

Zafeirakis Zafeirakopoulos

Curriculum Vitae

Section of Mathematics
University of Geneva
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Geneva, Switzerland



Personal Info

Gender Male
Date of birth June 11, 1982
Nationality Greek

Education

- 2012 **Doctor in Technical Sciences**, *Johannes Kepler University*,
Research Institute for Symbolic Computation (RISC)
Thesis: Linear Diophantine Systems: Partition Analysis and Polyhedral Geometry
Advisors Prof. Peter Paule (JKU, Austria) and Prof. Matthias Beck (SFSU, USA)
- 2008 **Master's in Computational Science**, *University of Athens*,
Department of Informatics and Telecommunications, *GPA – 8.72/10*
Thesis: Study and Benchmarks for Real Root Isolation methods
Advisor Prof. Ioannis Emiris (NKUA, Greece)
- 2005 **Bachelor's in Mathematics**, *University of Athens*,
Department of Mathematics, *GPA – 7.2/10*
Majors: Applied Mathematics and Computational Mathematics

Research Interests

Symbolic Computation	Enumerative Combinatorics
Computer Algebra	Algebraic Combinatorics
Polyhedral Geometry	Algorithmic Combinatorics
Algebraic Geometry	Integer Linear Optimization
Machine Learning	Linear Diophantine Systems
Experimental Math	Theoretical Computer Science

Languages

Greek (native), English (fluent), German (good), French (good), Turkish (basic)

Professional Experience

- Jan 2023 **University of Geneva (Switzerland) - Section of Mathematics**
Jan 2025 Research Associate
- Mar 2016 **Gebze Technical University (Turkey) - Institute of Information Technologies**
Jan 2023 Assistant Professor
- Jul 2015 **Galatasaray University (Turkey)**, *Post-doc at Project 113F293 (TUBITAK 1001)*,
Feb 2016 *Izole Olmayan Rasyonel Tekilliklerin Denklemleri ve Değişmezleri*
PI: Prof Meral Tosun
- Dec 2014 **University of Athens (Greece)**, *Post-doc at Research Project ΘΑΛΗΣ*,
Feb 2015 *Advanced Geometric Computing and Critical Applications*
PI: Prof Ioannis Emiris
- Jan 2014 **Hellenic Army (Compulsory Service)**, *Hellenic Army General Staff*,
Oct 2014 Program Analyst/Software Developer
- Dec 2012 **Johannes Kepler University (Austria) - RISC**, *Post-doc at Algorithmic Combinatorics Group (various projects)*,
Dec 2013 *Partition Analysis*
PIs: Prof. Peter Paule, Dr. Veronika Pillwein, Dr. Carsten Schneider
- Jan 2011 **Johannes Kepler University (Austria) - RISC**,
Nov 2012 *Algorithmic Combinatorics*
PI: Prof. Peter Paule
- Oct 2009 **Johannes Kepler University (Austria) - RISC**, *Doctoral Program "Computational Mathematics" - DK6*,
Dec 2010 *Computer Algebra Tools for Special Functions in Numerical Analysis*
PI: Prof. Peter Paule
- Apr 2009 **Johannes Kepler University (Austria) - RISC**, *Doctoral Program "Computational Mathematics" - DK11*,
Jun 2009 *Rational Parametric Algebraic Curves*
PI: Prof. Franz Winkler
- Jan 2008 **University of Athens (Greece)**, *European Project under FP7*,
Mar 2008 *Algorithms for Complex Shapes*
PI: Prof. Ioannis Emiris
- Apr 2007 **Greek Ministry of Tourism**, *Department of Informatics and New Technologies*,
Dec 2007 *Network admin, Network/Technical support and consulting*
- Jun 2006 **University of Athens (Greece)**, *Pythagoras Project*,
Jul 2006 *Distributed Iterative Methods for Numerical Solving of Convection Diffusion with application to atmospheric models*
PI: Prof. Nikolaos Misirlis

Awards and Scholarships

- 2023 ACA-ERA Applications of Computer Algebra Early Career Researcher Award
- Jan-Jun 2012 Marshall Plan Scholarship (Research Visit to San Francisco State University, USA)
Advisor: Prof. Matthias Beck

Funding

Research Projects

Projects for which I was the main applicant and principal investigator.
In total 25 researcher years (~200k € budget in Turkey)

- Oct 2022 **Polyhedral Omega - Generalizations and Applications - POGA**,
Oct 2025 *TÜBITAK 1001*, ~45k €, 3 researchers
- Jul 2022 **Continued Fractions and Arithmetic**,
Dec 2023 *Research Council of Gebze Technical University*, ~3k €, 1 researcher
- Jul 2021 **Symbolic Linear Algebra** ,
Dec 2022 *Research Council of Gebze Technical University*, ~3k €, 1 researcher
- Jun 2019 **Gröbner Bases, Resultants and Polyhedral Geometry - GRAPE** ,
Jun 2022 *TÜBITAK 2509 - Bilateral Project with France*, ~50k €, 2.5 researchers
- Aug 2021 **Machine Learning and Symbolic Computation** ,
Aug 2022 *Research Council of Gebze Technical University*, ~2k €, 1 researcher
- Oct 2017 **Heterogeneous Algorithms for Combinatorics, Geometry, Optimization and**
Oct 2020 **Number Theory - HALCYON** , *TÜBITAK 3501*, ~80k €, 2.5 researchers
- Sep 2017 **A system for representation of mathematical data and benchmarking of**
Mar 2019 **software and algorithms** , *TÜBITAK 3001*, ~17k €, 2 researchers
- Jul 2018 **Algebraic Motion Planning**,
Dec 2019 *Research Council of Gebze Technical University* , ~3k €, 1 researcher
- Aug 2016 **Parallel Computation of Discrete and Continuous Volume** ,
Feb 2017 *Research Council of Gebze Technical University*, ~3k €, 1 researcher

