

# Hans HÖNGESBERG

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## ACADEMIC POSITIONS

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from 05/2024	<b>Postdoctoral research fellow</b> , University of Ljubljana, Slovenia
2023 – 2024	<b>Assistant professor</b> , Institute of Mathematics of the Polish Academy of Sciences (IMPAN) in Kraków, Poland
2021 – 2023	<b>Postdoctoral research fellow</b> , University of Vienna, Austria
2017 – 2021	<b>Predocctoral research fellow</b> , University of Vienna, Austria
2017	<b>Undergraduate research assistant</b> , University of Vienna, Austria
2012 – 2013	<b>Student assistant</b> , Julius-Maximilians-University of Würzburg, Germany

## RESEARCH INTERESTS

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My research lies within enumerative and algebraic combinatorics. I am specially interested in alternating sign matrices and related objects such as integer and plane partitions, Young tableaux, lozenge tilings as well as symmetric functions.

## HIGHER EDUCATION

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JUN 2021	<b>PhD (Dr. rer. nat.)</b> in MATHEMATICS University of Vienna, Austria Thesis: <i>The Monotone Triangle Perspective on Alternating Sign Arrays</i> Advisor: Ilse FISCHER   <i>passed with distinction</i>
JUN 2017	<b>Master of Science (M.Sc.)</b> in MATHEMATICS University of Vienna, Austria Thesis: <i>Refined Enumeration Formulae Related to Halved Monotone Triangles</i> Advisor: Ilse FISCHER   <i>passed with distinction</i>
SEP 2013	<b>Bachelor of Arts (B.A.)</b> in PHILOSOPHY AND MATHEMATICS Julius-Maximilians-University of Würzburg, Germany Thesis: <i>Der Wahrheitsbegriff axiomatischer Sätze aus Sicht kritischer und formalistischer Theorie (The Concept of Truth of Axiomatic Sentences in Critical Philosophy and Hilbertian Formalism)</i> Advisor: Karl-Heinz LEMBECK   <i>passed with distinction</i>
JUL 2013	<b>Bachelor of Science (B.Sc.)</b> in MATHEMATICS Julius-Maximilians-University of Würzburg, Germany Thesis: <i>Kettenbruchentwicklung in algebraischen Zahlkörpern (Continued Fraction Expansion in Algebraic Number Fields)</i> Advisor: Jörn STEUDING   <i>final grade: very good</i>

## SCHOLARSHIPS AND GRANTS

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05/2024 – 4/2027	Erwin Schrödinger Fellowship Austrian Science Fund (FWF), project J 4810 <i>Alternating Sign Arrays: Symmetry &amp; Symmetric Functions</i> Grant Size: 183,430 €
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## SCIENTIFIC ACTIVITIES

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### JOURNAL PAPERS

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4. S. P. ALBION, I. FISCHER, H. HÖNGESBERG, F. SCHREIER-AIGNER, Skew symplectic and orthogonal characters through lattice paths, *European Journal of Combinatorics* **122**, 104000 (2024). DOI: [10.1016/j.ejc.2024.104000](https://doi.org/10.1016/j.ejc.2024.104000).
3. H. HÖNGESBERG, A fourfold refined enumeration of alternating sign trapezoids, *The Electronic Journal of Combinatorics* **29** (3), P3.42 (2022). DOI: [10.37236/9933](https://doi.org/10.37236/9933).
2. H. HÖNGESBERG, Weight-preserving bijections between integer partitions and a class of alternating sign trapezoids, *Annals of Combinatorics* **26**, 673–699 (2022). DOI: [10.1007/s00026-022-00588-1](https://doi.org/10.1007/s00026-022-00588-1).
1. H. HÖNGESBERG, Refined enumeration of halved monotone triangles and applications to vertically symmetric alternating sign trapezoids, *Journal of Combinatorial Theory, Series A* **177**, 105336 (2021). DOI: [10.1016/j.jcta.2020.105336](https://doi.org/10.1016/j.jcta.2020.105336).

### CONFERENCE PROCEEDINGS

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4. I. FISCHER, H. HÖNGESBERG, F. SCHREIER-AIGNER, Alternating sign matrices and descending plane partitions: a linear number of equivalent statistics, *Proceedings of the 35<sup>th</sup> Conference on Formal Power Series and Algebraic Combinatorics (Davis), Séminaire Lotharingien de Combinatoire* **89B.69** (2023). [Extended Abstract](#).
3. H. HÖNGESBERG, Weight-preserving bijections between integer partitions and a family of alternating sign trapezoids, *Proceedings of the 33<sup>rd</sup> Conference on Formal Power Series and Algebraic Combinatorics (Ramat Gan), Séminaire Lotharingien de Combinatoire* **85B.80** (2021). [Extended Abstract](#).
2. H. HÖNGESBERG, On a fourfold refined enumeration of alternating sign trapezoids, *Proceedings of the 32<sup>nd</sup> Conference on Formal Power Series and Algebraic Combinatorics (Online), Séminaire Lotharingien de Combinatoire* **84B.76** (2020). [Extended Abstract](#).
1. H. HÖNGESBERG, N. OSWALD, J. STEUDING, Complex continued fractions with constraints on their partial quotients, *Voronoi's Impact on Modern Science* **5(1): Proceedings of the 5<sup>th</sup> International Conference on Analytic Number Theory and Spatial Tessellations**, 1–14 (2013).

