

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

### Co-supervised students

Sophie Hofmanninger	<i>4-dimensional lattice walks restricted to the positive orthant</i> Master thesis, 2020
---------------------	--