

Personal Data

Date of Birth 28.10.1989
Family Status married, two children (5 and 8 years old).

Education

- 11/2019 **PhD in Mathematics, summa cum laude.** Eberhard-Karls-Universität Tübingen.
Thesis: 'Quotient presentations of Mori Dream Spaces'.
Advisor: Prof. Dr. Jürgen Hausen.
2nd Referee: Prof. Dr. Harm Derksen.
3rd Referee: Prof. Dr. Michel Brion.
- 08/2015 **Diploma in Mathematics.** Eberhard-Karls-Universität Tübingen, grade 'excellent'.
Thesis: ' \mathbb{K}^* -surfaces with trivial canonical class'.
Advisor: Prof. Dr. Jürgen Hausen.
2nd Referee: Prof. Dr. Victor Batyrev.

Employment

- 12/23– Senior Postdoc, Leopold-Franzens-Universität Innsbruck.
Funded by **FWF grant PAT9495823**.
- 10/21–09/23 Wiss. Mitarbeiter (research associate), Albert-Ludwigs-Universität Freiburg.
Funded by **DFG grant 452847893** (Walter Benjamin-Stelle).
- 10/19–09/21 Wiss. Mitarbeiter (research associate), Albert-Ludwigs-Universität Freiburg.
- 04/19–09/19 Parental leave.
- 12/15–03/19 Wiss. Mitarbeiter (research associate, 50%), Eberhard-Karls-Universität Tübingen.

Research Grants (as PI)

- 2023–2027 Austrian research foundation (FWF), grant PAT9495823. Amount: € **392.734**.
2021–2023 German research foundation (DFG), grant 452847893. Amount: € **188.400**.

Prizes and Distinctions

- 2021 **Teaching Prize** awarded by the Mathematics Student Council at University of Freiburg, together with Prof. Huber-Klawitter and Dr. Böcherer-Linder for the lecture 'Geometrie'.

- 10/2021 Nominated by the University of Freiburg as member of '**Die Junge Akademie**', **German National Academy of Natural Sciences Leopoldina**.
- 11/2021 **Early step advancement** (TVL-E13 Step 4) due to excellent scientific performance.
- 01/2023 Invitation to **Junior Trimester 'Algebraic geometry: derived categories, Hodge theory, and Chow groups'** at HIM Bonn

Publications in Pure Mathematics

Preprints

- 18. **Fundamental groups, coregularity, and low dimensional klt Calabi-Yau pairs**
With Fernando Figueroa.
arXiv:2401.01315, submitted.
- 17. **ODD Metrics**
arXiv:2211.12088, submitted.

Journal Articles & Accepted for Publication

- 16. **Reductive covers of klt varieties**
With J. Moraga.
Accepted for publication in **Rev. Mat. Iberoam.**
- 15. **Reductive quotients of klt singularities**
With D. Greb, K. Langlois, and J. Moraga.
Inventiones Mathematicae (2024), doi.org/10.1007/s00222-024-01280-2.
- 14. **Iteration of Cox rings of klt singularities**
With J. Moraga.
Journal of Topology 17 (2024), no. 1, 71 pp.
- 13. **Orbifold Kähler-Einstein metrics on projective toric varieties**
Bull. London Math. Soc. 55 (2023), no. 6, 2743-2748.
- 12. **The Jordan property for local fundamental groups**
With S. Filipazzi, J. Moraga, R. Svaldi.
Geometry & Topology 26 (2022), no. 1, 283-319.
- 11. **Gorensteinness and iteration of Cox rings for Fano type varieties**
Mathematische Zeitschrift 301 (2022), 1047–1061.
- 10. **The local fundamental group of a Kawamata log terminal singularity is finite**
Inventiones Mathematicae 226 (2021), no. 3, 845-896.
- 9. **Invariant rings of sums of fundamental representations of SL_n and colored hypergraphs**
Advances in Mathematics 389 (2021), 107929.
- 8. **Completing the classification of representations of SL_n with complete intersection invariant ring**
Transformation Groups 26 (2021), no. 1, 115-144.

