Curriculum Vitae

Personal details

Full name	Manfred Buchacher
Date of birth	12/05/1989
Nationality	Austria
Web page	buchacm.github.io

Contact

eMail	manfredi.buchacher@gmail.com

Research interests

algorithmic enumerative combinatorics, constructive algebra, effective algebraic geometry, differential algebra, dynamical systems

Academic employment

01/2024 - 02/2026	Project leader, 40 h/w, Institute for Algebra, Johannes Kepler University Linz
11/2022 - 12/2023	Postdoctoral researcher, 40 h/w, RICAM, Austrian Academy of Science
12/2021 - 07/2022	Project assistant, 40 h/w, Institute for Algebra, Johannes Kepler University Linz
10/2017 - 11/2021	Project assistant, 30 h/w, Institute for Algebra, Johannes Kepler University Linz
12/2016 - 09/2017	Project assistant, 40 h/w, Institute of Telecommunications, Technical University Vienna

Further work experience

01/2016 - 09/2016	Trainee, Market risk and price verification, UniCredit Bank Austria

Education

11/2021	Doktor der technischen Wissenschaften
10/2017 - 11/2021	PhD studies in Mathematics, Institute for Algebra, Johannes Kepler University Linz
12/2016 - 09/2017	Project assistant, Institute of Telecommunications, Technical University Vienna
04/2015	Master of Science in Mathematics
10/2012 - 04/2015	Graduate studies in Mathematics, University of Vienna
09/2012	Bachelor of Science in Mathematics
03/2009 - 09/2012	Undergraduate studies in Mathematics, University of Vienna

Research projects

01/2024 - 02/2026 *Problems of separation in enumerative combinatorics*,
Linz Institute of Technology, 180 000 EURO

Publications and preprints

- Manfred Buchacher, $x(1-t(x+x^{-1}))F(x;t) = x - tF(0;t)$, 2025, arXiv:2512.21753
- Manfred Buchacher, *On finite orbits of infinite correspondences*, 2025, arXiv:2511.07172
- Manfred Buchacher, *Separated variables on plane algebraic curves*, 2024, arXiv:2411.08584
- Manfred Buchacher, *Separating variables in bivariate polynomial ideals: the local case*, 2024, arXiv:2404.10377
- Manfred Buchacher, Manuel Kauers, *On the problem of separating variables in multivariate polynomial ideals*, Proceedings of ISSAC'24, 2024, DOI:10.1145/3666000.3669680
- Manfred Buchacher, *The Newton-Puiseux algorithm and effective algebraic series*, Journal of Algebra, 2026, DOI:10.1016/j.jalgebra.2025.09.027
- Manfred Buchacher, Manuel Kauers, *The orbit-sum method for higher order equations*, 2022, arXiv:2211.08175
- Manfred Buchacher, *Algorithms for the Enumeration of Lattice Walks*, PhD thesis, 2021, URN: urn:nbn:at:at-ubl:1-46037
- Manfred Buchacher, Manuel Kauers, and Amélie Trotignon, *Quadrant Walks Starting Outside the Quadrant*, Proceedings of FPSAC'21, 2021, Corpus ID: 227210243
- Manfred Buchacher, Sophie Hofmanninger, and Manuel Kauers, *Walks with Small Steps in the 4D-Orthant*, Annals of Combinatorics, 2020, DOI:10.1007/s00026-020-00520-5
- Manfred Buchacher, Manuel Kauers, and Gleb Pogudin, *Separating Variables in Bivariate Polynomial Ideals*, Proceedings of ISSAC'20, 2020, DOI:10.1145/3373207.3404028
- Manfred Buchacher and Manuel Kauers, *Inhomogeneous Restricted Lattice Walks*, Proceedings of FPSAC'19, 2019, Corpus ID: 119580728

- Peter Berger, Manfred Buchacher, Gábor Hannák and Gerald Matz, *Graph Learning based on Total Variation*, 2018 IEEE International Conference on Acoustics, Speech and Signal Processing, 2018, DOI:10.1109/ICASSP.2018.8461603

