

# Curriculum Vitae

Full name    Manfred Buchacher  
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## Employment

01/2024 - 02/2026    **Project leader**, Johannes Kepler University Linz  
11/2022 - 12/2023    **Postdoctoral researcher**, Austrian Academy of Sciences  
12/2021 - 07/2022    **Postdoctoral researcher**, Johannes Kepler University Linz  
10/2017 - 11/2021    **Project assistant**, Johannes Kepler University Linz  
12/2016 - 09/2017    **Project assistant**, Technical University Vienna

## Further work experience

01/2016 - 09/2016    **Trainee**, UniCredit Bank Austria

## Education

10/2017 - 11/2021    **PhD in Mathematics**, Johannes Kepler University Linz,  
thesis: **Algorithms for the enumeration of lattice walks**,  
supervisor: Manuel Kauers  
10/2012 - 04/2015    **Master of Science in Mathematics**, University of Vienna  
thesis: **The asymptotic behaviour of denumerable markov chains**,  
supervisor: Jiří Černý  
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 **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
- *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 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 **Enumerative Combinatorics and Effective Aspects of Differential Equations** conference, CIRM, Marseille, France
- 02/2025 **Galois Differential Theories and Transcendence** 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

## Conferences, seminars, summer schools and workshops

- 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 **Enumerative combinatorics and effective aspects of differential equations**, conference, CIRM, Marseille, France
- 02/2025 **Galois differential theories and transcendence**, conference, CIRM, Marseille, France
- 10/2024 **Algebraicity and Transcendence for Singular Differential Equations**, workshop, Erwin Schrödinger Institute, Vienna, Austria
- 11/2023 **SFB Statusseminar**, Admont, Austria
- 06/2023 **Algebraic and Tropical Methods for Solving Differential Equations**, summer school Oaxaca, Mexico
- 12/2022 **SFB Statusseminar**, Admont, Austria
- 07/2022 **Algorithmic and Enumerative Combinatorics**, conference, Technical University Vienna, Austria
- 11/2021 **SFB Statusseminar**, Online
- 08/2021 **SFB in-person meeting**, JKU Linz, Austria
- 12/2020 **SFB-Statusseminar**, Online
- 01/2020 **SFB-Colloquium**, RISC, Hagenberg, Austria
- 12/2019 **SFB-Statusseminar**, BIFEB, Strobl am Wolfgangsee, Austria
- 10/2019 **SFB-Colloquium**, Technical University Vienna, Austria
- 08/2019 **AEC Summer School**, RISC, Hagenberg, Austria
- 06/2019 **15th International Symposium on Orthogonal Polynomials, Special Functions and Applications**, RISC, Hagenberg, Austria
- 06/2019 **SFB-Colloquium**, RICAM, Linz, Austria
- 04/2019 **SFB-Colloquium**, University of Vienna, Austria
- 01/2019 **SFB-Colloquium**, RISC, Hagenberg, Austria
- 12/2018 **SFB-Statusseminar**, BIFEB, Strobl am Wolfgangsee, Austria
- 10/2018 **SFB-Colloquium**, Technical University Vienna, Austria
- 08/2018 **AEC Summer School**, RISC, Hagenberg, Austria
- 06/2018 **SFB-Colloquium**, JKU Linz, Austria
- 05/2018 **Combinatorics, Special Functions and Computer Algebra – A workshop on the occasion of Peter Paule's 60th birthday**, RISC, Hagenberg, Austria
- 03/2018 **SFB-Colloquium**, University of Vienna, Austria
- 01/2018 **SFB-Colloquium**, RISC, Hagenberg, Austria

- 12/2017 **SFB-Statusseminar**, BIFEB, Strobl am Wolfgangsee, Austria  
 11/2017 **Algorithmic and Enumerative Combinatorics** workshop, Erwin Schrödinger  
 Institute, Vienna, Austria

## Teaching

Johannes Kepler University Linz

- Spring 2024 **Algebra für InformatikerInnen**, teaching assistant  
 Spring 2021 **Algebra für InformatikerInnen**, teaching assistant  
 Fall 2020 **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 **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 **Stochastik für Lehramt**, teaching assistant  
 Spring 2018 **Algebra für InformatikerInnen**, teaching assistant

University of Vienna

- Fall 2013 **Tutorium für LehramtskandidatInnen zur STEOP**, teaching assistant

## Co-supervision

- Sophie Hofmanninger *4-dimensional lattice walks restricted to the positive orthant*  
 Master's thesis, 2020, Johannes Kepler University Linz

## Refereeing

Combinatorial Theory, FPSAC, ISSAC, Journal of Algebraic Combinatorics, Journal of Symbolic Computation, La Matematica, Séminaire Lotharingien de Combinatoire