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, Johannes Kepler University Linz, 2020

Refereeing

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

Languages

German (native), English (fluent), French (intermediate)

Software

Latex, Mathematica, Maple, SageMath