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,** Johannes Kepler University Linz
11/2022 - 12/2023	**Postdoctoral researcher,** Austrian Academy of Sciences
12/2021 - 07/2022	**Postdoctorial 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, Au
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