

Zafeirakis Zafeirakopoulos

Assistant Professor - Institute of Information Technologies
Gebze Technical University, Kocaeli, Turkey

Personal Details

Last Name Zafeirakopoulos
First Name Zafeirakis
Nationality Greek
Date of birth June 11, 1982

Contact Details

email zafeirakopoulos@gmail.com
webpage www.zafeirakopoulos.info
telephone 0090 - (262) 605 22 38
Office Address:
Institute of Information Technologies
Gebze Technical University
PK141, 41400 Gebze, Kocaeli, Turkey
Office 242

Education

Doctor in Technical Sciences 2012
Johannes Kepler University - Research Institute for Symbolic Computation
Advisor Prof. Peter Paule
Thesis Linear Diophantine Systems: Partition Analysis and Polyhedral Geometry
Major Symbolic Computation
Minor Algebra and Discrete Mathematics

Master in Computational Science 2008
University of Athens - Department of Informatics and Telecommunications
Advisor Prof. Ioannis Emiris
Thesis Study and Benchmarks for Real Root Isolation methods
Grade 8.72/10
Major Theoretical Computer Science

Bachelor in Mathematics (Ptychion/4-years degree) 2005
University of Athens - Department of Mathematics
Major Applied Mathematics
Minor Computational Mathematics grade

Employment

Gebze Technical University - Institute of Information Technologies Mar 2016 -
Assistant Professor

Galatasaray University - Department of Mathematics Jul 2015 - Feb 2016
Postdoctoral researcher advised by Prof. Meral Tosun

University of Athens - Department of Informatics and Telecommunications Oct 2014 - Sep 2015
Postdoctoral researcher advised by Prof. Ioannis Emiris

Johannes Kepler University - Research Institute for Symbolic Computation Jan 2013 - Dec 2013
Postdoctoral researcher

Research

Interests

- Linear Diophantine Systems
- Partition Analysis
- Integer Linear Programming
- Enumerative Combinatorics
- Algebraic Combinatorics
- Polyhedral Geometry
- High Performance Computing
- Symbolic Computation
- Algorithms
- Gröbner bases
- Machine Learning
- Parallel Algorithms

Activities

AIM Workshop @ American Institute of Mathematics, USA “Polyhedral Geometry and Partition Theory”	November 2016
Research visit @ Research Institute for Symbolic Computation, Austria Visiting Prof. Peter Paule to work on Partition Analysis	September 2016
Research visit @ Osnabrück University, Germany Visiting Prof. Winfried Bruns to work on NORMALIZ	November 2015
Research visit @ University of Athens, Greece Visiting Prof. Ioannis Emiris to work on Minkowski Decomposition	November 2015
Research visit @ Research Institute for Symbolic Computation, Austria Visiting Prof. Peter Paule to work on Partition Analysis	August 2015
Research visit @ PennState University, USA Visiting Prof. George Andrews to work on Partition Analysis	August 2013
Research visit @ North Carolina State University, USA Visiting Prof. Carla Savage to work on Lecture Hall Partitions	August 2013
AIM SQuaRE @ American Institute of Mathematics, USA Research visit to work on “Partition Theory and Polyhedral Geometry”	Nov 2010, 2011, 2012
Research visit @ UC Davis, USA Visiting Prof. Matthias Köppe to work on generating functions and Partition Analysis	June 2011
SageDays 31 @ University of Washington, USA Work on Polyhedral Geometry and Symbolics	June 2011
SageDays @ Research Institute for Symbolic Computation, USA Work on Benchmarks and Special Functions	July 2010

Organization

ACA - Applications of Computer Algebra (Kalamata, Greece) Publicity Chair	2015
ACA - Applications of Computer Algebra (New York, USA) Publicity Chair	2014
GBReLA - Gröbner Bases, Resultants and Linear Algebra (Vienna, Austria) Organizer	2017
GBReLA - Gröbner Bases, Resultants and Linear Algebra (Kalamata, Greece) Organizer	2015
GBReLA - Gröbner Bases, Resultants and Linear Algebra (Hagenberg, Austria) Organizer	2013
Polytopes - Algebra - Computation (PAC) (Kalamata, Greece) Organizer	2015

Journal Publications

- [J1] 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.ipl.2011.05.015. URL: <http://www.sciencedirect.com/science/article/pii/S0020019011001438>.
- [J2] 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>.
- [J3] 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>.
- [J4] Angelos Mantzafaris, 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>.
- [J5] Felix Breuer and Zafeirakis Zafeirakopoulos. “Polyhedral Omega: A New Algorithm for Solving Linear Diophantine Systems”. In: *Annals of Combinatorics* (to appear).

Conference Proceedings

- [C6] 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>.
- [C7] 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.
- [C8] 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.

Preprints

- [P9] Matteo Gallet, Hamid Rahkooy, and Zafeirakis Zafeirakopoulos. “On Computing the Elimination Ideal Using Resultants with Applications to Gröbner Bases”. In: *arXiv preprint arXiv:1307.5330* (2013).

Theses

- [T10] Zafeirakis Zafeirakopoulos. “Study and Benchmarks for Real Root Isolation methods”. MA thesis. Departments of Informatics and Telecommunication, Dec. 2008.
- [T11] Zafeirakis Zafeirakopoulos. “Linear Diophantine Systems: Partition Analysis and Polyhedral Geometry”. PhD thesis. Johannes Kepler University, Dec. 2012.

Other (Technical Reports, Conference Posters, Conference Presentations, etc.)

