CURRICULUM VITAE: DANIEL BROSCH

ADDRESS

Warandelaan 2
Koopmans Building
Room K420
5037 AB Tilburg
The Netherlands
Email: d.brosch@tilburguniversity.edu
Website: www.danielbrosch.com

PERSONAL DETAILS

Date of birth: 19.11.1996
Place of birth: Leverkusen, Germany
Citizenship: German

EDUCATION

- Since 2018: Ph.D. Student at University Tilburg under supervision of Etienne de Klerk and Monique Laurent
    - Secondment at ORTEC, Zoetermeer (10.2019-12.2019)
    - Secondment at CWI, Amsterdam (1.2020-3.2020)
- 2012-2018: University of Cologne
    - 2017-2018: Mathematics MSc (mit Auszeichnung), thesis: *Semidefinite Bounds for Unequal Error Protection Codes.*
    - 2015 -2017: Mathematics BSc (mit Auszeichnung), thesis*: The Banach-Tarski Paradox.*
    - 2012 -2015: Participant of project: "*Schülerinnen und Schüler an der Universität*"
    - 2008-2015: Otto-Hahn-Gymnasium Monheim, Abitur in Mathematics, Physics, Latin, Philosophy

RESEARCH

PAPERS:

- Accepted:
    - *Minimum energy configurations on a toric lattice as a quadratic assignment problem.* (Joint work with Etienne de Klerk), **Discrete Optimization**, 2020, https://doi.org/10.1016/j.disopt.2020.100612.
    - *Optimizing hypergraph-based polynomials modeling job-occupancy in queueing with redundancy scheduling* (joint work with Monique Laurent and Andries Steenkamp), **SIAM Journal on Optimization**, 2021 https://doi.org/10.1137/20M1369592.
    - *Jordan symmetry reduction for conic optimization over the doubly nonnegative cone: theory and software* (joint work with Etienne de Klerk),

https://arxiv.org/abs/2001.11348, accepted by **Optimization Methods and Software**, awaiting publication.
- Work in progress:
  - **PhD-Thesis:** *Symmetry reduction in convex optimization.* Under supervision of Etienne de Klerk and Monique Laurent. Expected completion: Q2 2022.
  - *More efficient and flexible Flag-SOS hierarchies.*
  - *Improved bounds for crossing numbers based on semidefinite programming* (joint work with Sven Polak).

TALKS:

- 6th International Conference on Continuous Optimization (ICCOPT), 7.8.2019, Berlin: *Minimum energy configurations on a toric lattice as a quadratic assignment problem.*
- Polynomial optimization reading group (CWI, Amsterdam), 26.2.2020 and 4.3.2020.: *A two-part introduction to symmetry reduction for SDPs.*
- Shared seminar CWI reading group/Cologne Oberseminar, January 2021: *More efficient and flexible Flag-Algebras.*
- Oberseminar "Reelle Geometrie und Algebra", Uni Konstanz, January 2021: *More efficient and flexible Flag-Algebras.*
- Virtual OR Seminar, Tilburg University, February 2021: *More efficient and flexible Flag-Algebras.*
- SIAM OP21, 20-23 July 2021: *More efficient and flexible Flag-Algebras coming from polynomial optimization.*
- SIAM AG21, 20 August 2021: *More efficient and flexible Flag-Algebras coming from polynomial optimization.*

CONFERENCES/WORKSHOPS/SUMMER SCHOOLS/COURSES:

- LNMB PhD Course: Networks and Semidefinite Programming (19.11.2018-18.2.2019) Utrecht
- 23rd Workshop on Combinatorial Optimization (7.1.2019-11.1.2019), Lunteren
- 44th conference on the mathematics of operations research (14.01.2019-16.01.2019), Aussois, France
- 1st MINOA conference (14.01.2019-16.01.2019), Aussois, France
- MINOA midterm review meeting, 9.4.2019, Cologne, Germany
- 1st MINOA PhD school: Mixed-Integer Nonlinear Optimization meets Data Science (24.06.2019-28.06.2019), Ischia, Italy
- 6th International Conference on Continuous Optimization (ICCOPT) (05.08.2019-08.08.2019), Berlin, Germany
- LNMB PhD Course: Interior Point Methods (9.9.2019-11.11.2019), Utrecht
- 24th Workshop on Combinatorial Optimization (6.1.2020-10.1.2020), Aussois, France
- 2nd MINOA conference (6.1.2020-10.1.2020), Aussois, France
- POEMA Online Learning Weeks (27.5.2020-16.9.2020)
- POEMA 2nd Workshop 10-12 2020 (online)
- First MINOA ESR Days, 23.11.-24.11.20 (Online)
- Complementary Skills Session on IPR, 01.12.20 (Online)
- POEMA 3rd Workshop 1-3 2021 (online)
- Annual MINOA Conference 2021, 01.03-03.03.21 (Online)
- Second ESR Days, 04.03/05.03.2021 (Online)

- General Julia training (POEMA) 16.4.2021
- MINOA Doctoral school 2021 (21-29 June 2021)
- CWI reading group on Polynomial Optimization, hosted by Monique Laurent (2019 – present)
- Cologne Oberseminar, hosted by Frank Vallentin (2020-present)