Selected talks and poster presentations

11/2025 $r(x,y)+q(x,y)p(x,y)=f(x)-g(y)$
AROMATH, INRIA Centre at Université Côte d'Azur, Sophia Antipolis, France

09/2025 *Separated variables on plane algebraic curves*
meeting of the ÖMG - DMV, JKU Linz, Linz, Austria

07/2025 *Separated variables on plane algebraic curves*
ACA 2025, Heraklion, Crete, Greece

06/2025 *Separated variables on plane algebraic curves*
Number Theory seminar, Université Paul Sabatier, Toulouse, France

02/2025 *Separated variables on plane algebraic curves*
CIRM, Luminy, Marseille, France

02/2025 *On the problem of computing intersections of fields*
CIRM, Luminy, Marseille, France

01/2025 *Separated variables on plane algebraic curves*
Arbeitsgemeinschaft Diskrete Mathematik, Universität Wien, Vienna, Austria

10/2024 *Some problems in algebraic dynamics*
LARD, RISC JKU Linz, Hagenberg, Austria

12/2023 *Separating variables over plane algebraic curves*
LARD, RICAM ÖAW, Linz, Austria

11/2023 *Separating variables in bivariate polynomial ideals: the local case*
SFB status seminar, Admont, Austria

07/2023 *Separating variables in bivariate polynomial ideals: the local case*
ACA 2023, Warsaw, Poland

07/2023 *The Newton-Puiseux algorithm and effective algebraic series*
ACA 2023, Warsaw, Poland

06/2023 *Some non-standard problems in elimination theory*
CIMPA school "Algebraic and tropical methods for solving differential equations", Oaxaca, Mexico

12/2022 *Effective arithmetic for multivariate algebraic series*
SFB status seminar, Admont, Austria

01/2022	*Quadrant Walks Starting Outside the Quadrant* FPSAC 2021, Bar Ilan University, Ramat Gan, Israel, Online
07/2021	*The Kernel-Method and Automated Positive Part Extraction* ACA 2021, Online
04/2021	*Separating Variables in Bivariate Polynomial Ideals* Séminaire de Calcul Formel, Sorbonne Université, Paris, and Inria Saclay, Palaiseau, France, Online
03/2021	*On Restricted Lattice Walks* Groupe de travail Transcendance et Combinatoire, l'Institut Henri Poincaré, Paris, and Inria Saclay, Palaiseau, France, Online
11/2019	*Inhomogeneous Lattice Walks* Laboratory of Theoretical Computer Science, HSE Univserity, Moscow, Russia
07/2019	*Inhomogeneous Lattice Walks* SIAM AG 2019, Bern, Switzerland
07/2019	*Restricted Inhomogeneous Lattice Walks* FPSAC 2019, Ljubljana, Slovenia
02/2019	*Inhomogeneous Lattice Walks* Institut Denis-Poisson, Université de Tours, Tours, France

Teaching experience

Summer 2024	Algebra für InformatikerInnen, 2 SSt, Exercises
Summer 2021	Algebra für InformatikerInnen, 2 SSt, Exercises
Winter 2020/21	Diskrete Strukturen, 2×1 SSt, Exercises
Summer 2020	Algebra für InformatikerInnen, 2 SSt, Exercises
09/02 - 13/02, 2020	Projektwoche Angewandte Mathematik: Abzählende Kombinatorik und das Zählen von Jongliermustern, Seminar for high school students
Winter 2019/20	Diskrete Strukturen, 2×1 SSt, Exercises
Summer 2019	Algebra für InformatikerInnen, 2 SSt, Exercises
01/02/2019	Mathematik und Zauberei: Wie mathematische Ideen die Grundlage von Zaubertricks bilden, Seminar for high school students
Winter 2018/19	Stochastik (für Lehramt), 1 SSt, Exercises
Summer 2018	Algebra für InformatikerInnen, 2 SSt, Exercises
Winter 2013/14	Tutorium für LehramtskandidatInnen zur Studieneingangs- und Orientierungsphase, 1 SSt, Exercises

Co-supervised students

Sophie Hofmanninger — 4-*dimensional lattice walks restricted to the positive orthant*
Master thesis, 2020