Afshin Behmaram

Assistant Professor at
Faculty of Mathematical Sciences
University of Tabriz, Tabriz, Iran

Director of **Erdős Math Institute** at
Tabriz Science and Technology park

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Research Interests:

Combinatorics and Graph theory ó Especially:

- Matchings and Domination in Graphs
- Algebraic and linear Algebra methods in Graph theory

Profession:

- Faculty member (Assistant Professor), **Faculty of mathematical Sciences**, University of Tabriz 2014-present
- Founder and Director of *Erdős Math Institute*, leading Institute in mathematics education programs and Scientific competitions in Iran, 2017- present
- Visiting Scholar, **University of Illinois at Chicago**, 2012-2013
- Researcher, **Institute for Research in Fundamental Sciences (IPM)**, Tehran, Iran, 2013-2016
- Member, Advisory Board, **Singapore International Scholastic Trust (IST),** 2019-present
- Member, Advisory Board, **Singapore and Asian school math Olympiad** (SASMO), 2019-present
- Member, Iranian mathematical Olympiad committee for university student, 2014-2019
- Member, Iranian National Elites Foundation, 2014-present

Education:

- University of Tehran, Tehran, Iran
  PhD in Combinatorics and Graph theory, 2013
    - Dissertation Topic: Matching in fullerene and molecular graph
    - Advisor: Professor Hassan Yousefi Azari, Professor Alireza Ashrafi

- Sharif University of technology
  M.S. in Combinatorics, 2008
    - Dissertation Topic: Matching polynomial of Graphs
    - Advisor: Professor Saeid Akbari

- Amirkabir University of technology
  B.A. in Mathematics, 2005

Awards and Grants:

- 2021 Board of Jury,**" Khwarizmi International Award"** Iranian Research organization for Science and Technology (IROST)
- 2019 Visitor grants from **Istanbul center for Mathematical Sciences** (IMBM) for visiting IMBM and Bogazici university, Turkey, (5-21September).
- 2019 **Popularization of mathematics Award** from **Iranian mathematical Society** for Popularization of mathematics amongst Iranian university
- 2017-2018 Grants from Center for International Scientific Studies and Collaboration, Ministry of Science for joint **Iranian-French Project "Jondi Shapour"**
- 2017 Visitor grant from **Charles University, Czech Republic** for visiting department of mathematics for 2 weeks
- 2013-2016 Nonresidents Researcher grant of **Institute for Research in Fundamental Sciences (IPM)**, Tehran, Iran (No. 90050113)
- 2015 Visitor grants from **Galileo Galilei Institute**, Florence, Italy for participate in workshop for 2 weeks
- 2013 Distinguished **PhD student researcher** award from university of Tehran, Iran
- 2013 Travel Grant from **Tata Institute**, Mumbai, India for participate in a workshop for 10 days
- 2012 Ministry of Science of Iran Grants for visiting **university of Illinois at Chicago**
- 2011 First Rank in integrated PhD exam amongst all PhD student of Department.
- 2007 Top 20 rank in Iranian M.Sc. entrance in pure and applied Mathematics.
- 2004-2005 Third prize (Bronze) in Iranian mathematics Olympiad for 2 years.

*Publication***:**

- S Akbari, H Baktash, A Behjati, A Behmaram, M Roghani, Some Results on Dominating Induced Matchings, Graphs and Combinatorics 38, (73) 2022, 1-8

- Reza Sharafdini, Afshin Behmaram, Signless Laplacian Determination of a Family of Double Starlike Trees, Ukrainian Mathematical Journal, 79(2021);1274-1284

- M Arezoomand, A Behmaram, M Ghasemi, P Raeighasht, Isomorphisms of bi-Cayley graphs on Dihedral groups, Discrete Mathematics, Algorithms and Applications 12 (04), 2050051(2020)

- A Mahmoodi, S Nazari-Moghaddam, A Behmaram, Some results on the strong Roman domination number of graphs, Mathematics Interdisciplinary Research 5 (3), 259-277(2020)

- A. Behmaram, C Boutilier, Asymptotic enumeration of perfect matchings in m-barrel fullerene graphs, Discrete Applied Mathematics, 266(2019) 153-162

- AZ Abdian, A Behmaram, GH Fath Tabar - Graphs determined by signless Laplacian spectra, AKCE International Journal of Graphs and Combinatorics, Volume 17, 2020 - Issue 1

- AZ Abdian, LW Beineke, MR Oboudi, A Behmaram, K Thulasiaman, S Alikhani, K Zhao, On the spectral determinations of the connected multicone graphs $Kr\triangledown sKt$, AKCE International Journal of Graphs and Combinatorics, Volume 17, 2020 - Issue 1

- Afshin Behmaram, Tomislav Doslic, Shmuel Friedlsnd, Matchings in generalized Fullerene, Ars Mathematica contemporanea, Vo11, No2 (2016), pp 301-311

- R. Rasi, S. M. Sheikholeslami, A. Behmaram, An upper bound on the first Zagreb index in graphs, Iranian J. Math. Chem. 8(1) March (2017) 71 82

- A. Marandi, A.H. Nejah, A.Behmaram, Perfect Matchings in Edge-Transitive Graphs, Iranian Journal of Mathematical Chemistry, Vol.5, Supplement1, December 2014, pp 27-33.

