

CONTACT INFORMATION

Izmir Institute of Technology
Department of Mathematics
Office No: 208
Glbahe Campus
Izmir, Turkey
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RESEARCH INTERESTS

Low-dimensional topology, knot theory and its applications in biology, physics and chemistry, theory of knotoids, quantum topology, graph theory, topological graph theory.

EDUCATION

National Technical University of Athens December 2013 - February 2018
Ph.D. in Mathematics
• Dissertation: *On Knotoids, Braidoids and Their Applications*
• Supervisor: Sofia Lambropoulou
• Committee: L.H.Kauffman, V.Turaev, S.Nelson, D.Kodokostas, O.Pashaev, P. Bellingeri

Middle East Technical University, Turkey
M.S. in Mathematics with High Honors January 2008- June 2010
B.S. in Mathematics with Honors September 2003- January 2008

APPOINTMENTS

- Assistant Professor,
Izmir Institute of Technology, Department of Mathematics October 2019- ...
- Postdoctoral Fellow,
Georg-August Universitt, Gttingen January 2020- July 2022
- Postdoctoral Fellow,
Oberwolfach Research Institute of Mathematics August-September 2019
- Adjunct Professor,
Izmir University of Economics, Department of Mathematics Jun 2018- December 2018
- Research Fellow,
Department of Mathematics, National Technical University of Athens 2013-2015
- Teaching Assistant,
Ko University Department of Mathematics, Istanbul Turkey 2010-2013
- Research and Teaching Assistant,
Bakent University, Department of Education of Mathematics, Ankara Turkey 2008-2010

- Undergraduate Teaching Assistant,
Middle East Technical University
Department of Mathematics, Ankara Turkey

2007-2008

PUBLICATIONS

- 1. New invariants of knotoids**
With L. H. Kauffman,
European Journal of Combinatorics 65C, pp. 186-229, (2017).
- 2. On the height of knotoids**
With L. H. Kauffman,
Springer Proceedings in Mathematics & Statistics (PROMS) Book Title: Algebraic Modeling of Topological and Computational Structures and Applications, 219, (2017).
- 3. Topological models for knotted bonded open protein chains using the concept of knotoids and bonded knotoids**
With D. Goundaroulis, S. Lambropoulou, J. Dorier, A. Stasiak and L. H. Kauffman,
Polymers 9(9), (2017).
- 4. Knotoids, braidoids and applications**
With S. Lambropoulou,
Symmetry, 9(12), 315, (2017), Special Issue: Knot Theory and Its Applications
- 5. Biquandle coloring invariants of knotoids**
With S. Nelson,
Journal of Knot Theory and its Ramifications, Vol.28, No. 04, (2019).
- 6. What is a braidoid?**
Invited chapter in the refereed book: ‘A Concise Encyclopedia of Knots’, CMC Press, (2020)
Editors: Colin Adams, Erica Flapan, Louis Kauffman, Lew Ludwig, Sam Nelson, Allison Henrich.
- 7. Braidoids**
With S. Lambropoulou, Oberwolfach Preprints; 2020,17, DOI: 10.14760/OWP-2020-17
- 8. Braidoids**
With S. Lambropoulou, Israel Journal of Mathematics. 242, 955â995 (2021). <https://doi.org/10.1007/s11856-021-2155-8>IsraelJournalofMathematics
- 9. Biquandle Brackets and Knotoids**
With S.Nelson and N.Oyamaguchi, Journal Knot Theory and its Ramifications,, Vol.30, No:09, (2021).
- 10. Quantum invariants of knotoids**
With L. Kauffman, Communications in Mathematical Physics. (2021). <https://doi.org/10.1007/s00220-021-04081-3>
- 11. Parity, closure and minimality of knotoids**
With L.Kauffman, Journal of Knot theory and its Ramifications, Vol.30, No:11, (2021).

12. **Invariants of bonded knotoids and applications to protein folding**
Invited paper, with B.Gabrovsek and L.Kauffman, Symmetry, Special Issue: Topological Methods in Chemistry and Molecular Biology, Editors: Erica Flapan and Helen Wong, (2022).
13. **Invariants of multi-linkoids**
With B. Gabrovsek, Mediterranean Journal of Mathematics volume 20, Article number: 165 (2023).
14. **Spatial graphoids**
With P. Pongtanapaisan and L. Kauffman, Aequationes Math. <https://doi.org/10.1007/s00010-023-00981-y> (2023).
15. **k-color Region select game**
With A.Batal, Journal of Japanese Mathematical Society, 75(4): 1409-1429 (2023).

