship START"](#); a scholarship for young researchers awarded by [Foundation for Polish Science](#).
- **May 2012 - Apr 2014.** ["Secant varieties, computational complexity, and toric degenerations"](#) the scholarship in ["Homing Plus"](#), program of [Foundation for Polish Science](#) cofinanced from European Union, Regional Development Fund; I am the Laureate (equivalently, the principal investigator).
- **Apr 2012 - Apr 2014.** ["Układy linii na zespolonych rozmaitościach kontaktowych oraz uogólnienia"](#) the grant ["Juventus Plus"](#) of the [Polish Ministry of Science and Higher Education](#); I am the principal investigator.
- **Jan 2011 - Dec 2011.** ["Deformacje rozmaitości algebraicznych ze specjalnymi strukturami"](#) the grant ["Juventus Plus"](#) of the [Polish Ministry of Science and Higher Education](#); I was an investigator, the principal investigator was Michał Kapustka.
- **Sep 2008 - Jan 2012.** ["Contact Manifolds"](#) the [Marie Curie International Outgoing Fellowship](#); I was the researcher/fellow.
- **Sep 2006 - Feb 2008.** ["Rozmaitości legendrowskie w geometrii algebraicznej"](#) the grant for PhD students of the [Polish Ministry of Science and Higher Education](#); I was the investigator (the PhD student), the principal investigator was my advisor Jarosław Wiśniewski.

Scientific titles and degrees

- **January 2015:** Habilitation awarded at Institute of Mathematics of Polish Academy of Sciences; thesis: "Secant varieties and tensor ranks in algebraic geometry".
- **February 2008:** PhD Degree obtained at Department of Mathematics, Warsaw University, graduated with distinction; thesis: "Algebraic Legendrian Varieties".
- **June 2003:** MSc Degree in Math at Warsaw University: graduated Summa Cum Laude; thesis: "Podrozmaitości legendrowskie w zespolonej przestrzeni rzutowej".

Publications

Accepted for publication:

- *"Special lines on contact manifolds"*
Jarosław Buczyński, Grzegorz Kapustka, Michał Kapustka
[arXiv:1405.7792](#), to appear in Annales de l'Institut Fourier

- *"Algebraic torus actions on contact manifolds"*
Jarosław Buczyński, Jarosław A. Wiśniewski, with an appendix by Andrzej Weber
J. Differential Geom. 121(2): 227-289 [DOI: 10.4310/jdg/1659987892](https://doi.org/10.4310/jdg/1659987892), [arXiv:1802.05002](https://arxiv.org/abs/1802.05002)

Published:

- *"Apolarity, border rank and multigraded Hilbert scheme"*
Weronika Buczyńska, Jarosław Buczyński
Duke Mathematical Journal, 2021, 170(16): 3659-3702, [DOI: 10.1215/00127094-2021-0048](https://doi.org/10.1215/00127094-2021-0048), [arXiv:1910.01944](https://arxiv.org/abs/1910.01944)
- *"Immaculate line bundles on toric varieties"*
Klaus Altmann, Jarosław Buczyński, Lars Kastner, Anna-Lena Winz
Pure and Applied Mathematics Quarterly, Vol. 16, No. 4 (2020), pp. 1147-1217 (special issue in honor of Prof. Gert-Martin Greuel's 75th birthday),
[DOI:10.4310/PAMQ.2020.v16.n4.a12](https://doi.org/10.4310/PAMQ.2020.v16.n4.a12), [arXiv:1808.09312](https://arxiv.org/abs/1808.09312)
- *"Singular curves of low degree and multifiltrations from osculating spaces"*
Jarosław Buczyński, Nathan Ilten, Emanuele Ventura
International Mathematics Research Notices, Volume 2020, Issue 21, November 2020, Pages 8139–8182, [DOI:10.1093/imrn/rnaa009](https://doi.org/10.1093/imrn/rnaa009), [arXiv:1905.11860](https://arxiv.org/abs/1905.11860)
- *"On Strassen's rank additivity for small three-way tensors"*
Jarosław Buczyński, Elisa Postinghel, Filip Rupniewski
SIAM J. Matrix Anal. Appl., 2020, 41(1), 106–133, [DOI: 10.1137/19M1243099](https://doi.org/10.1137/19M1243099), [arXiv:1902.06582](https://arxiv.org/abs/1902.06582)
- *"Complex contact manifolds, varieties of minimal rational tangents, and exterior differential systems"*
Jarosław Buczyński, Giovanni Moreno
Banach Center Publications 117 (2019), 9-44, [DOI: 10.4064/bc117-5](https://doi.org/10.4064/bc117-5), [arXiv:1805.08548](https://arxiv.org/abs/1805.08548)
- *"Constructions of k -regular maps using finite local schemes"*
Jarosław Buczyński, Tadeusz Januszkiewicz, Joachim Jelisiejew, Mateusz Michałek
Journal of European Mathematical Society, 21 (2019), no. 6, 1775–1808, [DOI: 10.4171/JEMS/873](https://doi.org/10.4171/JEMS/873), [arXiv:1511.05707](https://arxiv.org/abs/1511.05707)
- *"Maps of Mori Dream Spaces in Cox coordinates. Part I: existence of descriptions"*
Jarosław Buczyński, Oskar Kędzierski
Mathematische Nachrichten 291 (2018) Issue 4, 576-592, [DOI: 10.1002/mana.201600287](https://doi.org/10.1002/mana.201600287), [arXiv:1605.06828](https://arxiv.org/abs/1605.06828)
- *"On the locus of points of high rank"*
Jarosław Buczyński, Kangjin Han, Massimiliano Mella, Zach Teitler
European Journal of Mathematics 4 (2018) Issue 1, 113-136, [DOI: 10.1007/s40879-017-0172-2](https://doi.org/10.1007/s40879-017-0172-2) (open access), [arXiv:1703.02829](https://arxiv.org/abs/1703.02829)
- *"Finite schemes and secant varieties over arbitrary characteristic"*
Jarosław Buczyński, Joachim Jelisiejew
Differential Geometry and its Applications 55 (2017), 13-67 [DOI: 10.1016/j.difgeo.2017.08.004](https://doi.org/10.1016/j.difgeo.2017.08.004), [arXiv:1703.02770](https://arxiv.org/abs/1703.02770).
- *"Some examples of forms of high rank"*
Jarosław Buczyński, Zach Teitler
Collect. Math. 67 (2016) Issue 3, 431-441, [DOI: 10.1007/s13348-015-0152-0](https://doi.org/10.1007/s13348-015-0152-0), [arXiv:1503.08253](https://arxiv.org/abs/1503.08253)

- *"Apolarity and direct sum decomposability of polynomials"*
Weronika Buczyńska, Jarosław Buczyński, Johannes Kleppe, Zach Teitler
Michigan Math. J. 64 (2015) Issue 4, 675-719, [DOI:10.1307/mmj/1447878029](https://doi.org/10.1307/mmj/1447878029), [arXiv:1307.3314](https://arxiv.org/abs/1307.3314)
- *"The Hackbusch Conjecture on tensor formats"*
Weronika Buczyńska, Jarosław Buczyński, Mateusz Michałek
Journal de Mathématiques Pures et Appliquées, 2015, 104(4), 749-761
[DOI:10.1016/j.matpur.2015.05.002](https://doi.org/10.1016/j.matpur.2015.05.002), [arXiv:1501.01120](https://arxiv.org/abs/1501.01120)
- *"On differences between the border rank and the smoothable rank of a polynomial"*
Weronika Buczyńska, Jarosław Buczyński
Glasgow Mathematical Journal, 2015, 57(2), 401-413, [DOI: 10.1017/S0017089514000378](https://doi.org/10.1017/S0017089514000378), [arXiv:1305.1726](https://arxiv.org/abs/1305.1726)
- *"On the third secant variety"*
Jarosław Buczyński, Joseph M. Landsberg
Journal of Algebraic Combinatorics, 2014, 40(2), 475-502, [DOI: 10.1007/s10801-013-0495-0](https://doi.org/10.1007/s10801-013-0495-0) (open access), [arXiv:1111.7005](https://arxiv.org/abs/1111.7005)
- *"Secant varieties to high degree Veronese reembeddings, catalecticant matrices and smoothable Gorenstein schemes"*
Weronika Buczyńska, Jarosław Buczyński
J. Algebraic Geom. 23 (2014), 63-90, [DOI: 10.1090/S1056-3911-2013-00595-0](https://doi.org/10.1090/S1056-3911-2013-00595-0), [arXiv:1012.3563](https://arxiv.org/abs/1012.3563)
- *"Maps of toric varieties in Cox coordinates"*
Gavin Brown, Jarosław Buczyński
Fundamenta Mathematica, 222 (2013), 213-267, [DOI: 10.4064/fm222-3-2](https://doi.org/10.4064/fm222-3-2), [arXiv:1004.4924](https://arxiv.org/abs/1004.4924)
- *"On the graph labellings arising from phylogenetics"*
Weronika Buczyńska, Jarosław Buczyński, Kaie Kubjas, Mateusz Michałek
Central European Journal of Mathematics, 2013, 11(9), 1577-1592, [DOI: 10.2478/s11533-013-0263-3](https://doi.org/10.2478/s11533-013-0263-3), [arXiv:1105.5382](https://arxiv.org/abs/1105.5382)
- *"Determinantal equations for secant varieties and the Eisenbud-Koh-Stillman conjecture"*
Jarosław Buczyński, Adam Ginensky, Joseph M. Landsberg
Journal of London Mathematical Society (2013) 88(1), 1-24, [doi: 10.1112/jlms/jds073](https://doi.org/10.1112/jlms/jds073), [arXiv:1007.0192](https://arxiv.org/abs/1007.0192)
Note also there is an accompanying example to this paper [here](#).
- *"Waring decompositions of monomials"*
Weronika Buczyńska, Jarosław Buczyński, Zach Teitler
Journal of Algebra 378 (2013), pp. 45-67, [DOI: 10.1016/j.jalgebra.2012.12.011](https://doi.org/10.1016/j.jalgebra.2012.12.011), [arXiv:1201.2922](https://arxiv.org/abs/1201.2922)
- *"Ranks of tensors and a generalization of secant varieties"*
Jarosław Buczyński, Joseph M. Landsberg
Linear Algebra and Its Applications 438 (2013), pp. 668-689 (Special Issue "Tensors and Multilinear Algebra"), [DOI: 10.1016/j.laa.2012.05.001](https://doi.org/10.1016/j.laa.2012.05.001), [arXiv:0909.4262](https://arxiv.org/abs/0909.4262)
- *"Contact Moishezon threefolds with second Betti number one"*
Jarosław Buczyński, Thomas Peternell
Archiv der Mathematik, 2012, Volume 98, Number 5, Pages 427-431, [DOI: 10.1007/s00013-012-0388-9](https://doi.org/10.1007/s00013-012-0388-9) (open access), [arXiv:1201.3705](https://arxiv.org/abs/1201.3705)