- [O12] Hamid Rahkooy and Zafeirakis Zafeirakopoulos. “Using resultants for inductive Gröbner bases computation”. In: *ACM Commun. Comput. Algebra* 45.1/2 (July 2011), pp. 135–136. ISSN: 1932-2240. DOI: 10.1145/2016567.2016593. URL: <http://doi.acm.org/10.1145/2016567.2016593>.
- [O13] Christos Koukouvinos, Dimitris E. Simos, and Zafeirakis Zafeirakopoulos. “An algebraic framework for extending orthogonal designs”. In: *ACM Commun. Comput. Algebra* 45.1/2 (July 2011), pp. 123–124. ISSN: 1932-2240. DOI: 10.1145/2016567.2016587. URL: <http://doi.acm.org/10.1145/2016567.2016587>.
- [O15] Zafeirakis Zafeirakopoulos. *Partition Analysis and Polyhedral Geometry*. MAA Golden Section poster. 2012.
- [O16] Christos Koukouvinos, Dimitris E Simos, and Zafeirakis Zafeirakopoulos. “A Gröbner Bases Method for Complementary Sequences”. In: *Proceedings of Applications of Computer Algebra ACA 2013. Málaga* (2013), p. 255.

Awards and Scholarships

Marshall Plan Scholarship “Algorithmic Solution of Linear Diophantine Systems” Research Visit to San Francisco State University (Advisor: Prof. Matthias Beck)	Jan-Jun 2012
SFB - Algorithmic and Enumerative Combinatorics “Algorithmic and Enumerative Combinatorics” Travel and accommodation stipend for the summer school	July 2015
Berlin Math School “Convex Geometry - discrete & computational” Travel and accommodation stipend for the summer school	June 2015
IMA Thematic Year on Discrete Structures: Analysis and Applications “Workshop Geometric and Enumerative Combinatorics” Invited for the workshop	November 2014
SIAM AG - Tutorials in the Mountains “Toric Geometry” Accommodation stipend for the summer school	July 2013
COCOA - International School on Computer Algebra “Sets of Points and Mathematical Models” and ”Algorithms for toric geometry” Accommodation stipend for the summer school	June 2013
JKU International Scholarship travel allowance Complementary travel costs scholarship	Jan-Jun 2012
Rocky Mountain Mathematics Consortium “Polyhedral Geometry & Algebraic Combinatorics” Accommodation stipend for the summer school	June 2011

Languages

Greek	Native
English	Excellent (Cambridge Proficiency July 2004)
German	Very Good (Mittelstufe, July 1999)
French	Good (DELF II, July 1998)
Turkish	Intermediate
Spanish	Basic

Reviewer

European Journal of Combinatorics	
Journal of Combinatorial Theory A	
Mathematics in Computer Science	
International Journal of Combinatorics	
International Symposium on Experimental Algorithms (SEA)	2011
Symbolic Numeric Computation (SNC)	2011,2014
SIAM Conference on Geometric and Physical Modeling (SPM)	2011
Int. Symposium on Symbolic and Algebraic Computation (ISSAC)	2012
Computer Algebra and Scientific Computing (CASC)	2013

Conferences and Workshops

Workshop on Graph Theory and its Applications

† 2016 Istanbul, Turkey

Istanbul Design Theory, Graph Theory and Combinatorics Workshop

† 2016 Istanbul, Turkey

RIMS workshop - Algebraic Statistics and Symbolic Computation

@ 2016 Kyoto, Japan

RIMS workshop - Computational Commutative Algebra and Convex Polytopes

2016 Kyoto, Japan

Algebra Geometry and Topology of Singularities

2016 Istanbul, Turkey

GBReLA - Gröbner Bases, Resultants and Linear Algebra

2015 Kalamata, Greece

2013 Hagenberg, Austria

Institute for Mathematics and its Applications - Geometric and Enumerative Combinatorics

2010 Minneapolis, Minnesota, USA

SIAM AG - Applications of Algebraic Geometry

2013 Fort Collins, Colorado, USA

ACA - Applications of Computer Algebra

2015 Kalamata, Greece

2014 New York, USA

2013 Malaga, Spain

ISSAC - International Symposium on Symbolic and Algebraic Computation

* 2015 Bath, UK

‡ 2012 Grenoble, France

‡ 2011 San Jose, CA, USA

2010 Munich, Germany

2008 Hagenberg, Austria

FPSAC - International Conference on Formal Power Series and Algebraic Combinatorics

2009 Hagenberg, Austria

SNC - Symbolic Numeric Computation

2011 San Jose, CA, USA

† 2009 Kyoto, Japan

EuroCG - European Workshop on Computational Geometry

* 2015 Lugano, Switzerland

2013 Braunschweig, Germany

2008 Nancy, France

2006 Delphi, Greece

Bay Area Discrete Mathematics (BADMath)

2012 Berkeley, CA, USA

MAA Golden Section meeting

‡ 2012 Berkeley, CA, USA

RTA - Rewriting Techniques and Applications

2008 Hagenberg, Austria

ACAC - Athens Colloquium on Algorithms and Complexity

† 2014 Athens, Greece
2010 Athens, Greece,
2009 Athens, Greece
2008 Athens, Greece
2007 Athens, Greece
2006 Athens, Greece

Panhellenic Conference in Algebra, Number Theory and Applications

2008 Athens, Greece

Legend:

† Attended and presented a paper

‡ Attended and presented a poster

(co-)organizer

* Contributed a paper but did not attend

@ Invited talk