Conference and Workshop organization (selected)

- 2022 - 2023 **Training Mathematicians in Computation in Turkey**, *Int. Math Union*, ~7.5k €
- Aug 2022 **Support for SCALE 2022**, *Turkish Math Society*, ~3k €

Travel grants

- Jul 2015 SFB - Algorithmic and Enumerative Combinatorics *Austria*
- Jun 2015 Berlin Math School *Germany*
- Nov 2014 IMA Thematic Year on Discrete Structures *USA*
- Jul 2013 SIAM AG - Tutorials in the Mountains - "Toric Geometry" *USA*
- Jun 2013 COCOA - International School on Computer Algebra *Germany*
- Jan-Jun 2012 JKU International Scholarship travel allowance *Austria*
- Jun 2011 Rocky Mountain Math Consortium *USA*

Invited talks (conferences, workshops and seminars)

Conferences

- 2024 **Int. Conference on Modular Forms and q-Series**, *Cologne, Germany*
- 2016 **Int. Conference on "Algebra, Geometry and Topology of Singularities"**, *Galatasaray University, Istanbul, Turkey*

Lectures

- 2016 **RIMS Workshop on "Algebraic Statistics and Symbolic Computation"**, *Kyoto, Japan*, Lecture topic: "Polyhedra, Symbolic Computation and Applications"
- 2018 **Ankara-Istanbul Algebraic Geometry & Number Theory Meetings**, *METU and IMBM, Ankara and Istanbul, Turkey*, Lecture topic: "(Sparse) Elimination Theory"

Seminars (selected)

- 23 May 2023 **Lyon 1 - Combinatorics and Number Theory Seminar**, *Lyon, France*
- 30 Nov 2022 **TU Berlin DMG Seminar**, *Berlin, Germany*
- 05 Apr 2022 **Institute of Applied Mathematics (METU) General Seminar**, *Ankara, Turkey*
- 10 Mar 2017 **Gebze Technical University General Math Seminar**, *Istanbul, Turkey*
- 24 Nov 2016 **Bilkent University Algebra Seminar**, *Ankara, Turkey*
- 03 Oct 2016 **TU Wien - Formal Methods in Systems Engineering Seminar**, *Vienna, Austria*
- 03 Dec 2015 **Yildiz Technical University Math Seminar**, *Istanbul, Turkey*
- 07 Nov 2014 **U. of Minnesota Combinatorics Seminar**, *Twin Cities, USA*
- 13 Aug 2013 **PennState Partitions Seminar**, *PennState, USA*
- 17 Apr 2012 **UC Davis Algebra and Discrete Math Seminar**, *Davis, USA*

Conference and Workshop Organization

- 2022 **SCALE - Symbolic Computation: Algorithms, Learning and Engineering**, *Istanbul, Turkey*, General chair
- 2022 **CASC - Computer Algebra in Scientific Computing**, *Istanbul, Turkey*, Local Organizer
- 2022 **ACA - Applications of Computer Algebra**, *Istanbul, Turkey*, General Chair
- 2022 **Summer School on Integer Partition Identities**, *Nesin Math Village, Turkey*, Lecturer
- 2019 **MACIS - International Conference on Mathematical Aspects of Computer and Information Sciences**, *Istanbul, Turkey*, General chair
- 2018 **Summer School on Integer Partitions**, *Nesin Math Village, Turkey*, Lecturer
- 2016 **Algebra, Geometry and Topology of Singularities**, *Galatasaray University, Istanbul, Turkey*, Local Organizer
- 2015 **ACA - Applications of Computer Algebra**, *Kalamata, Greece*, Publicity chair
- 2014 **ACA - Applications of Computer Algebra**, *New York, USA*, Publicity chair
- 2013 **GBReLA - Gröbner Bases, Resultants and Linear Algebra**, *RISC, Hagenberg, Austria*, Organizer

Teaching

Main Lecturer

2017-2022	Discrete Mathematics (Undergraduate)	CS @ Gebze Technical University
2019-2021	Probability and Statistics (Undergraduate)	CS @ Gebze Technical University
2017,2019,2022	Theory of Computation (Undergraduate)	CS @ Gebze Technical University
2017-2019	Algorithm Design and Analysis (Graduate)	CS @ Gebze Technical University
2017-2022	Symbolic Computation (Grad & Undergrad)	CS @ Gebze Technical University
2020-2022	Special Topics in Algorithms (Graduate)	CS @ Gebze Technical University
2016	Signals and Systems (Undergraduate)	CS @ Gebze Technical University