- *"Secants of Lagrangian Grassmannians"*
Ada Boralevi, Jarosław Buczyński
Annali di Matematica Pura ed Applicata 2011, Volume 190, Number 4, 725-739, [DOI: 10.1007/s10231-010-0171-0](#), [arXiv:1006.1925](#)
- *"Duality and integrability on contact Fano manifolds"*
Jarosław Buczyński
Documenta Math. 15 (2010) 821--841, [article](#), [arXiv:1002.0698](#)
Erratum available [here](#)!
- *"Algebraic Legendrian Varieties"*
Jarosław Buczyński
Dissertationes Math. 467 (2009), 86 pp. [DOI:10.4064/dm467-0-1](#), [arXiv:0805.3848](#) (Phd thesis)
- *"Some quasihomogeneous Legendrian varieties"*
Jarosław Buczyński
Advances in Geometry. Volume 9 (2009), Issue 2, Pages 257-277, [DOI: 10.1515/ADVGEOM.2009.016](#), [arXiv:0701750](#)
- *"Hyperplane sections of Legendrian subvarieties"*
Jarosław Buczyński
Math. Res. Lett. 15 (2008), no. 4, 623--629, [DOI: 10.4310/MRL.2008.v15.n4.a2](#), [arXiv:0701590](#)
- *"Toric Legendrian subvarieties"*
Jarosław Buczyński
Transform. Groups 12 (2007), no. 4, 631--646, [DOI: 10.1007/s00031-007-0064-5](#), [arXiv:math/0609550](#)
- *"Legendrian subvarieties of projective space"*
Jarosław Buczyński
Geom. Dedicata 118 (2006), 87--103, [DOI: 10.1007/s10711-005-9027-y](#), arxiv.org version contains more details: [arXiv:math/0503528](#) (MSc thesis)

Books, book chapters, editorial work:

- *"Phenomenological Approach to Algebraic Geometry"*,
Editors: Jarosław Buczyński, Sławomir Cynk, Tomasz Szemberg,
Banach Center Publications, 2018, vol 116, ISBN 978-83-86806-38-6
- *"Schubert varieties, equivariant cohomology and characteristic classes, IMPANGA15"*,
Editors: Jarosław Buczyński, Mateusz Michałek, Elisa Postinghel,
EMS Series of Congress Reports, 2018, [DOI: 10.4171/182](#)
- *"Toric varieties"*, a chapter in *"The Magma handbook"*
Gavin Brown, Jarosław Buczyński, Alexander Kasprzyk
- *"Convex polytopes and polyhedra"*, a chapter in *"The Magma handbook"*
Gavin Brown, Jarosław Buczyński, Alexander Kasprzyk