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7. **Canonical threefold singularities with a torus action of complexity one and k -empty polytopes**
With D. Hättig.
Rocky Mountain Journal of Mathematics 50 (2020), no. 3, 881-939.
6. **Hilbert series of the Grassmannian and k -Narayana numbers**
Communications in Mathematics 27 (2019), no. 1, 27-41.
5. **Log-terminal singularities, platonic tuples and iteration of Cox rings**
With I. Arzhantsev, J. Hausen, M. Wrobel.
European Journal of Mathematics 4 (2018), no. 1, 242-312.

Conference Proceedings

4. **ODD (Riemannian) Metrics**
Oberwolfach Report 18/2023, Komplexe Analysis - Differential and Algebraic methods in Kähler spaces (2023), 15–18, <https://doi.org/10.14760/OWR-2023-18>
3. **Finiteness and klt singularities**
Oberwolfach Report 24/2020, Komplexe Analysis - Algebraicity and Transcendence (2020), 1280–1283, <https://doi.org/10.4171/OWR/2020/24>
2. **Covariants of $SL_4(\mathbb{C})$ and incidence geometry of $\mathbb{P}_3(\mathbb{C})$**
Journal of Physics: Conference Series 1194 (2019), 012015.

Publications in Other Subject Areas

Journal Articles

1. **Long-term monitoring (1953-2019) of geomorphically active sections on LIA lateral moraines under changing meteorological conditions**
M. Altmann, M. Pfeiffer, F. Haas, J. Rom, F. Fleischer, T. Heckmann, L. Piermattei, M. Wimmer, L. Braun, M. Stark, S. Betz-Nutz, and M. Becht.
Earth Surface Dynamics 12 (2024), 399–431.

Selected Scientific Talks

- 01/2024 'Coregularities, Irregularities, and Fundamental Groups of Regular Loci' **Oberseminar Algebraische Geometrie und Arithmetik**, University of Duisburg-Essen.
- 09/2023 'Log terminal singularities and group actions' **Workshop: Singularities and Torus Actions**, University of Oldenburg.
- 06/2023 'Fundamental Groups of Singular Varieties and ODD Kähler Metrics', **University of Mainz** (job talk).
- 05/2023 'ODD (Riemannian) metrics' **Oberseminar Differentialgeometrie**, University of Freiburg.
- 04/2023 'Reductive quotients of klt singularities' **Nottingham Online Algebraic Geometry Seminar**.

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- 04/2023 'ODD (Riemannian) metrics' at the workshop **Komplexe Analysis - Algebraicity and Transcendence**, Mathematisches Forschungszentrum Oberwolfach.
- 02/2023 'From group actions and metrics to singularities and all the way back' at **EPFL Lausanne** (job talk).
- 12/2022 'Resolutions, coverings, and quotients of klt singularities' at **Universität Bayreuth** (job talk).
- 11/2022 'Orbifold Kähler-Einstein metrics on toric varieties' at **Friedrich-Schiller-Universität Jena**.
- 08/2022 'Reductive quotients of klt singularities' at the conference 'Stability and Moduli', **Simons Centre at Stony Brook**.
- 06/2022 'Reductive quotients of klt singularities' at **Universität des Saarlandes**.
- 06/2022 'Reductive quotients of klt singularities' at the **Birational Geometry Conference, EPFL Lausanne**.
- 06/2022 'Reductive quotients of klt singularities' at **Universität Bayreuth**.
- 05/2022 'Reductive quotients of klt singularities' at **Université Grenoble-Alpes**.
- 03/2022 'Finiteness of local fundamental groups' at the MMP Seminar, **Princeton University**.
- 02/2022 'Kähler metrics, orbifold structures, and fundamental groups on resolutions of klt spaces' at the **Conference on Subvarieties and foliations of complex projective varieties**, Osaka City University.
- 06/2021 'Local Cox rings for klt singularities' at **Università degli studi di Milano**.
- 06/2021 'Local Cox rings for klt singularities' at the **Oberseminar Algebra, Zahlentheorie und algebraische Geometrie**, University of Freiburg.
- 06/2021 'Local Cox rings for klt singularities' at the **Oberseminar Algebraische Geometrie und Arithmetik**, University of Duisburg-Essen.
- 08/2020 'Finiteness and klt singularities' at the workshop **Komplexe Analysis - Algebraicity and Transcendence**, Mathematisches Forschungszentrum Oberwolfach.
- 06/2020 'Fundamental groups of smooth loci of klt spaces' at the **Groups, Arithmetic & Algebraic Geometry Seminar**, EPFL Lausanne.
- 04/2020 'Fundamental groups of smooth loci of klt spaces' at the **Yale Algebraic Geometry Online Seminar**, organised by Yuchen Liu (Yale) and Chenyang Xu (MIT).
- 06/2019 'Gorensteinness and iteration of Cox rings' at the **Basel-Dijon-EPFL joint seminar**, University of Basel.
- 05/2019 'Gorensteinness and iteration of Cox rings' at the **Oberseminar Algebra, Zahlentheorie und algebraische Geometrie**, University of Freiburg.
- 05/2019 'Gorensteinness and iteration of Cox rings' at the **Oberseminar Zahlentheorie und Arithmetische Geometrie**, University of Hannover.
- 08/2018 'Invariants of fundamental representations of SL_n and colored hypergraphs', Short Communication at the **ICM 2018 in Rio de Janeiro**
- 07/2018 'Invariants of fundamental representations of SL_n and colored hypergraphs' at the **GROUP32** Conference at Technical University of Prague

