Hamid Reza Daneshpajouh School of Mathematical Sciences Email: Hamid-Reza.Daneshpajouh@nottingham.edu.cn



Employment

School of Mathematical Sciences Faculty of Science and Engineering 23 Sept 2021 → present

Postdoctoral Experience

| 2019-2021 | Postdoctoral Fellow, CERMICS, Ecole des Ponts ParisTech, Paris, France. |
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| 2018-2019 | Postdoctoral Fellow, School of Mathematics, Institute for Research in Fundamental Sciences, Tehran, Iran. |

Educations

| 2013-2018 | Ph.D In Mathematics, Institute For Research In Fundamental Sciences, Iran. Adviser: Prof. H. Hajiabolhassan, GPA 18.69 out of 20. |
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| (Second Master's Degree) | Master's Degree in Applied Mathematics, Advanced Combinatorics Program, Moscow Institute of Physics and Technology, Moscow, Russia. Adviser: Roman Karasev, Graduated with Red Diploma (Highest Honors). |
| 2009-2011 | Master's of Science In Pure Mathematics, University of Tehran, Tehran, Iran. Adviser: F.Shirazi, GPA 18,14 out of 20. |

Research Interests

Broadly speaking, my research interests lie in the intersection of combinatorics and topology. In particular, using topological and geometric techniques to study combinatorial problems.

Awards and Honors

| 2024 | 35000 RMB, Exceptional Performance Award, awarded by the University of Nottingham Ningbo. |
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| 2023 | 13000 RMB, Excellent Performance Award, awarded by the University of Nottingham Ningbo. |
| 2023 | 30000 RMB, Research Grant, awarded by the University of Nottingham Ningbo China. |
| 2022 | 15000 RMB, Research Grant, awarded by the University of Nottingham Ningbo China. |
| 2021 | 200 Million Iranian Rials, Research Grant, Institute for Research in Fundamental Sciences (IPM). Awarded to support a summer research project conducted at IPM. |
| 2015-2017 | (\$9,000) Research Grant, awarded by Iranian National Elites Foundation. |
| 2012 | Ranked 6th in the National University Entrance Exam for PhD in Mathematics among around 10000 candidates. |
| 2010-2011 | Selected for one-year special program in Non-Commutative Geometry with full funding, IPM, Tehran, Iran. |
| 2008 | Silver Medals, 32th Iranian National Mathematics Competition for University Students |
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Research outputs

Box complexes: at the crossroad of graph theory and topology

Daneshpajouh, H. R. & Meunier, F., Jun 2025, In: Discrete Mathematics. 348, 6, 114422.

On the number of star-shaped classes in optimal colorings of Kneser graphs Daneshpajouh, H. R., Feb 2024, In: Journal of Graph Theory. 105, 2, p. 230-238 9 p.

A Topological Version of Hedetniemi's Conjecture for Equivariant Spaces

Bui, V. & Daneshpajouh, H. R., 2024, (Accepted/In press) In: Combinatorica. 44, 2, p. 441-452 12 p.

Hedetniemi's conjecture from the topological viewpoint

Daneshpajouh, H. R., Karasev, R. & Volovikov, A., Apr 2023, In: Journal of Combinatorial Theory - Series A. 195, 105721.

A counterexample to a conjecture on the chromatic number of r-stable Kneser hypergraphs Daneshpajouh, H. R., 26 Feb 2023, In: Journal of Graph Theory. 103, 4, p. 762-766 5 p.

Colorings of complements of line graphs Daneshpajouh, H. R., Meunier, F. & Mizrahi, G., Sept 2021, In: Journal of Graph Theory. 98, 2, p. 216-233 18 p.

On the neighborhood complex of s→-stable Kneser graphs Daneshpajouh, H. R. & Osztényi, J., Apr 2021, In: Discrete Mathematics. 344, 4, 112302.

Dold's theorem from viewpoint of strong compatibility graphs Daneshpajouh, H. R., Mar 2020, In: European Journal of Combinatorics. 85, 103064.

On the chromatic number of generalized Kneser hypergraphs Daneshpajouh, H. R., Oct 2019, In: European Journal of Combinatorics. 81, p. 150-155 6 p.

A topological lower bound for the chromatic number of a special family of graphs Daneshpajouh, H. R., Feb 2018, In: Discrete Mathematics. 341, 2, p. 508-512 5 p.

New Construction of Graphs with High Chromatic Number and Small Clique Number Daneshpajouh, H. R., 1 Jan 2018, In: Discrete and Computational Geometry. 59, 1, p. 238-245 8 p.

A new proof of 0-resolvability of a metric space without an isolated point Daneshpajouh, H. R., 2015, In: American Mathematical Monthly. 122, 9, p. 897-898 2 p.

An interesting proof of the nonexistence of a continuous bijection between \mathbb{R}^n and \mathbb{R}^2 for n \neq 2 Daneshpajouh, H. R., Daneshpajouh, H. & Malek, F., 2014, In: Involve. 7, 2, p. 125-127 3 p.

