M. Levent Doğan

M.Sc.

+49 163 2255913

dogan.mlevent@gmail.com

mldogan.github.io

Berlin, Germany

EDUCATION

PhD   **11/2019-present**
Technische Universität Berlin
Berlin Mathematical School Phase 2
Subject: Mathematics
Supervisor: Prof. Dr. Peter Bürgisser

Master's Degree   **10/2017-11/2019**
Technische Universität Berlin
Berlin Mathematical School Phase 1
Subject: Mathematics
Grade: 1.0 (Excellent)

Bachelor's Degree   **09/2014-08/2017**
Middle East Technical University
Subject: Mathematics
CGPA: 3.99

EXPERTISE

Programming Languages

- Python, C, C++, Java
- SageMath
- Julia
- Macaulay2

Languages

- Turkish (native)
- English (fluent)
- German (B2)

SUMMARY STATEMENT

I am a PhD student at TU Berlin and a Berlin Mathematical School Phase 2 student.
My supervisor is Prof. Dr. Peter Bürgisser.
I am interested in computational problems in the areas of algebra, geometry and combinatorics.
My main research is on geometric complexity theory and geometric invariant theory.

PUBLICATIONS

1) Polynomial Time Algorithms in Invariant Theory for Torus Actions

In 36th Computational Complexity Conference (CCC 2021).
with Peter Bürgisser, Visu Makam, Michael Walter and Avi Wigderson.
DOI: 10.4230/LIPIcs.CCC.2021.32
arXiv: 2102.07727

2) The Multivariate Schwartz-Zippel Lemma
In SIAM Journal on Discrete Mathematics. Vol. 36, Iss. 2 (2022).
with Alperen A. Ergür, Jake D. Mundo and Elias Tsigaridas.
DOI: 10.1137/20M1333869
arXiv: 1910.01095

PREPRINTS

3) Deterministic Approximation Algorithms for Volumes of Spectrahedra

with Jonathan Leake and Mohan Ravichandran.
arXiv: 2211.12541

4) On the Complexity of Chow and Hurwitz Forms

with Alperen A. Ergür and Elias Tsigaridas.
Accepted for publication in: ACM Communications in Computer Algebra. arXiv:2202.11582

GRANTS AND AWARDS

• **2019 - present**	ERC Grant 787840	
	European Union's Horizon 2020 research programme	
• **2019 - present**	Berlin Mathematical School	
	Admission to Phase 2 studies	
• **2017-2019**	Berlin Mathematical School	
	Scholarship for Phase 1 studies	
• **2014-2017**	Middle East Technical University and TUBITAK	
	Scholarship for Science Studies	
• **2014**	National University Admission Exam	
	55th place among >1.5 million participants	
• **2013**	5th National Human Sciences Olympiads	
	1st degree for Philosophy	

TEACHING EXPERIENCE

- **10/2022 - 04/2023**   Teaching Assistant
  TU Berlin - Algebra 1
- **2021 - present**   Mentor at a Directed Reading Program
  I have mentored 3 students at DRP Türkiye
- **2016**   Student Assistant
  Middle East Technical University
- **2015**   Student Assistant
  Middle East Technical University

RESEARCH VISITS

- **11/2023**   I visited my co-author Michael Walter
  Ruhr University Bochum
- **12/2022**   I visited my co-author Alperen A. Ergür
  University of Texas at San Antonio
- **06/2022**   I visited my co-author Michael Walter
  Ruhr University Bochum
- **09/2021**   I visited my co-author Elias Tsigaridas
  Inria Paris

CONFERENCES AND TALKS

- **07/2023**   SIAM Conference on Applied Algebraic Geometry 2023
  Eindhoven
  I gave a talk in the minisymposium *Efficient Symbolic and Numerical Algorithms for Polynomial Systems*
- **06/2023**   Foundations of Computational Mathematics (FOCM) 2023
  Paris
- **06/2023**   25th Conference of the International Linear Algebra Society
  Madrid
  I gave a talk in the minisymposium *Semidefinite matrices: geometry and optimization*
- **11/2022**   Dies Mathematicus event
  I presented my master's thesis at TU Berlin
- **09/2022**   Peterfest: Geometry in Complexity and Computations
  Konstanz
- **07/2022**   Math+ P-NP event
  I gave a "What is…" seminar talk on the PCP Theorem
- **04/2022**   Seminar on Geometry, Probability, and Computing
  Talk at the colloquium of University of Texas San Antonio.
- **08/2021**   SIAM Conference on Applied Algebraic Geometry 2021
  I gave a talk at the virtual minisymposium *Applied Invariant Theory: Statistics and Algorithms*
- **08/2021**   Seminar on Nonlinear Algebra
  Leipzig
  I gave a talk at the colloquium of MPI MiS
- **07/2021**   Computational Complexity Conference 2021
  I gave a talk at the virtual conference on the accepted paper *Polynomial Time Algorithms in Invariant Theory for Torus Actions*
- **02/2020**   Milestone Conference of the Thematic Einstein Semester
  Berlin
  I gave a talk on my preprint *The Multivariate Schwartz-Zippel Lemma*