### PREPRINTS

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2. S. ALBION, T. EISENKÖLBL, I. FISCHER, M. GANGL, H. HÖNGESBERG, C. KRATTENTHALER, M. RUBEY, A generalization of conjugation of integer partitions. arXiv: [2407.16043\[math.CO\]](https://arxiv.org/abs/2407.16043).
1. I. FISCHER, H. HÖNGESBERG, Alternating sign matrices with reflective symmetry and plane partitions:  $n + 3$  pairs of equivalent statistics. arXiv: [2207.04469\[math.CO\]](https://arxiv.org/abs/2207.04469).

### POSTERS

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6. 35<sup>th</sup> Conference on Formal Power Series and Algebraic Combinatorics (FPSAC 2023), Davis (California, USA), 07/2023.
5. [AlCoVE: an Algebraic Combinatorics Virtual Expedition](#), Online, 06/2023.
4. 89<sup>th</sup> Séminaire Lotharingien de Combinatoire and Brenti Fest (89<sup>th</sup> SLC), Bertinoro (Italy), 03/2023.
3. 33<sup>rd</sup> Conference on Formal Power Series and Algebraic Combinatorics (FPSAC 2021), Ramat Gan (Israel), 01/2022. [Poster](#).
2. [Lattice Paths, Combinatorics and Interactions](#), CIRM, Marseille (France), 06/2021. [Poster](#).
1. 32<sup>nd</sup> Conference on Formal Power Series and Algebraic Combinatorics (FPSAC 2020), Online, 07/2020.

### SELECTED TALKS & WORKSHOPS

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13. [Doctoral seminar](#), Alpen-Adria-Universität Klagenfurt (Austria), 11/2024.
12. [Discrete mathematics seminar](#), University of Ljubljana (Slovenia), 05/2024.

11. Core participant of the long program *Geometry, Statistical Mechanics, and Integrability* at the Institute for Pure & Applied Mathematics (IPAM) at UCLA, Los Angeles (California, USA), 04–05/2024.
10. Speaker at the EAUMP-ICTP School on Enumerative Combinatorics, Arusha (Tanzania), 07/2023.
9. 2<sup>nd</sup> Queer and Trans Mathematicians in Combinatorics, QTMC 2023, London (UK), 07/2023.
8. Arbeitsgemeinschaft Diskrete Mathematik, TU Wien (Austria), 05/2023.
7. Algorithmic and Enumerative Combinatorics conference, Vienna (Austria), 07/2022. [Abstract](#). [Slides](#).
6. Séminaire virtuel de combinatoire du LaCIM, Montréal (Canada), 12/2020.
5. Arbeitsgemeinschaft Diskrete Mathematik, TU Wien (Austria), 12/2020.
4. 83<sup>rd</sup> Séminaire Lotharingien de Combinatoire, Bad Boll (Germany), 09/2019. [Slides](#).
3. SFB F50 Seminar, RICAM, Universität Linz (Austria), 06/2019.
2. Arbeitsgemeinschaft Diskrete Mathematik, TU Wien (Austria), 10/2018.
1. Workshop *Enumerative Combinatorics*, Mathematisches Forschungsinstitut Oberwolfach (Germany), 05/2018. [Report](#).

## REVIEWS

Referee for *Ars Mathematica Contemporanea*, *Combinatorial Theory*, *Discrete Mathematics*, *Electronic Journal of Combinatorics*, *Monatshefte für Mathematik*.

## TEACHING EXPERIENCE

### SUPERVISION

2023	Alexander Kargl (Bachelor student), <i>Stanley's shuffling theorem</i>
2022	Helene Leitner (Bachelor student), <i>Completion of Latin squares</i>

### CLASSES

2022	Assistance in preparing a new lecture series with exercise classes <i>Discrete Mathematics and Computer Science</i>
2021	<i>Combinatorics</i> , Exercise Classes
2020	<i>Discrete Mathematics</i> , Exercise Classes
2018 2019	<i>Linear Algebra for Physicists</i> , Exercise Classes

## PROFESSIONAL ACTIVITIES

Organiser	Combinatorics Working Seminar, University of Vienna, 2019
Substitute Member	Fakultätskonferenz Mathematik, University of Vienna, since 2020
Member	Studienkonferenz Doktoratsstudium Naturwissenschaften, University of Vienna, 2018