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08/2017 'Classification of compound du Val and canonical threefold singularities with torus action of complexity one' at the workshop **Experimental Classification of Fano varieties**, University of Tübingen

Outreach Talks

- 04/2024 'Nullstellen und Gröbnerbasen', **Girls' Day Tirol**, University of Innsbruck
- 10/2022 'Riemann und der gekrümmte Raum', (Talk for highschool students interested in studying mathematics), **Mathematiktage**, University of Freiburg
- 04/2018 'Can the Big Bang be embedded somewhere and is it a quotient?', (Talk for Ph.D. students from different areas of expertise), **Forum Scientiarum**, University of Tübingen

Refereeing Service

Annales Henri Lebesgue, Algebraic Geometry, Geometry & Topology, International Mathematics Research Notices IMRN, Selecta Mathematica, Michigan Mathematical Journal, Journal of Pure and Applied Algebra (2x), Journal of Algebra, Transformation Groups

Teaching Experience

- 2024 Lecture 'Introduction to Higher Algebra and Discrete Mathematics' (Innsbruck)
- 2023 Reading Course 'Torische Geometrie' (Freiburg)
- 2021 Proseminar 'Einführung in die Graphentheorie' (Freiburg)
- 2021 Teaching assistant for 'Geometrie' (Freiburg)
- 2020/21 Seminar 'Gröbnerbasen und Invariantentheorie' (Freiburg)
- 2020/21 Teaching assistant for 'Algebra und Zahlentheorie' (Freiburg)
- 2020 Teaching assistant for 'Mathematik für Informatiker' (Freiburg)
- 2020 Teaching assistant for 'Lineare Algebra II' (Freiburg)
- 2019/2020 Teaching assistant for 'Topological Groups' (Freiburg)
- 2019/2020 Seminar 'Representation Theory of finite groups' (Freiburg)
- 2018/2019 Teaching assistant for 'Geometrie' (Tübingen)
- 2018 Seminar 'Geometry' (Tübingen)
- 2017/2018 Teaching assistant for 'Geometrie' (Tübingen)
- 2017 Teaching assistant for 'Algebraic Geometry' (Tübingen)
- 2016/2017 Teaching assistant for 'Geometrie' (Tübingen)
- 2016 Teaching assistant for 'Algebra' (Tübingen)
- 2015/2016 Teaching assistant for 'Geometrie' (Tübingen)

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Language Skills

German Mother tongue
English Fluent
French Conversational (German Abitur level)
Italian Basic