Teaching record

2015-2016 S	Signals and Systems (Undergraduate)	
2016-2017 W	Discrete Mathematics (Undergraduate)	CS @ Gebze Technical University
2016-2017 W	Symbolic Computation (Grad & Undergrad)	CS @ Gebze Technical University
2016-2017 S	Theory of Computation (Undergraduate)	CS @ Gebze Technical University
2016-2017 S	Algorithm Design and Analysis (Graduate)	CS @ Gebze Technical University
2017-2018 W	Discrete Mathematics (Undergraduate)	CS @ Gebze Technical University
2017-2018 S	Algorithm Design and Analysis (Graduate)	CS @ Gebze Technical University
2018-2019 W	Discrete Mathematics (Undergraduate)	CS @ Gebze Technical University
2018-2019 W	Symbolic Computation (Grad & Undergrad)	CS @ Gebze Technical University
2018-2019 S	Theory of Computation (Undergraduate)	CS @ Gebze Technical University
2018-2019 S	Algorithm Design and Analysis (Graduate)	CS @ Gebze Technical University
2019-2020 W	Discrete Mathematics (Undergraduate)	CS @ Gebze Technical University
2019-2020 W	Symbolic Computation (Grad & Undergrad)	CS @ Gebze Technical University
2019-2020 S	Special Topics in Algorithms (Graduate)	CS @ Gebze Technical University
2019-2020 S	Probability and Statistics (Undergraduate)	CS @ Gebze Technical University
2020-2021 W	Discrete Mathematics (Undergraduate)	CS @ Gebze Technical University
2020-2021 W	Symbolic Computation (Grad & Undergrad)	CS @ Gebze Technical University
2020-2021 S	Special Topics in Algorithms (Graduate)	CS @ Gebze Technical University
2020-2021 S	Probability and Statistics (Undergraduate)	CS @ Gebze Technical University
2021-2022 W	Discrete Mathematics (Undergraduate)	CS @ Gebze Technical University
2021-2022 W	Symbolic Computation (Grad & Undergrad)	CS @ Gebze Technical University
2021-2022 S	Theory of Computation (Undergraduate)	CS @ Gebze Technical University
2021-2022 S	Special Topics in Algorithms (Graduate)	CS @ Gebze Technical University
2021-2022 S	Probability and Statistics (Undergraduate)	CS @ Gebze Technical University

Teaching evaluation

Official evaluation records from student surveys (for the years that the surveys were available).

Year	Course	# of students	# survey answers	Evaluation (5 is best)
2022 W	Discrete Math	161	140	4.0
2021 W	Discrete Math	142	68	3.7
2020 W	Discrete Math	150	128	4.0
2022 W	Symbolic Computation	44	35	4.5
2021 W	Symbolic Computation	33	28	4.4
2020 W	Symbolic Computation	15	15	4.5
2021 S	Probability and Statistics	100	93	4.1
2020 S	Probability and Statistics	90	84	4.0
2020 S	Theory of Computation	44	42	4.1
2022 W	Graduation Project	10	9	4.5
2021 S	Graduation Project	6	6	4.5
2020 S	Graduation Project	7	7	4.0
2021 W	Graduation Project	9	6	4.7
2020 W	Graduation Project	5	5	4.8

Teaching Assistant

2023	Numerical Analysis Lab (Undergraduate)	<i>Math @ University of Geneva</i>
2024	Combinatorics of Integer Partitions (Graduate)	<i>Math @ University of Geneva</i>
2005 - 2007	Discrete Mathematics (Undergraduate)	<i>CS @ University of Athens</i>
2005 - 2006	Numerical Analysis (Undergraduate)	<i>CS @ University of Athens</i>
2004 - 2005	Computer Graphics (Undergraduate)	<i>Math @ University of Athens</i>
2004 - 2005	Basic computer skills (Undergraduate)	<i>Math @ University of Athens</i>
2004 - 2006	E-class: Computer Algebra in Scientific Computing	<i>University of Athens</i>
2003 - 2006	Computer Lab Assistant	<i>Math @ University of Athens</i>

Master's students supervision

2019	Nurdan Ünlü (co-advisor)	<i>Math @ Mimar Sinan GSU</i>
	Chow-Betti numbers and toric h-numbers of dual hypersimplices and Ehrhart polynomials of Minkowski sums with segments	
2019	Büşra Sert (co-advisor)	<i>Math @ Mimar Sinan GSU</i>
	A study on the chamber complex	
2020	Umutcan Önal (dropped out after defense)	<i>CS @ Gebze Technical University</i>
	Volume prediction for high dimensional polytopes with deep learning	
2023	Hüseyin Sabri Aliefendioğlu	<i>CS @ Gebze Technical University</i>
	Implementation and comparison of methods for real root isolation of univariate polynomials	

Undergraduate students supervision

2016	2 graduation theses (undergraduate senior year project)	<i>Galatasaray University</i>
2017 - 2022	More than 40 graduation theses. Full list in appendix	<i>Gebze Technical University</i>

Lectures in Nesin Mathematics Village (1 or 2 week lectures)

2010	Polynomial System Solving	2016	Symbolic Computation
2011	Solving Linear Diophantine Systems	2017	Combinatorial Counting (2 weeks)
2012	Geometry and Number Theory	2018	Introduction to Polyhedral Geometry
2015	Geometry that counts	2019	Polyhedral Combinatorics
2015	Algorithmic Algebraic Geometry	2022	Symbolic Computation