- Afshin Behmaram, Shmuel Friedland, Upper bound for perfect matching in Pfaffian and planar graphs, The Electronic journal of combinatorics 20 (1) (2013) p64

- A. Behmaram, H.yousefi Azari, A.R.Ashrafi, On the Number of Matchings and Independent Sets in (3, 6)-Fullerenes , Match common. Math. Comput. Chem, 70(2013) 525-532.

- A. Behmaram, H.yousefi Azari, A.R.Ashrafi, On the number of paths, independent sets and matchings of low order in (4, 6) fullerenes, MATCH Commun. Math. Comput. Chem.69 (2013) 25-32.

- A. Behmaram, H. Yousefi Azari and A. R. Ashrafi, Wiener polarity index of fullerenes and hexagonal systems, Appl. Math. Lett. 25(2012) 1510-1513.

- A. Behmaram, H. Yousefi-Azari, A.R. Ashrafi, Closed formulas for the number of small paths, independent sets and matchings in fullerenes, Appl. Math. Lett. 25(2012) 1721-1724.
- A. Behmaram, H. Yousefi-Azari, Further Results on Wiener Polarity Index of Graphs, Iranian Journal of Mathematical Chemistry, Vol. 2, No. 1, September (2011) 67-70.
- A. R. Ashrafi, P. Nikzad, A. Behmaram and H. Yousefi-Azari, Kekule count in TUC4C8(R) nanotubes, Studia Universitatis Babes-Bolyai CHEMIA, 55(2010) 91-96.
- A. Behmaram, H.yousefi-Azari, A.R.Ashrafi , Some new result on distance based polynomial, Match common Math .Comput. Chem, 65(2011), 39-50.
- A. Behmaram, on the number of 4-matchings in graphs, MATCH Commun. Math.Comput. Chem. 62 (2009) 381-388.

Author (Book):

- Creative Mathematics in Combinatorics and Algebra, Fatemi publishing Company, Iran, 2017 (In Persian)

Organizer:

- 2019 Chief Organizer of International **CIMPA Research School** on õGraphs, Algorithms and randomness õat university of Tabriz (15-22 June)
- 2019 Executive Committee of 17**th Iranian Mathematics Education Conference,** university of Tabriz (16-18 August)
- 2019 **Organizer** of õ**Singapore and Asian schools Math Olympiad (SASMO)"** Competition in Iran
- 2018-2019 Chief Organizer of õ**Creative Mathematics summer camp** õfor talented high school student in Faculty of mathematical Sciences, university of Tabriz (20-24 August)
- 2018-2019 Co organizer of õMath **kangaroo Summer Camp** õfor talented high school student in Istanbul Turkey (5-13 July)
- 2017 Organizer of õ**Workshop on mathematical tiling**ö in innovation center of **university** of Tabriz (4-6 November)
- 2017   Organizer of õ**Workshop on combinatorics and graph theory "in** Faculty of mathematical Sciences, university of Tabriz (8-10 December)
- Member of scientific committee , **9th Iranian Conference on Algebraic graph theory and combinatorics**, Amirkabir university of technology, Tehran , Iran , (22-24 February)

Conference Talks:

- Asymptotic enumeration of perfect matchings in Fullerene graphs,ö Illinois State University Discrete Math Seminarö, March 3, 2022
- Counting matchings in Fullerene graphs and its application, workshop on õGraph theory and its Applicationö, Invited Speaker , IPM-Isfahan, Iran, January 20-21, 2021
- Mathematical aspects of m-barrel Fullerene, ICRAMS (International conference on recent achievement in mathematical Sciences), Yazd, Iran, 14-18 Jan 2019
- On Matching and distance property of m-barrel Fullerene, 16th Cologne óTwente workshop on Graphs and combinatorial optimization, Paris, France, June 2018
- Teaching mathematics with respect of Manipulative tools, Iranian mathematics education Conference, Farhangian university, Tabriz, Iran, Feb 2018
- Counting Matchings in a class of Fullerene Graphs, The Second Malta Conference in Graph Theory and Combinatorics, 26-30 June, 2017
- Perfect Matching in Cubic graphs and Fullerene, õMathematics of Jiri Matousekö Conference, Prague, Czech Republic, 23-28 July 2016
- Counting perfect matching in graphs with application in monomer-dimer models, workshop on Statistical mechanics, integrability and combinatorics Florence, Italy,2015/05/11, 2015/07/03
- Fullerene Graphs and Generalization, seventh conference on mathematical chemistry, Saveh, Iran (Invited Talks)- February 5-7, 2015
- Induced matchings and edge roman domination in regular graphs, IPM combinatorics and computation conference 2015- IPM, Tehran, Iran, April 29-30, 2014
- Linear Algebra method for counting the number of perfect Matchings in graphs, The 7th seminar on Linear Algebra and its Application, Ferdowsi university of Mashhad, Iran, February 2014.
- Perfect matchings in cubic graphs, invited speakers, 6th algebraic combinatorics conference of Iran, Mazandaran University, October 29-30, 2013.
- The number of perfect matchings in Pfaffian graphs, IPM weekly seminar on combinatorics and computing, Tehran, Iran, March 13, 2013.
- Upper bound for perfect matching in Pfaffian and planar graphs with Friedland, International Conference on Recent Trends in Discrete Mathematics, Tata Institute, Mumbai, India, December 17-20, 2012
- Upper bounds for matchings in graphs, Midwestern Graph Theory (MIGHTY) LIII Conference -Iowa state university, USA, September 21-22, 2012.

- Counting the number of small paths and small matchings with respect to the number of cycles in a graph, International Conference on Cycles in Graphs, Vanderbilt University, Nashville, Tennessee, USA, May 30 - June 2, 2012.
- Matching and Small Paths in Fullerene Graphs, Graph Theory @ Georgia Tech: Conference in Honor of Professor Robin Thomas: May 7-11, 2012 (poster presentation).
- Perfect matching count especially in fullerene graphs, university of Illinois at Chicago ,April 11,2012
- Closed formula for the number of small paths, matchings and independent set in fullerene graphs, in Math/Chem/Comp 2011 in Dubrovnik, Croatia, June 13-18,2011
- On the automorphism group of Fullerene workshop on Finite Groups and Their Automorphisms, Istanbul, June 7-11, 2011 (poster presentation).
- Some new recursive method for enumeration of Perfect matching, in workshop on graphs and Algorithms in Ipm, Tehran, Iran ,1 - 2 June 2011
- On the matching of fullerene graphs, in the first international conference on applied mathematics 2010, In American university of Sharja, Emirates.
- Some new Results on distance-based polynomial in the second international conference on mathematical chemistry (2010), university of Kashan, Kashan, Iran.
- Perfect Matching in some Nano tube The First Iranian Conference on Chemical Graph Theory (FICCGT 2010) Shahid Rajaee Teacher Training University, Tehran, IRAN ,Oct 6-7, 2010
- On the number of 4-matching in Graphs, first international conference on mathematical chemistry (2009), Tarbiat Moddares University, Tehran, Iran.

Educational Inventions:

- 12 inventions on educational math tools (joint with Mehregan Shamsaei)
- Approved by Iran's National Elites Foundation
- Gold medal in ITEX exhibition (Malaysia) -2011
- Gold medal in ITI exhibition, Kish, Iran -2010
- Silver medal, Geneva invention exhibition, Switzerland (2015)

Teaching Experience:

- 2014- present lecturer Combinatorics, Graph theory, Algorithmic graph theory, Mathematics of networks and Calculus 1,2 at University of Tabriz
- 2021 Teaching Math Olympiad online course in GMOS (Global Math Olympiad Scholar)
- 2018-2021   Teaching **Graph games** and **Game theory** in **Creative math summer Camp** and **Math Kangaroo summer Camp (Istanbul -Turkey)**
- 2011-2012   Lecturer, Algorithmic Combinatorics and Discrete mathematics at Department of Engineering, University of Tehran

- 2010- 2011   lecturer, Graph theory and Discrete mathematics, Department of mathematics, University of Tehran.
- 2007-2008   Teaching assistant, Calculus 1 and 2, Sharif university of technology, Tehran, Iran
- 2009-Present   Teaching combinatorics and graph theory in Iranian informatics Olympiad course for high schooløs student (preparation for IMO).
- 2009-Present   Teaching creative mathematics (combinatorics and Algebra) for high schooløs student in Iranian schools for gifted and Talented students

Programing:

- C++, MATLAB, Maple, Sage, python