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## Education

**Freie Universität Berlin** Germany

Ph.D. in Mathematics, Defended March 2022 2018 – 2022

Dissertation: *Three Ehrhart Theories & Simplicial Hyperplane Arrangements*

Advisors: Christian Haase and Jean-Philippe Labbé

**Freie Universität Berlin** Germany

Master of Science in Mathematics 2016 – 2018

Master's Thesis: *A Survey of Quotient Posets*

Advisor: Jean-Philippe Labbé

**University of California, Berkeley** USA

Bachelor of Arts in Pure Mathematics (graduated with honors) 2012 – 2016

Honors Bachelor's Thesis: *Realizing Regular Embeddings of Complete Graphs*

Advisors: Kathryn Mann and Bernd Sturmfels

## Research Interests

Discrete geometry, algebraic and enumerative combinatorics, Ehrhart theory

## Honors

Scholar of the Facets of Complexity Research Training Group 2018 – 2022

Scholarship holder (Berlin Mathematical School) 2016 – 2018

Haas Scholar (2015), Bergeron Scholar (2015), Cal NERD Scholar (2015),

PROTON Scholar (2015), Cal Alumni Leadership Award Scholar (2012),

Davis-Bahcall Scholar (2012)

## Publications

**Congruence Normality of Simplicial Hyperplane Arrangements via Oriented Matroids**

With Michael Cuntz and Jean-Philippe Labbé

*Annals of Combinatorics*, 2021, DOI: 10.1007/s00026-021-00555-2

**Rational Ehrhart Theory**

With Matthias Beck and Sophie Rehberg

*To appear in Proceedings of the 34th International Conference FPSAC 2022,*

October 2021, arXiv:2110.10204, 21 pages

**Multivariate Volume, Ehrhart, and  $h^*$  Polynomials of Polytropes**

With Marie-Charlotte Brandenburg and Leon Zhang

*To appear in the Journal of Symbolic Computation special issue for MEGA 2021,*

August 2021, arXiv:2006.01920, 19 pages

## Selected Talks

### *Invited Seminar*

Combinatorics Seminar, KTH, Stockholm 2022  
 Algebra and Discrete Mathematics Seminar, UC Davis 2022  
 Graduate Online Combinatorics Colloquium 2020  
 Applied Algebra Seminar, York University, Canada 2020  
 Doctorants en Géométrie Combinatoire, Sorbonne Université, Paris 2020

### *Conference*

Convex and Discrete Day, FU Berlin 2022  
 (Polytop)ics Conference, Max Planck Institute, Leipzig, Online 2021

### *Expository*

*The Classification of Finite Reflection Groups*, PhD Defense, FU Berlin 2022  
 Discrete Geometry Graduate Student Seminar, FU Berlin:  
*Coxeter Groups* 2022  
*Equivariant Ehrhart Theory: Using Symmetric Decompositions* 2021

## Teaching Experience

**Bachelor's Thesis Co-Advisor (with Prof. Matthias Beck)** Summer 2021  
 Student: Nikolaj Gus, Topic: exponential generating functions

**Organizer, Discrete Geometry Graduate Student Seminar** 2020 – 2022

**Grader, Mathematics (Freie Universität Berlin)** Winter 2019 – 2020  
 Discrete Geometry 3, Course instructor: Matthias Beck

## Conference

### Organization

**Organizer, Berlin Mathematical School Student Conference** 2020

## Service & Outreach

**Berlin Mathematical School Student Representative** Dec 2018 – Feb 2020  
*Represent BMS students at Board Meetings, present motions on students' behalf, organize BMS student conference, lead social activities*

**Berlin Mathematical School Peer Mentor** August 2018 – May 2019  
*Mentor an incoming BMS student with similar interests*

## Skills

### **Programming**

Contributor to SageMath:

Authored tickets (available at [https://trac.sagemath.org/ticket/\[ticket number\]](https://trac.sagemath.org/ticket/[ticket number])):

#27637: *Compute the equivariant Ehrhart  $H^*$ -vector* 2021  
 #28247: *Parametrize the hypercube functions in the library of polytopes* 2020  
 #28413: *Compute the Ehrhart  $h^*$ -vector for rational polytopes* 2020  
 #18957: *Compute the Ehrhart polynomial for polytopes defined over  $\mathbb{Q}$*  2019

Proficient in: python,  $\text{\LaTeX}$ , GitHub

### **Languages**

English (native), German (advanced), Italian (basic)

## Other Interests

Music, illustration, film photography, flora of California