Research Activities

Outgoing visits

Nov 2022	RICAM (Austria) - Research in Teams	<i>Research visit</i>
Nov 2022	Paris Jussieu (France) - Visiting Dr. Elias Tsigaridas	<i>Research visit</i>
Nov 2021	Paris Jussieu (France) - Visiting Dr. Elias Tsigaridas	<i>Research visit</i>
Jul 2021	SBA (Austria) -Visiting Dr. Dimitris E. Simos	<i>Research visit</i>
Dec 2019	Paris Jussieu (France) - Visiting Dr. Elias Tsigaridas	<i>Research visit</i>
Jul 2019	RISC (Austria) -Visiting Dr. Veronika Pillwein	<i>Research visit</i>
Oct 2017	MSRI (USA) -Geometric and topological combinatorics	<i>MSRI Workshop</i>
Nov 2016	AIM (USA) - Partition Theory and Polyhedral Geometry	<i>AIM Workshop</i>
Sep 2016	RISC (Austria) -Visiting Prof. Peter Paule	<i>Research visit</i>
Nov 2015	Osnabrück U (Germany) - Visiting Prof. Winfried Bruns	<i>Research visit</i>
Nov 2015	U of Athens (Greece) - Visiting Prof. Ioannis Emiris	<i>Research visit</i>
Aug 2015	RISC (Austria) -Visiting Prof. Peter Paule	<i>Research visit</i>
Nov 2014	IMA (USA) - Geometric and Enumerative Combinatorics	<i>IMA Workshop</i>
Aug 2013	PennState U (USA) - Visiting Prof. George Andrews	<i>Research visit</i>
Aug 2013	NCSU (USA) - Visiting Prof. Carla Savage	<i>Research visit</i>
Nov 2012	AIM (USA) - Partition Theory and Polyhedral Geometry	<i>AIM SQuaRE</i>
Nov 2011	AIM (USA) - Partition Theory and Polyhedral Geometry	<i>AIM SQuaRE</i>
Jun 2011	UC Davis (USA) - Visiting Prof. Matthias Köppe	<i>Research visit</i>
Jun 2011	U of Washington (USA) - Polyhedral Geometry, Symbolics	<i>SageDays</i>
Nov 2010	AIM (USA) - Partition Theory and Polyhedral Geometry	<i>AIM SQuaRE</i>
Jul 2010	RISC (Austria) - Benchmarks, Special Functions	<i>SageDays</i>

Short visits hosted

Sep 2022	Mădălina Eraşcu	<i>Erasmus</i>
Sep 2021	Mădălina Eraşcu	<i>Erasmus</i>
Nov 2019	Elias Tsigaridas	<i>GRAPE</i>
Sep 2019	Bernd Sturmfels	<i>HALCYON</i>
May 2019	Matias Bender	<i>GRAPE</i>

Service

Editorial board member

Communications in Computer ALgebra (2024-) *ACM*
Mathematics in Computer Science (2023-2024) *Springer*

Guest editor

LNCS volume: Mathematics of Computer and Information Sciences 2019 *Springer*
Appl. Algebra Eng. Commun. Comput. - ACA2022 *Springer*
MCS Special collection: Applications of Computer Algebra 2022 *Springer*

ACM SIGSAM

Information Director of the SIG Symbolic and Algebraic Manipulation

Symbolic Computation Istanbul Meetings

(co-)Founder of the biweekly seminar *2021-2023*

Experimental Mathematics Meetings

IMU funded workshops for promoting computation in Turkey *2022-2023*

Reviewer for Journals

Journal of Combinatorial Theory A *Elsevier*
European Journal of Combinatorics *Elsevier*
Journal of Symbolic Computation *Elsevier*
Ramanujan Journal *Springer*
Special Matrices *De Gruyter*
Mathematics in Computer Science *Springer*
International Journal of Combinatorics *Hindawi*
PROMS volume: Applications of Computer Algebra 2015 *Springer*

Reviewer for Conferences

International Symposium on Experimental Algorithms (SEA)
Symbolic Numeric Computation (SNC)
SIAM Conference on Geometric and Physical Modeling (SPM)
ACM Int. Symposium on Symbolic and Algebraic Computation (ISSAC)
Computer Algebra in Scientific Computing (CASC)

PhD theses committee member

2023 Çiğdem Çelik (advisor: Turgay Bayraktar) *Sabancı University*
"Distribution of Zeros of Random Polynomials"
2020 Murat Yasin Kubilay (advisor: Hacı Ali Mantar) *Gebze Technical University*
"CERTLEDGER: A new PKI model with certificate transparency based on blockchain"

Master's theses committee member (Mathematics)

- 2017 Seyyed Hamed Mousavi (advisor: Kağan Kürşüngöz) *Sabancı University*
"The Hardy-Ramanujan-Rademacher expansion for the partition function and its extensions"
- 2018 Beril Talay (advisor: Kağan Kürşüngöz) *Sabancı University*
"Yee's bijective proof of Bousquet-Melou and Erksson's refinement of the the lecture hall partition theorem"
- 2018 Aslı T. Musapaşaoğlu (advisor: Ayesha Asloob Qureshi) *Sabancı University*
"Algebraic and homological properties of polymatroidal ideals"
- 2018 Ayşegül Yavuz (advisor: Kağan Kürşüngöz) *Sabancı University*
"Ramanujan's Congruences for the Partition Function modulo 5, 7, 11"
- 2021 Recep Altar Çiçeksiz (advisor: Mohan Ravichandran) *Bosphorus University*
"Negative dependence in Discrete Probability : Notions, Models and Consequences"

Master's theses committee member (Computer Science/Engineering)

- 2018 Baran Usta (advisor: Kamer Kaya) *Sabancı University*
"Optimal Hypergraph Partitioning"
- 2018 Sertaç Karahoda (advisors: Hüsni Yenigün, Kamer Kaya) *Sabancı University*
"Algorithmic Optimization and Parallelization of Eppstein's Synchronizing Heuristic"
- 2022 Nijat Karimli (advisor: Betül Boz) *Marmara University*
"Using genetic algorithms to extract an active subnetwork"

PhD Qualification exam jury (Mathematics)

