Marie-Louise Lackner (née Bruner)

Curriculum Vitae

✉ *ml.lackner@fastmail.net*
http://marielouise.lackner.xyz/
http://orcid.org/0000-0002-9916-9011

Education

Oct 2011 – Jun 2015 **PhD studies in Mathematics**, *TU Wien*, PhD thesis "Patterns in labelled combinatorial objects" supervised by Alois Panholzer.
Academic title: Dr.techn.
Graduated with distinction

Jun 2012 **"Dr. Maria Schaumayer"-prize**, *awarded for the diploma thesis*.

Oct 2005 – Jun 2011 **Studies of "Technische Mathematik"**, *TU Wien*, Area of concentration: "Mathematics in Science", Master thesis (Diplomarbeit) "Restricted Permutations on Multisets" supervised by Alois Panholzer.
Academic title: Dipl.-Ing. (equivalent to MSc)
Graduated with distinction

Aug 2008 – Dec 2008 **Erasmus exchange term**, *Royal Institute of Technology in Stockholm (KTH), Sweden*.

Aug 1993 – Jun 2005 **Lycée Français de Vienne**, *Ecole primaire, collège, lycée*, Section S (scientifique/sciences).
French Baccalauréat passed with distinction
Austrian Matura passed with distinction

Work experience

Jun 2016 – Apr 2017 **Research Facilitator**, *University of Oxford, Department of Statistics*.
Supporting academics both pre-award and post-award: identifying best funding opportunities, assisting with the preparation of proposals, managing research grants.

Oct 2016 – Dec 2016 **Tutor**, *University of Oxford, Balliol College*.
College tutorials "Linear Algebra" and "Discrete Mathematics" for first year students in computer science

Sep 2014 – present **External lecturer**, *Karl Landsteiner Privatuniversität Krems, Austria*.
Part-time lecturer with full responsibility for the course "Mathematics for Medicine"

Jul 2015 – May 2016 **Postdoctoral researcher**, *TU Wien, Institute of Discrete Mathematics and Geometry*.
Identifying and investigating research questions in combinatorics, disseminating research (talks and scientific publications), writing project reports and lecturing introductory mathematics

Jun 2011 – Jun 2015 **Graduate teaching and research assistant**, *TU Wien, Institute of Discrete Mathematics and Geometry*.
Independent research towards obtaining a PhD in mathematics, disseminating research results, teaching and grading, active participation in proposal writing

Sep 2012 – Jan 2015 **External lecturer**, *FH Campus Wien – University of Applied Sciences*.
Small group tutoring in "Calculus 1" for electrical engineering students

Mar 2012 – Nov 2012 **Consultancy work**, *Vienna Science and Technology Fund WWTF*.
Policy analysis for the report "OECD Reviews of Innovation Policy for Sweden"

Mar 2009 – Jun 2011 **Undergraduate teaching assistant**, *TU Wien, Institute of Discrete Mathematics and Geometry*.
Small group tutoring in mathematics for mechanical and civil engineering students

Sep 2006 **Summer intern**, *Vienna Science and Technology Fund WWTF*.
Performing internet searches, evaluating ongoing research projects, and providing administrative support

Research areas

My research lies within Discrete Mathematics, more precisely within Combinatorics. I am interested in the enumeration of labelled combinatorial objects and in the complexity of combinatorial problems.

- Enumeration: permutation patterns, generalized parking functions, patterns in trees and mappings; exact and asymptotic results, generating functions and bijections
- Complexity analysis: aspects and variants of the Permutation Pattern Matching problem; classical and parametrized complexity theory, design of (FPT)-algorithms
- Social Choice Theory: Connection between domain restrictions and permutation patterns, likelihood of domain restrictions; combinatorial and probabilistic methods

Scientific activity

Publications: 11 peer-reviewed publications, one scientific article currently under revision, one publication in recreational mathematics: "Mountainous patterns", a playful introduction to some of my research
all publications in English, see the section "Publications" on page 4 for details

International collaborations: Miklós Bóna and Vincent Vatter, University of Florida, U.S.A.
Bruce Sagan, Michigan State University, U.S.A
Michael H. Albert, Univeristy of Otago, New Zealand

Talks: Extensive experience giving scientific presentations in English
17 talks at international events

Reviews: Article Reviewing for 10 international journals and conferences

Teaching: Teaching at TU Wien 2009–2015 (mostly mathematics for students of other disciplines); teaching at Vienna Univeristy of Applied Sciences for three years; teaching at University of Oxford in 2016; responsible for the mathematics course at KLPU Krems (held in English) since 2014