RESEARCH
FELLOWSHIPS &
AWARDS

2024 CIMPA-ICTP Research in Pairs Program, Host: Prof. Joanna Ellis Monaghan, University of Amsterdam

2020-2022 Dorothea Schloezer Postdoctoral Program for Female Scientists, Georg-August Universität, Göttingen

2019 Leibniz Fellows by Oberwolfach Research Institute for Mathematics, Oberwolfach, Germany

2018 Open Arms Travel Grant for International Congress of Mathematicians , Rio de Janeiro, Brazil

2018 Simons Foundation (USA) Travel Grant to visit Prof. Sam Nelson

2017 Simons Foundation (USA) Travel Grant and Funding by University of Illinois to visit Prof. Louis Kauffman

2017 European Mathematical Society Travel Fund for AMS Meeting in Washington

2017 Claremont Topology Seminar Fund for visiting Claremont McKenna College

2016 European Mathematical Society Travel Fund for Knots in Hellas Conference

2014 – 2015 Ph.D. Grant by THALES Program of the Greek Ministry of Education and E.U., Scientific Coordinator: Prof. Sofia Lambropoulou

2009 – 2012 Scientific and Technological Research Council of Turkey Travel Grant for Gökova Geometry & Topology Conferences

2004 – 2007 Middle East Technical University Development Foundation Scholarship for Undergraduate Students

ACADEMIC
VISITS

Feb-March 2024 Centre International de Rencontres Mathematiques (CIRM), Luminy, France

Jan-February 2024 University of Amsterdam Amsterdam, Netherlands
 Host: Prof. Joanna Ellis Monaghan

January 2024 Claremont Mckenna College, Pomona, USA
 Host: Prof. Sam Nelson

September 2019 Oberwolfach Research Institute for Mathematics, Oberwolfach, Germany

March 2018 Claremont McKenna College Claremont, USA
 Host: Prof. Sam Nelson

July 2017 Oberwolfach Research Institute for Mathematics Oberwolfach, Germany
 ‘Research in pairs’ program, with L. H. Kauffman ve S. Lambropoulou

April 2017 University of Illinois at Chicago Chicago, USA

Host: Prof. Louis H. Kauffman
April 2017 Claremont McKenna College Pomona, USA
Host: Prof. Sam Nelson
April 2015 University of Illinois at Chicago Chicago, USA
Host: Prof. Louis H. Kauffman

INVITED
PRESENTATIONS

2024:
MAR A mini lecture on knot theory,
Centre International de Rencontres Mathematiques Marseille, France
JAN AMS Special session: Algebraic structures in knot theory (organizer)
Joint Mathematics Meeting San Fransisco, USA
2023:
SEP 35th National Mathematics Symposium, Trakya University Edirne, Turkey
MAY RTG Fourier Analysis and Spectral Theory, Georg-August University Göttingen, Germany
MAY Special Session on Algebraic Structures in Knot Theory (organizer),
California State University Fresno, USA
2022:
SEP Topology and Group Theory Workshop, 9 Eylül University Izmir, Turkey
Knots and representation Theory Seminar, Moscow&Beijing online seminar series
2021:
SEP The 33rd National Mathematics Symposium (online), Istanbul University
JUN Novel Mathematical Methods in Material Science: Applications to Biomaterials,
Banff International Research Institute (virtual)
MAR Topology Seminar, Durham University (online)
MAR Geometric Topology Seminar, University of Ljubljana (online)
JAN Universidad de Valparaiso,
II Encuentro de Algebra y Teoria de Nudos(virtual)
2020
OCT The 8th Spring Meeting of Mathematics (Turkey, online)
JUL Novosibirsk State University,
Physical Knotting, Vortices and Surgery in Nature Conference (online)
JUN Georg-August Universität, Mathematisches Institut Colloquium Talk (online)
Ohio State University Colloquium on Algebraic Structures related to Knots (online)
2019 MAR
Izmir Institute of Technology Mathematics Department Seminar Izmir, Turkey
Istanbul Mathematical Sciences Center Istanbul, Turkey
Bosphorus University Mathematics Department Colloquium Istanbul, Turkey
2018:
OCT 9 Eylül University Department of Mathematics Algebra Seminar Izmir, Turkey
JUL International Congress of Mathematicians 2018 Poster Presentation Rio de Janeiro, Brazil
APR AMS Spring Western Sectional Meeting Portland, USA
MAR
Claremont College Topology Seminar Pomona, USA

