

Curriculum Vitae

Full name Manfred Buchacher

Date of birth 12/05/1989

Nationality Austrian

eMail manfredi.buchacher@gmail.com

Web page buchacm.github.io

Employment

01/2024 - 02/2026 **Project leader**, Institute for Algebra, Johannes Kepler University Linz

11/2022 - 12/2023 **Postdoctoral researcher**, RICAM, Austrian Academy of Sciences

12/2021 - 07/2022 **Postdoctoral researcher**, Institute for Algebra, Johannes Kepler University Linz

10/2017 - 11/2021 **Project assistant**, Institute for Algebra, Johannes Kepler University Linz

12/2016 - 09/2017 **Project assistant**, Institute of Telecommunications, Technical University Vienna

Further work experience

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

Education

10/2017 - 11/2021 **PhD in Mathematics**, Johannes Kepler University Linz

10/2012 - 04/2015 **Master of Science in Mathematics**, University of Vienna

03/2009 - 09/2012 **Bachelor of Science in Mathematics**, University of Vienna

Research interests

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

Awards and scholarships

01/2024 - 02/2026 **JKU LIT Young career award**, LIT-2022-11-YOU-214, 180 000 EURO

08/2014 - 03/2015 **Scholarship for master's students**, FWF

2012/2013 **Merit scholarship**, University of Vienna

2009/2010 **Merit scholarship**, University of Vienna

Publications and preprints

- $x(1 - t(x + x^{-1}))F(x; t) = x - tF(0; t)$, 2025, arXiv:2512.21753
- *On finite orbits of infinite correspondences*, 2025, arXiv:2511.07172
- *Separated variables on plane algebraic curves*, 2024, arXiv:2411.08584
- *Separating variables in bivariate polynomial ideals: the local case*, 2024, arXiv:2404.10377
- *On the problem of separating variables in multivariate polynomial ideals*, with Manuel Kauers, Proceedings of ISSAC'24, 2024, DOI:10.1145/3666000.3669680
- *The Newton-Puiseux algorithm and effective algebraic series*, Journal of Algebra, 2026, DOI:10.1016/j.jalgebra.2025.09.027
- *The orbit-sum method for higher order equations*, with Manuel Kauers, 2022, arXiv:2211.08175
- *Algorithms for the Enumeration of Lattice Walks*, PhD thesis, 2021, URN: urn:nbn:at:at-ubl:1-46037
- *Quadrant Walks Starting Outside the Quadrant*, with Manuel Kauers and Amélie Trotignon, Proceedings of FPSAC'21, 2021, Corpus ID: 227210243
- *Walks with Small Steps in the 4D-Orthant*, with Sophie Hofmanninger and Manuel Kauers, Annals of Combinatorics, 2020, DOI:10.1007/s00026-020-00520-5
- *Separating Variables in Bivariate Polynomial Ideals*, with Manuel Kauers and Gleb Pogudin, Proceedings of ISSAC'20, 2020, DOI:10.1145/3373207.3404028
- *Inhomogeneous Restricted Lattice Walks*, with Manuel Kauers, Proceedings of FPSAC'19, 2019, Corpus ID: 119580728
- *Graph Learning based on Total Variation Minimization*, with Peter Berger, Gábor Hannák and Gerald Matz, 2018 IEEE International Conference on Acoustics, Speech and Signal Processing, 2018, DOI:10.1109/ICASSP.2018.8461603

Selected talks and poster presentations

- 11/2025 **AROMATH Seminar**, INRIA Centre at Université Côte d'Azur, France
09/2025 **ÖMG - DMV Annual Meeting**, Linz, Austria
07/2025 **Applications of Computer Algebra** conference, Heraklion, Greece
06/2025 **Number Theory Seminar**, Université Paul Sabatier, Toulouse, France
02/2025 **Galois Differential Theories and Transcendence** conference, CIRM, Marseille, France
02/2025 **Enumerative Combinatorics and Effective Aspects of Differential Equations** conference, CIRM, Marseille, France
01/2025 **Arbeitsgemeinschaft Diskrete Mathematik** seminar, University of Vienna, Austria
11/2023 **SFB AEC Status Seminar**, Admont, Austria
07/2023 **Applications of Computer Algebra** conference, Warsaw, Poland
06/2023 **Algebraic and Tropical Methods for Solving Differential Equations** summer school, Oaxaca, Mexico
12/2022 **SFB AEC Status Seminar**, Admont, Austria
01/2022 **Formal Power Series and Algebraic Combinatorics** conference, Ramat Gan, Israel, Online
11/2021 **SFB AEC Status Seminar**, Online
07/2021 **Applications of Computer Algebra** conference, Online
04/2021 **Séminaire de Calcul Formel**, Sorbonne Université and INRIA Saclay, France, Online
03/2021 **Groupe de travail Transcendance et Combinatoire** seminar, l’Institut Henri Poincaré and INRIA Saclay, France, Online
12/2020 **SFB AEC Status Seminar**, Online
11/2019 **Laboratory of Theoretical Computer Science** seminar, HSE University, Moscow, Russia
07/2019 **SIAM Algebraic Geometry** conference, Bern, Switzerland
07/2019 **Formal Power Series and Algebraic Combinatorics** conference, Ljubljana, Slovenia
02/2019 **Special Colloquium**, Université de Tours, France
12/2018 **SFB AEC Status Seminar**, Strobl am Wolfgangsee, Austria

Teaching activities

- Spring 2024 **Algebra für InformatikerInnen**, teaching assistant
Spring 2021 **Algebra für InformatikerInnen**, teaching assistant
Fall 2020/21 **Diskrete Strukturen**, teaching assistant

- Spring 2020 **Algebra für InformatikerInnen**, teaching assistant
- 09/02 - 13/02/2020 Projektwoche Angewandte Mathematik: **Abzählende Kombinatorik und das Zählen von Jongliermustern**, seminar for high school students
- Fall 2019/20 **Diskrete Strukturen**, teaching assistant
- Spring 2019 **Algebra für InformatikerInnen**, teaching assistant
- 01/02/2019 **Mathematik und Zauberei: Wie mathematische Ideen die Grundlage von Zaubertricks bilden**, seminar for high school students
- Fall 2018/19 **Stochastik für Lehramt**, teaching assistant
- Spring 2018 **Algebra für InformatikerInnen**, teaching assistant
- Fall 2013/14 **Tutorium für LehramtskandidatInnen zur STEOP**, teaching assistant

Co-supervised students

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