- 2023 Yalçın Can Kılıç (advisor: Betül Boz) *Sabancı University*

Conferences and Workshops

Attended as (co-)organizer

- 2022 **SCALE - Symbolic Computation: Algorithms, Learning and Engineering**, *Istanbul, Turkey*, General chair
- 2022 **CASC - Computer Algebra in Scientific Computing**, *Istanbul, Turkey*, Local Organizer
- 2022 **ACA - Applications of Computer Algebra**, *Istanbul, Turkey*, General Chair
- 2022 **Summer School on Integer Partition Identities**, *Nesin Math Village, Turkey*, Lecturer
- 2019 **MACIS - International Conference on Mathematical Aspects of Computer and Information Sciences**, *Istanbul, Turkey*, General chair
- 2018 **Summer School on Integer Partitions**, *Nesin Math Village, Turkey*, Lecturer
- 2016 **Singularities**, *Galatasaray University, Istanbul, Turkey*, Organizer, Presented a talk
- 2015 **GBReLA - Gröbner Bases, Resultants and Linear Algebra**, *Applications of Computer Algebra (ACA)*, *Kalamata, Greece*, Organizer
- 2015 **PAC - Polytopes Algebra Computation**, *Applications of Computer Algebra (ACA)*, *Kalamata, Greece*, Organizer
- 2015 **ACA - Applications of Computer Algebra**, *Kalamata, Greece*, Publicity chair
- 2014 **ACA - Applications of Computer Algebra**, *New York, USA*, Publicity chair
- 2013 **GBReLA - Gröbner Bases, Resultants and Linear Algebra**, *RISC, Hagenberg, Austria*, Organizer

Contributed or attended

- 2023 **Workshop + special week: Computer Algebra for Functional Equations in Combinatorics and Physics**, *Paris, France*, Attended
- 2023 **SYNASC - Symbolic and Numeric Algorithms for Scientific Computing**, *Nancy, France*, Presented
- 2023 **ACA - Applications of Computer Algebra**, *Warsaw, Poland*
- 2023 **SIAM AAG - SIAM Applied Algebraic Geometry**, *Eindhoven, Netherlands*, Presented in minisymposium
- 2023 **Certified and Symbolic-Numeric Computation**, *Lyon, France*
- 2022 **"Algorithmic and Enumerative Combinatorics" - SFB concluding event**, *Vienna, Austria*
- 2021 **CASC - Computer Algebra in Scientific Computing**, *Sochi, Russia*
- 2021 **ACA - Applications of Computer Algebra**, *Vienna, Austria*, Organized special session
- 2020 **JMM - Joint Math Meetings**, *Denver, USA*, Presented in minisymposium
- 2019 **OPSFA - Orthogonal Polynomials, Special Functions and Applications**, *Hagenberg, Austria*, Presented in minisymposium

- 2019 **PGMO Days 2019 - Programme Gaspard Monge pour l'Optimisation**, *Paris, France*, Presented a talk
- 2019 **SIAM AAG - SIAM Applied Algebraic Geometry**, *Bern, Switzerland*, Presented in minisymposium
- 2019 **SEA - International Symposium on Experimental Algorithms**, *Kalamata, Greece*, Paper
- 2018 **First Congress of Greek Mathematicians - FCGM**, *Athens, Greece*, Paper, Talk
- 2017 **MACIS - International Conference on Mathematical Aspects of Computer and Information Sciences**, *Vienna, Austria*, Presented a paper
- 2017 **Geometric and topological combinatorics**, *MSRI Workshop*, Berkeley, CA, USA
- 2017 **2nd Turkish Romanian Mathematics Workshop**, *Galatasaray University*, Istanbul, Turkey, Presented a talk
- 2017 **Antalya Algebra Days**, *Nesin Mathematics Village*, Sirince, Turkey, Presented a paper
- 2014 **Geometric and Enumerative Combinatorics**, *Institute for Mathematics and its Applications*, Minneapolis, Minnesota, USA
- 2016 **RIMS Workshop on "Computational Commutative Algebra and Convex Polytopes"**, *RIMS*, Kyoto, Japan
- 2016 **"3rd Istanbul Design Theory, Graph Theory and Combinatorics Workshop"**, *Koç University*, Istanbul, Turkey, Presented a talk
- 2016 **PRACE School on "Modern HPC Development for Scientists and Engineers"**, *RISC*, Hagenberg, Austria
- 2014 **ACAC - Athens Colloquium on Algorithms and Complexity**, Athens, Greece, Presented a talk
- 2013 **EuroCG - European Workshop on Computational Geometry**, Braunschweig, Germany
- 2013 **ACA - Applications of Computer Algebra**, Malaga, Spain, Presented a talk
- 2013 **SIAM AG - Applications of Algebraic Geometry**, Fort Collins, Colorado, USA, Presented a talk
- 2012 **BADMATH**, *UC Berkeley*, Berkeley, CA, USA
- 2012 **MAA Golden Section meeting**, *MSRI*, Berkeley, CA, USA
- 2012 **ISSAC - International Symposium on Symbolic and Algebraic Computation**, Grenoble, France, Presented a poster
- 2011 **SNC - Symbolic Numeric Computation**, San Jose, CA, USA
- 2011 **ISSAC - International Symposium on Symbolic and Algebraic Computation**, San Jose, CA, USA, Presented two posters
- 2010 **ACAC - Athens Colloquium on Algorithms and Complexity**, Athens, Greece
- 2010 **ISSAC - International Symposium on Symbolic and Algebraic Computation**, Munich, Germany
- 2009 **SNC - Symbolic Numeric Computation**, Kyoto, Japan, Presented a paper