Cal State Fullerton Geometry and Topology Seminar	Fullerton, USA
Izmir University of Economics	Izmir, Turkey
2017:	
SEP Izmir Institute of Technology Department of Mathematics Seminar	Izmir, Turkey
APR	
UIC Quantum Topology and Hopf Algebra Seminar	Chicago, USA
AMS Sectional Meeting	
Combinatorial and Algebraic Structures Conference	Washington, USA
USC Geometry and Topology Seminar	Los Angeles, USA
Claremont College Topology Seminar	Pomona, USA
FEB Winter Braids '7 Poster Presentation Université de Caen 1	Caen, France
2016:	
JUL Knots in Hellas'16, International Olympic Academy	Olympia, Greece
FEB Winter Braids'6 Poster Presentation, Université de Lille 1	Lille, France
2015:	
JUN Thalys Project Workshop Poster Presentation, NTUA	Athens, Greece
APR UIC Quantum Topology and Hopf Algebra Seminar	Chicago, USA
2014:	
JUL Young Topologists Meeting '14, University of Copenhagen	Copenhag, Denmark
APR Thessaloniki Algebra Days Aristotle University of Thessaloniki	Thessaloniki, Greece
FEB NTUA Low Dimensional Topology Seminar	Athens, Greece

SUPERVISION OF
GRADUATE
STUDENTS

1. Mehmet Kaymak (IZTECH, 2021-...). **Knot invariants related to graph invariants.**
2. Neslihan Güneş (IZTECH, 2021-...). **Bondles, singquandles and applications.**
3. Tansilu Altay (IZTECH, 2022-...). **Quotient quandles of knots and links**
4. Runa Pflume (Georg-August University, Göttingen, 2022-2023). **Generalizations of quandles to linkoids.**

COURSES TAUGHT

Izmir Institute of Technology	
Analytic Geometry	Fall 2023
Izmir Institute of Technology	
Topology I (Graduate course)	Spring 2023
Izmir Institute of Technology	
Differential Geometry	Spring 2023
Izmir Institute of Technology	
Introduction to Knot Theory	Fall 2022
Izmir Institute of Technology	
Vector CalculusI	Fall 2022
Georg-August-Universitat Göttingen	
A seminar course in Algebraic and combinatorial structures in knot theory	Summer 2022
Georg-August-Universitat Göttingen	
Modern Geometry (tutor of exercise sessions and preparation of homework & exams)	Summer 2022

Izmir Institute of Technology	
Manifold Theory	Fall 2021
Izmir Institute of Technology	
Fundamentals of Mathematics	Fall 2021
Georg-August-Universität Göttingen	
Introduction to Knot Theory (virtual)	Summer 2021
Georg-August-Universität Göttingen	
A seminar course in Geometric-Topology (virtual)	Winter 2020
Georg-August-Universität Göttingen	
A seminar course in Knot Theory (virtual)	Summer 2020
Izmir Institute of Technology, Turkey	
Calculus for Engineering and Science II	Summer 2019
Izmir University of Economics, Turkey	
Calculus I	Fall'18
Calculus II	Summer'18
National Technical University of Athens, Greece	
Teaching Assistant for	
Knot Theory & Its Applications in Biology, Physics, Chemistry	Spring'14, '16
Koç University, Turkey	
Teaching Assistant for	
Calculus I-II	10/2012 - 06/2013
Statistics - Calculus I	10/2011 - 06/2012
Calculus I - Statistics	10/2010 - 06/2011
Başkent University, Turkey	
Teaching Assistant for	
Abstract Mathematics-General Topology	10/2008 - 06/2009
Advanced Calculus- Calculus I, Calculus II	10/2009 - 06/2010
Middle East Technical University	
Undergraduate Teaching Assistant for	
Linear Algebra	10/2007 - 06/2008
(Grading of examinations and 2hr/ a week Office Hours)	

MEMBERSHIPS & SERVICE Reviewer for zbMath, Journal of Knot Theory and Its Ramifications, Mediterranean Journal of Mathematics, Scientific Reports, Communications of the Korean Mathematical Society, Communications in Mathematical Physics, Turkish Journal of Mathematics, Rocky Mountain Journal of Mathematics.

OUTREACH Izmir Institute of Technology Children's University Math Instructor
Izmir Institute of Technology Departmental Coordinator of the Promotion Committee

LANGUAGES Turkish (Native), English (Fluent), Greek (A2 level)