Books

| 1 | Mathematics Olympiad for High School (1st, 2nd, and 3rd Grades) (In Farsi). Co-authored with M. T. Tanjani, O. Mazaheri, S. Taheri, M. Etesami Far, M. R. Gharib Dost, S. Khan Khajeh, P. Ramzi, A. Iranian, and M. Mir Rafie. Publisher: Kanon Farhangi Amoozesh Ghalam Chi. ISBN: 978-964-509-405-6. |
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| 2 | Mathematics Olympiad for 2nd Grade of High School (In Farsi). Co-authored with M. T. Tanjani, O. Mazaheri, S. Taheri, M. Etesami Far, M. R. Gharib Dost, S. Khan Khajeh, A. Iranian, P. Ramzi, and M. Mir Rafie. Publisher: Kanon Farhangi Amoozesh Ghalam Chi. ISBN: 978-964-509-390-5. |
| 3 | Computer Science Olympiad for High School (In Farsi). Co-authored with M. T. Tanjani, M. Etesami Far, M. R. Gharib Dost, S. Taheri, and P. Esfandyar. Publisher: Kanon Farhangi Amoozesh Ghalam Chi. ISBN: 978-964-509-387-5. |

Teaching Certificates

| Nov 2023 | Fellow (FHEA), Advanced Higher Education (AdvHE) |
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| May 2023 | Associate Fellow AFHEA), Advanced Higher Education (AdvHE). |

Teaching Exprience

2021–Present University of Nottingham Ningbo China (UNNC):

Coding and Cryptography, Discrete Mathematics and Graph Theory, and Game Theory.

Problem-Solving-based Seminars (IMC Preparation):

(Some Topics in:) Linear Algebra, Topology of Metric Spaces, Polynomial and Probabilistic Methods in Combinatorics, Discrete Geometry, Multivariable Calculus I & II, Real Analysis, Abstract Algebra, Number Theory and Combinatorics.

2019

Guest Lecturer, Moscow Institute of Physics and Technology A mini course on Topological Combinatorics.

Other Working Experience

| 2022-Present | Team Leader and Mathematical Olympiad Instructor, UNNC Mathematical Olympiad Team. Achievements: 2024: Two bronze medals at the 29th International Mathematics Competition for University Students (IMC). 2023: One gold medal and one silver medal at the 30th IMC. 2022: One silver medal and one bronze medal at the 29th IMC. | |
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| 2022-Present | Organizer of UNNC Undergraduate Seminar in Mathematics. | |
| 2019 | Guest Lecturer}, Moscow Institute of Physics and Technology, Delivered a mini-course on topological combinatorics. | |
| 2010-2015 | Mathematical Olympiad Instructor, Allameh-Heli 11 High School (Farzanegan Branch) and Mofid High School. Prepared students for national and international mathematics competitions. | |
| 2011-2013 | Cryptanalyst in a Cryptography Company, Tehran, Iran. | |
| 2008-2011 | Team Leader and Mathematical Olympiad Instructor, K. N. Toosi University of Technology. Achievements: Students won two silver medals and one bronze medal at the Iranian National Mathematics Competition for University Students. Team ranked third among nearly 40 participating teams. | |

Undergraduate Research Supervision

Summer 2025: An Open Problem in Graph Colorings Supervising 3 undergraduate students in investigating some unsolved problems in graph colorings.

2025–Present:

Algebraic Topology

Mentoring 5 undergraduate students in exploring fundamental concepts and applications of algebraic topology.

2023–2024: Kakeya Problem Guided 7 students in studying the Kakeya needle problem and its finite field variant.

2022–2023: Fair Division: Sperner's Lemma & Brouwer's Fixed-Point Theorem

Supervised 15 students in analyzing fair cake-cutting problems using fixed-point theorems.

Peer Review

Journal of Graph Theory

Journal of Combinatorial Theory, Series B.

Discrete & Computational Geometry.

Discrete Mathematics.

Discussiones Mathematicae Graph Theory.

Journal of Fixed Point Theory and Applications.

The Bulletin of the Iranian Mathematical Society.

Conferences and Workshops

2023

Convex and Discrete Geometry Summer School August 28 – September 1 | Budapest, Hungary

2020 Topological Combinatorics Seminar (Online) June 30 – August 30 2019

International Conference on Mathematical Optimization for Fair Social Decisions (Tribute to Michel Balinski) December 3–4 | Paris, France

Workshop on Graphs, Networks, and Their Applications May 13–18 | Moscow, Russia

Combinatorics and Computing Conference April 16–18 | Tehran, Iran

2018 Workshop on Graphs, Networks, and Their Applications

May 14–16 | Moscow, Russia

2017 International Mini-Workshop: Extremal Combinatorics September 5 | Moscow, Russia

1st Russian-Hungarian Workshop on Discrete Mathematics April 21–23 | Moscow, Russia

2015 5th German-Russian Week of the Young Researcher (Discrete Geometry) September 7–11 | Moscow, Russia

IPM Combinatorics and Computing Conference April 29–30 | Tehran, Iran

2014 Frontiers in Mathematical Sciences (3rd Conference) December 29 – January 1, 2015 | Tehran, Iran

References

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