- 2009 **FPSAC - International Conference on Formal Power Series and Algebraic Combinatorics**, Hagenberg, Austria
- 2009 **Linz Algebra Research Day '09**, Linz, Austria, Presented a talk
- 2009 **ACAC - Athens Colloquium on Algorithms and Complexity**, Athens, Greece
- 2008 **Panhellenic Conference in Algebra, Number Theory and Applications**, Athens, Greece
- 2008 **ACAC - Athens Colloquium on Algorithms and Complexity**, Athens, Greece
- 2008 **RTA - Rewriting Techniques and Applications**, RISC, Hagenberg, Austria
- 2008 **EuroCG - European Workshop on Computational Geometry**, Nancy, France
- 2008 **ISSAC - International Symposium on Symbolic and Algebraic Computation**, Hagenberg, Austria
- 2007 **ACAC - Athens Colloquium on Algorithms and Complexity**, Athens, Greece
- 2006 **ACAC - Athens Colloquium on Algorithms and Complexity**, Athens, Greece
- 2006 **EuroCG - European Workshop on Computational Geometry**, Delphi, Greece

Seminar talks

- 22&29 Jan 2024 **Greek Algebra and Number Theory seminar**, *Online*
Polyhedra, Algebra, and Computation
- 23 May 2023 **Lyon 1 - Combinatorics and Number Theory Seminar**, *Lyon, France*
Polyhedral Omega (+ applications)
- 30 Nov 2022 **TU Berlin DMG Seminar**, *Berlin, Germany*
Polyhedral Omega (+ applications)
- 12 Oct 2022 **Sabancı Algebra Seminar**, *Istanbul, Turkey*
From Sylvester to van der Waerden and beyond
- 05 Apr 2022 **Institute of Applied Mathematics (METU) General Seminar**, *Ankara, Turkey*
Using Polyhedral Geometry for Integer Linear Programming
- 11 Dec 2019 **Bilkent Algebra Seminar**, *Ankara, Turkey*
Solving linear Diophantine systems via Polyhedral Omega and applications in optimization
- 10 May 2017 **Sabancı Engineering and Natural Sciences Colloquium**, *Istanbul, Turkey*
To err is human and computers can do without it
- 10 Mar 2017 **Gebze Technical University General Math Seminar**, *Istanbul, Turkey*
Polyhedral Omega: Solving Linear Diophantine Systems
- 24 Nov 2016 **Bilkent University Algebra Seminar**, *Ankara, Turkey*
Polyhedral Omega: Solving Linear Diophantine Systems
- 03 Oct 2016 **TU Wien - Formal Methods in Systems Engineering Seminar**, *Vienna, Austria*
Polyhedral Omega: Solving Linear Diophantine Systems
- 03 Dec 2015 **Yildiz Technical University Math Seminar**, *Istanbul, Turkey*
Polyhedral Omega: A linear Diophantine system solver
- 25 Oct 2015 **Mimar Sinan University of Fine Arts Math Seminar**, *Istanbul, Turkey*
Polyhedral Omega: A new linear Diophantine system solver

- 11 Nov 2015 **Galatasaray University Math Seminar, Istanbul, Turkey**
Polyhedral Omega: A linear Diophantine system solver
- 29 Apr 2015 **Bosphorus University Math Seminar, Istanbul, Turkey**
Polyhedral Omega: A linear Diophantine system solver
- 30 Apr 2015 **Koç University Math Seminar, Istanbul, Turkey**
A century of Partition Analysis
- 07 Nov 2014 **U. of Minnesota Combinatorics Seminar, Twin Cities, USA**
Polyhedral Omega: A linear Diophantine system solver
- 13 Aug 2013 **PennState Partitions Seminar, PennState, USA**
The geometry of partition analysis
- 29 Oct 2012 **ERGA Seminar, University of Athens, Greece**
Polyhedral geometry for linear diophantine systems
- 17 Apr 2012 **UC Davis Algebra and Discrete Math Seminar, Davis, USA**
Partition Analysis and its Polyhedral Geometry
- 01 Jun 2011 **RISC Algorithmic Combinatorics Seminar, Hagenberg, Austria**
Polyhedral geometry - an introduction
- 25 Nov 2009 **RISC Algorithmic Combinatorics Seminar, Hagenberg, Austria**
Multivariate real root isolation - theory and practice

Publications

In mathematics and theoretical computer science the names of the authors are in alphabetical order.

Books and Special Issues edited

- [2] Michela Ceria and Ilias Kotsireas and Teo Mora and Zafeirakis Zafeirakopoulos, eds. *Special Issue for 27th International Conference on Applications of Computer Algebra (Istanbul, August 2022), Selected papers*. Applicable Algebra in Engineering, Communication and Computing. Springer, 2023. DOI: 10.1007/s00200-023-00635-1.
- [1] Daniel Slamanig, Elias P. Tsigaridas, and Zafeirakis Zafeirakopoulos, eds. *Mathematical Aspects of Computer and Information Sciences - 8th International Conference, MACIS 2019, Gebze, Turkey, November 13-15, 2019, Revised Selected Papers*. Vol. 11989. Lecture Notes in Computer Science. Springer, 2020. ISBN: 978-3-030-43119-8. DOI: 10.1007/978-3-030-43120-4. URL: <https://doi.org/10.1007/978-3-030-43120-4>.