Organisation: Co-organisation of two international scientific meetings: CSASC 2011 (Krems, Austria) and AofA 2015 (Strobl, Austria)

Computer skills

- General computer skills: Microsoft Office and LibreOffice; Windows and Linux
- On- and offline publishing: HTML, Wordpress, Microsoft Publisher, Latex
- Finance: Oracle Financials, X5 (research costing and pricing system)
- Mathematical Software: Maple, Sage, Python, Java

Languages

German	native language	English	proficiency (C2 on CEFR scale)
French	proficiency (C2)	Swedish	upper intermediate (B2)

Certificates

Oct 2007	*Driving licence (B)*, full Austrian driving license that is accepted in the UK
Mar 2016	Certificate of Proficiency in English, University of Cambridge Grade A

Professional training

Jul–Sep2016	X5 costing creators training, University of Oxford
Jul–Aug2016	Oracle Financials training, University of Oxford
Mar 2015	Article Reviewing, Katherine Thiede
Nov 2014	Activating methods for academic teaching, Thomas Tribelhorn
Apr 2014	Effective Scientific Writing Part 2, Katherine Thiede
Nov 2013	Communication and interaction in university courses, Paul Lahninger
Apr 2013	Effective Scientific Writing Part 1, Katherine Thiede

Other Interests

Sports	Trekking, rock climbing, via ferrata climbing, backcountry skiing, kayaking During the summer of 2015, I hiked, paddled and cycled from Oslo to Vienna in 70 days (600 km of hiking, 200 km of sea-kayaking and 2100 km of cycling). Currently, I am planning a hike from the North Cape to Stockholm for 2018 (more than 2800 km).
Sweden	Swedish nature, culture and traditions I am an active member of the Austrian-Swedish society and have contributed several articles to the yearly Christmas magazine "God Jul". Recently, I joined the Oxford Scandinavian Society.
Crafts and Baking	Creative sewing and dressmaking - participation in MeMadeMay 2017 on Instagram Knitting - regular member of the Oxford Yarn Store knit club Baking - regular baking of bread and cakes, contribution of multiple recipes to the Austrian-Swedish society's magazine

Publications

submitted *Ascending Runs in Cayley Trees and Mappings*
with Alois Panholzer
preprint available at `arxiv.org/abs/1507.05484`

2017 *On the Likelihood of Single-peaked Preferences*
with Martin Lackner, Social Choice and Welfare, 48(4), 717-745
preprint available at `arxiv.org/abs/1505.05852`

2017 *Longest Increasing Subsequences and Log Concavity*
with Miklós Bóna and Bruce Sagan, accepted for publication in Annals of Combinatorics
preprint available at `arxiv.org/abs/1511.08653`

2016 *Mountainous patterns*
self-published by Marie-Louise Lackner and printed by epubli, Berlin; ISBN: 9783741817038
available at `epubli.de`

2016 *The Complexity of Pattern Matching for 321-Avoiding and Skew-Merged Permutations*
with Michael H. Albert, Martin Lackner and Vincent Vatter, Discrete Mathematics & Theoretical Computer Science, vol. 18 no. 2, Permutation Patterns 2015
available at `dmtcs.episciences.org/2607`

2016 *Parking Functions for Mappings*
with Alois Panholzer, Journal of Combinatorial Theory, Series A, 142, 1-28.

2016 *A Fast Algorithm for Permutation Pattern Matching Based on Alternating Runs*
with Martin Lackner, Algorithmica: 75(1), 84-117

2015 *Patterns in Labelled Combinatorial Objects*, PhD thesis, TU Wien

2014 *The Likelihood of Structure in Preference Profiles*
with Martin Lackner, in Proceedings of the 8th Multidisciplinary Workshop on Advances in Preference Handling (MPref 2014)

2013 *On Restricted Permutations on Regular Multisets*
in Permutation Patterns 2012 Proceedings, Special Issue of Pure Mathematics and Applications, 24 (2): 59-82.

2013 *The Computational Landscape of Permutation Patterns*
with Martin Lackner, in Permutation Patterns 2012 Proceedings, Special Issue of Pure Mathematics and Applications, 24 (2): 83-101.

2012 *From Peaks to Valleys, Running Up and Down: Fast Permutation Pattern Matching*
with Martin Lackner, Tiny Transactions on Computer Science

2012 *A Fast Algorithm for Permutation Pattern Matching Based on Alternating Runs*
with Martin Lackner, Algorithm Theory – SWAT 2012

2011 *Restricted Permutations on Multisets*, Master's thesis, TU Wien