

# Kemal Rose

## Curriculum vitae

KTH Royal Institute of Technology  
Brinellvägen 8, 114 28, Stockholm, Sweden  
Pronouns: he/him  
✉ kemalr@kth.se  
🌐 kemalrose.github.io/

## Education

- 01/2024–**Postdoctoral researcher**, *KTH Royal Institute of Technology*, Stockholm  
today Supervised by: Sandra di Rocco
- 01/2021–**PhD Student**, *Max Planck Institute for Mathematics in the Sciences*, Leipzig  
01/2024 Research group: nonlinear algebra  
Supervised by: Bernd Sturmfels, Simon Telen
- 10/2018–**M.Sc. in Mathematics**, *Technische Universität Berlin*  
12/2020 Thesis title: The non-Gorenstein locus of toric varieties  
Supervised by: Peter Bürgisser and Christian Haase
- 10/2015–**B.Sc.**, *Technische Universität Berlin*  
09/2018 Thesis title: Semi-invariants of quiver representations in characteristic 0  
Supervised by: Peter Bürgisser and Mario Kummer

## Publications

- [7] Mareike Dressler et al. “Algebraic optimization of sequential decision problems”. In: *Journal of Symbolic Computation* 121 (2024), p. 102241.
- [6] Paul Breiding, Kemal Rose, and Sascha Timme. “Certifying zeros of polynomial systems using interval arithmetic”. In: *ACM Trans. Math. Softw.* (2023).
- [5] Julia Lindberg, Leonid Monin, and Kemal Rose. “A polyhedral homotopy algorithm for computing critical points of polynomial programs”. In: *arXiv:2302.04117* (2023).
- [4] Julia Lindberg, Leonid Monin, and Kemal Rose. “The algebraic degree of sparse polynomial optimization”. In: *arXiv preprint arXiv:2308.07765* (2023).
- [3] Rida Ait El Manssour et al. “Lines on  $p$ -adic and real cubic surfaces”. In: *Abh. Math. Semin. Univ. Hambg.* (2023) (2023).
- [2] Kemal Rose. “Multi-degrees in polynomial optimization”. In: *arXiv:2209.10670* (2022).
- [1] Kemal Rose. “Toric non-Gorenstein loci”. In: *arXiv:2204.01317* (2022).

## Presentations

### Talks

- 02/2024 **Signed tropical discriminants and steady state varieties**, *Applied CATS seminar*, KTH Royal Institute of Technology, Stockholm
- 01/2024 **Signed tropical discriminants and steady state varieties**, *Nonlinear algebra seminar*, Max Planck Institute for Mathematics in the Sciences, Leipzig
- 01/2024 **Signed tropical discriminants and steady state varieties**, *Joint algebra seminar*, RWTH Aachen university, Aachen

- 07/2023 **Certifying Zeros of Polynomial Systems Using Interval Arithmetic** , *SIAM AG 2023*, Eindhoven University of Technology, Eindhoven
- 05/2023 **The algebraic degree of sparse polynomial optimization** , *Research seminar in the department of Mathematical Sciences*, Copenhagen
- 03/2023 **What is a tropical discriminant?** , *Workshop algebra, geometry and computation at CWI*, Centrum Wiskunde & Informatica (CWI), Amsterdam
- 01/2023 **What is a tropical discriminant?**, *Nonlinear algebra seminar* , Max Planck Institute for Mathematics in the Sciences, Leipzig ,
- 11/2022 **The geometry of sequential decision problems with state uncertainty**, *Research seminar at the institute of analysis and algebra* , Technische Universität Braunschweig
- 08/2022 **Algebraic optimization of decision rules**, *N & O seminar* , Centrum Wiskunde & Informatica (CWI), Amsterdam
- 07/2022 **Algebraic optimization of decision rules**, *MEGA - Effective Methods in Algebraic Geometry* , Krakow
- 02/2020 **The non Gorenstein locus of hibi rings**, *Milestone conference of the thematic Einstein semester Algebraic Geometry*, Freie Universität Berlin
- [Poster](#)
- 10/2022 **Quadratically constrained polynomial optimisation in statistics**, *Workshop on solving polynomial equations and applications* , Centrum Wiskunde & Informatica (CWI), Amsterdam

---

## Organisation

- 05/2024 **Altogelis 2024** , Technische Universität Dresden
- 04/2023 **Workshop on solving hard polynomial systems** , Max Planck Institute for Mathematics in the Sciences, Leipzig

---

## Other activities

- 03/2023 **Applications of Tropical Geometry in Leipzig-Berlin** , Max Planck Institute for Mathematics in the Sciences, Leipzig
- 03/2023 **Algebra, geometry and computation at CWI** , Centrum Wiskunde & Informatica (CWI), Amsterdam
- 02/2023 **North german algebraic geometry seminar (NOGAGS)** , Humboldt Universität Berlin,
- 11/2022 **Research visit**, Technische Universität Braunschweig
- 10/2022 **Workshop on solving polynomial equations and applications** , Centrum Wiskunde & Informatica (CWI), Amsterdam
- 08/2022 **Research visit**, Centrum Wiskunde & Informatica (CWI), Amsterdam
- 02/2022 **OSCAR developer meeting - tropical geometry** , Technische Universität Kaiserslautern
- 08/2021 **Branching from number theory: p-adics in the sciences** , Max Planck Institute for Mathematics in the Sciences, Leipzig

- 07/2021 **Workshop on Frobenius structures and operads** , Centre international de rencontres mathématiques (CIRM), Marseille
- 07/2021 **Minicourse on convex geometry** , Max Planck Institute for Mathematics in the Sciences, Leipzig
- 07/2018 **Einstein workshop geometric and topological combinatorics** , Freie Universität
- 09/2018– **Student-assistant at TU Berlin,**
- 09/2020 Developer for the software package HomotopyContinuation.jl

## ■ Programming languages

- Matlab
- Julia: advanced
- Macaulay2: advanced
- Python

## ■ Teaching experience

- 09/2017– **Tutor for Analysis for engineers I,**
- 03/2018 Marking of homework and exams; weekly tutoring classes for 20-40 students
- 03/2018– **Tutor for Algebra I**
- 09/2018 Marking of homework and exams; weekly tutoring classes for ~20 students

## ■ Interests

I very much like dancing Salsa, cooking and baking.