Journal Papers

- [6] Christina Katsamaki, Fabrice Rouillier, Elias Tsigaridas, and Zafeirakis Zafeirakopoulos. "PTOPO: Computing the geometry and the topology of parametric curves". In: *Journal of Symbolic Computation* 115 (2023), pp. 427–451. ISSN: 0747-7171. DOI: <https://doi.org/10.1016/j.jsc.2022.08.012>. URL: <https://www.sciencedirect.com/science/article/pii/S0747717122000785>.
- [5] Felix Breuer and Zafeirakis Zafeirakopoulos. "Polyhedral Omega: a New Algorithm for Solving Linear Diophantine Systems". In: *Annals of Combinatorics* 21.2 (June 2017), pp. 211–280. ISSN: 0219-3094. DOI: 10.1007/s00026-017-0349-x. URL: <https://doi.org/10.1007/s00026-017-0349-x>.
- [4] Matthias Beck, Benjamin Braun, Matthias Köppe, Carla D. Savage, and Zafeirakis Zafeirakopoulos. "Generating Functions and Triangulations for Lecture Hall Cones". In: *SIAM Journal on Discrete Mathematics* 30.3 (2016), pp. 1470–1479. DOI: 10.1137/15M1036907. eprint: <http://dx.doi.org/10.1137/15M1036907>. URL: <http://dx.doi.org/10.1137/15M1036907>.
- [3] Angelos Mantzaflaris, Hamid Rahkooy, and Zafeirakis Zafeirakopoulos. "Efficient computation of dual space and directional multiplicity of an isolated point". In: *Computer Aided Geometric Design* 47 (2016). SI: New Developments Geometry, pp. 114–129. ISSN: 0167-8396. DOI: <http://dx.doi.org/10.1016/j.cagd.2016.05.002>. URL: <http://www.sciencedirect.com/science/article/pii/S0167839616300498>.
- [2] Matthias Beck, Benjamin Braun, Matthias Köppe, Carla D. Savage, and Zafeirakis Zafeirakopoulos. "s-Lecture hall partitions, self-reciprocal polynomials, and Gorenstein cones". English. In: *The Ramanujan Journal* (2014), pp. 1–25. ISSN: 1382-4090. DOI: 10.1007/s11139-013-9538-3. URL: <http://dx.doi.org/10.1007/s11139-013-9538-3>.

- [1] Christos Koukouvinos, Veronika Pillwein, Dimitris E. Simos, and Zafeirakis Zafeirakopoulos. "On the average complexity for the verification of compatible sequences". In: *Information Processing Letters* 111.17 (2011), pp. 825–830. ISSN: 0020-0190. DOI: DOI : 10 . 1016 / j . ip1 . 2011 . 05 . 015. URL: <http://www.sciencedirect.com/science/article/pii/S0020019011001438>.

Conference Papers

- [8] Christina Katsamaki, Fabrice Rouillier, Elias P. Tsigaridas, and Zafeirakis Zafeirakopoulos. "On the geometry and the topology of parametric curves". In: *ISSAC '20: International Symposium on Symbolic and Algebraic Computation, Kalamata, Greece, July 20-23, 2020*. Ed. by Ioannis Z. Emiris and Lihong Zhi. ACM, 2020, pp. 281–288. DOI: 10.1145/3373207.3404062. URL: <https://doi.org/10.1145/3373207.3404062>.
- [7] Christina Katsamaki, Fabrice Rouillier, Elias P. Tsigaridas, and Zafeirakis Zafeirakopoulos. "PTOPO: a maple package for the topology of parametric curves". In: vol. 54. 2. 2020, pp. 49–52. DOI: 10.1145/3427218.3427223. URL: <https://doi.org/10.1145/3427218.3427223>.
- [6] Umutcan Önal and Zafeirakis Zafeirakopoulos. "A Machine Learning Framework For Volume Prediction". In: *Special Event on Analysis of Experimental Algorithms (SEA2 2019)*. Springer International Publishing, 2019.
- [5] Vissarion Fisikopoulos and Zafeirakis Zafeirakopoulos. "Experimental Study of the Ehrhart Interpolation Polytope". In: *Mathematical Aspects of Computer and Information Sciences: 7th International Conference, MACIS 2017, Vienna, Austria, November 15-17, 2017, Proceedings*. Ed. by Johannes Blömer, Ilias S. Kotsireas, Temur Kutsia, and Dimitris E. Simos. Cham: Springer International Publishing, 2017, pp. 320–324. ISBN: 978-3-319-72453-9. DOI: 10.1007/978-3-319-72453-9_26. URL: https://doi.org/10.1007/978-3-319-72453-9_26.
- [4] Ioannis Z. Emiris, Anna Karasoulou, Eleni Tzanaki, and Zafeirakis Zafeirakopoulos. "On the space of Minkowski summands of a convex polytope". In: EuroCG '16. Lugano, Switzerland, 2016. URL: http://www.eurocg2016.usi.ch/sites/default/files/paper_76.pdf.
- [3] Ioannis Z. Emiris, Christos Konaxis, and Zafeirakis Zafeirakopoulos. "Minkowski Decomposition and Geometric Predicates in Sparse Implicitization". In: *Proceedings of the 40th International Symposium on Symbolic and Algebraic Computation. ISSAC '15*. Bath, UK, 2015.
- [2] Christos Koukouvinos, Dimitris E Simos, and Zafeirakis Zafeirakopoulos. "A Gröbner Bases Method for Complementary Sequences". In: 2013, p. 255.
- [1] Michael Hemmer, Elias P. Tsigaridas, Zafeirakis Zafeirakopoulos, Ioannis Z. Emiris, Menelaos I. Karavelas, and Bernard Mourrain. "Experimental evaluation and cross-benchmarking of univariate real solvers". In: *Proceedings of the 2009 conference on Symbolic numeric computation. SNC '09*. Kyoto, Japan: ACM, 2009, pp. 45–54. ISBN: 978-1-60558-664-9. DOI: 10.1145/1577190.1577202. URL: <http://doi.acm.org/10.1145/1577190.1577202>.

Theses

- [2] Zafeirakis Zafeirakopoulos. "Linear Diophantine Systems: Partition Analysis and Polyhedral Geometry". PhD thesis. Johannes Kepler University, Dec. 2012.
- [1] Zafeirakis Zafeirakopoulos. "Study and Benchmarks for Real Root Isolation methods". MA thesis. Departments of Informatics and Telecommunication, Dec. 2008.

Posters, Technical Reports and Other

- [7] Vissarion Fisikopoulos, Matthias Henze, and Zafeirakis Zafeirakopoulos. *Interpolation and Ehrhart Theory*. 2013.
- [6] Felix Breuer and Zafeirakis Zafeirakopoulos. *Partition Analysis via Polyhedral Geometry*. New York, NY, USA, 2012.
- [5] Zafeirakis Zafeirakopoulos. *Partition Analysis and Polyhedral Geometry*. MAA Golden Section poster. 2012.
- [4] Christos Koukouvinos, Dimitris E. Simos, and Zafeirakis Zafeirakopoulos. *An algebraic framework for extending orthogonal designs*. New York, NY, USA, July 2011. DOI: 10.1145/2016567.2016587. URL: <http://doi.acm.org/10.1145/2016567.2016587>.
- [3] Hamid Rahkooy and Zafeirakis Zafeirakopoulos. *Using resultants for inductive Gröbner bases computation*. New York, NY, USA, July 2011. DOI: 10.1145/2016567.2016593. URL: <http://doi.acm.org/10.1145/2016567.2016593>.
- [2] Christos Koukouvinos, Veronika Pillwein, Dimitris E. Simos, and Zafeirakis Zafeirakopoulos. *A Note on the Average Complexity Analysis of the Computation of Periodic and Aperiodic Ternary Complementary Pairs*. Research Report. Oct. 2010. URL: https://www.dk-compmath.jku.at/dk-reports/dk-report-10-08/at_download/file.
- [1] Ioannis Emiris, Michael Hemmer, Menelaos Karavelas, Sebastian Limbach, Bernard Mourrain, Elias P. Tsigaridas, and Zafeirakis Zafeirakopoulos. *Cross-benchmarks of univariate algebraic kernels*. 2008.

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Appendix

Undergraduate student theses

- 2016 **Nurefşen Çelenk**, Mixed Volume
- 2017 **Yunus Emre Avcı**, Volumes of Polytopes
- 2017 **Yunus Emre Avcı**, Symbolic Computation in signal processing
- 2018 **Yakup Türkan**, Software Benchmarking System
- 2018 **Emrah Korkmaz**, Tone generation project
- 2019 **Eda Bahrioğlu**, Event wall - Android application
- 2019 **Kevser Yolcu**, Computational Graphs
- 2019 **Elif Şeyma Armağan**, Mathdata: A platform for collaborative data exchange
- 2019 **Mehmet Oğuzhan Ataman** , Mathdata interface in JupyterLab
- 2019 **Emre Bayram**, Efficient rational arithmetic in Xeon Phi
- 2020 **Bengi Yörükoğlu** , Orthogonal designs
- 2020 **Vekhid Betrakhamdov**, Polyhedral compilation model
- 2020 **Hakkı Erdem Duman**, Parallel Polyhedral Omega
- 2020 **Elif Şeyma Armağan**, Algebraic Motion Planning
- 2020 **İbrahim Yazıcı** , Machine learning for Real Polynomials
- 2020 **İbrahim Yazıcı**, Number of Real Roots of Polynomials with Machine Learning
- 2020 **Ömer Fatih Kuruca**, Motion Path Planning Using Subdivision Method and the shortest path algorithms
- 2020 **Ömer Fatih Kuruc**, Bibliography Management and Annotation System
- 2020 **Nevzat Furkan Yangil**, Parallel Implementation of Polyhedral Omega
- 2020 **Nevzat Furkan Yangil**, Counting Lattice Points using Machine Learning
- 2020 **Can Dursun Telek** , Online Repository for Mathematical Data (MathData)
- 2020 **Can Dursun Telek** , Generating nice polynomials of specific topological types
- 2021 **Yusuf Patoğlu**, Symbolic Linear Algebra
- 2021 **Yusuf Patoğlu**, Computing Ramsey Counterexamples Using GANs
- 2021 **Ahmet Melih Yanalak**, Integer Linear Programming Benchmarks + ML
- 2021 **Emek Çağrı Yerman**, Vulnerability analysis tool with symbolic execution and taint analysis
- 2021 **Selman Tasin Özyelen**, Optimal Transport
- 2021 **Gamze Kanburoğlu**, Android conference organization application
- 2022 **Jin Hussein** , ML for choosing optimal solvers
- 2022 **Muhammed Mücahit Üçer** , Chamber Complex
- 2022 **Muhammed Mücahit Üçer** , Minkowski Decomposition
- 2022 **İlkay Can** , Curve topology and geometry
- 2022 **Canberk Arıcı** , ML for polynomials
- 2022 **Can Duyar** , Learning bijections

- 2022 **Djuro Radusinovšc**, Android conference organization application
- 2022 **Abdullah Küsgülü** , A software citation system
- 2022 **Ahmet Yusuf Erdoğan** , Resultant System
- 2022 **İlkan Mert Okul**, Ehrhart Polynomial Interpolation
- 2022 **Kamil Kaya** , Curve topology and geometry
- 2022 **Haktan Bilgehan Dilber** , Computational Graphs
- 2022 **Melihcan Çilek** , Polyhedral Omega
- 2022 **İsmail Tapan**, Minkowski Decomposition
- 2022 **Emrullah Salik**, DYNNet: The dynamic neural network toolkit
- 2022 **Sena Erdoğan** , Symbolic Linear Algebra
- 2022 **Elif Öztürk**, Ehrhart Polynomial Interpolation
- 2022 **Muhammed Salih Yılmaz**, Dixon Resultant