

CURRICULUM VITAE

Elham Roshanbin

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Appointment

- **Alzahra University**, Tehran, Iran, Sept 2018-present.
Assistant Professor, Department of Mathematics, Faculty of Mathematical Sciences.
- **Isfahan University of Technology**, Isfahan, Iran, Sept 2017-Aug 2018.
Visiting researcher, Supervisor: Dr. Behnaz Omoomi.
Advisor of PhD student: Marzieh Vahiddastjerdi, Sept 2017-present.
- **University of British Columbia (Okanagan Campus)**, Kelowna, Canada, Aug 2016-May 2017.
Postdoctoral research fellow, Supervisor: Dr. Yong Gao.

Education

- **Dalhousie University**, Halifax, Canada, Jan 2012-May 2016.
PhD in Applied Mathematics, Supervisors: Dr. Jeannette Janssen, Dr. Anthony Bonato.
PhD Thesis: **Burning a Graph as a Model for the Spread of Social Contagion**.
<https://dalspace.library.dal.ca/handle/10222/71417>
- **Isfahan University of Technology**, Isfahan, Iran, Sept 2007-April 2010.
MSc in Applied Mathematics, Supervisor: Dr. Behnaz Omoomi,
Thesis title: **Star colouring of Graphs**.
- **Isfahan University of Technology**, Isfahan, Iran, Sept 2003-Aug 2007.
BSc in Pure Mathematics (Required 132 credits course, however I passed 141 credits).
Honour Project: **Matroid Theory**, Supervisor: Dr. Behnaz Omoomi.

Research Interests

- Graph Burning, Applications of Graph Theory in Social Networks, Graph Colouring, Probabilistic Tools in Combinatorics, Combinatorics.

Published and Accepted Papers

- Gao Y., Roshanbin E., “**The graph burning problem for some families of graphs**”, proceeding of the 5th International Conference on Combinatorics, Cryptography, Computer Science and Computing, March 2021. http://i4c.iust.ac.ir/index.php?option=com_content&view=article&id=35&Itemid=239&lang=en
- Omoomi B., Roshanbin E., and Vahiddastgerdi M., “**A Polynomial time Algorithm to Find the Star Chromatic index of Trees**”, Electronic Journal of Combinatorics, Volume **28** (1) (2021), #P1.6.

- Mitsche D., Pralat P., and Roshanbin E., “**Burning number of graph products**”, Theoretical Computer Science, Volume **746** (2018) 124-135.
- Bessy S., Bonato A., Janssen J., Rautenbach D., and Roshanbin E., “**Bounds on the Burning Number**”, Discrete Applied Mathematics, Volume **235** (2018) 16-22.
- Bessy S., Bonato A., Janssen J., Rautenbach D., and Roshanbin E., “**Burning a Graph is Hard**”, Discrete Applied Mathematics, Volume **232** (2017) 73-87.
- Mitsche D., Pralat P., and Roshanbin E., “**Burning graphs-a probabilistic perspective**”, Graphs and Combinatorics, Volume **33** (2017) 1-23.
- Bonato A., Janssen J., and Roshanbin E., “**How to burn a graph**”, Internet Mathematics, Volume **12** (2016) 85-100.
- Bonato A., Janssen J., and Roshanbin E., “**Burning a graph as a model of social contagion**”, In: Proceedings of 11th Workshop on Algorithms and Models for the Web Graph (WAW 2014), published in Lecture Notes in Computer Science, Volume **8882** (2014) 13-22.
- Roshanbin E., “**The competitive diffusion game in classes of graphs**”, In: Proceedings of Algorithmic Aspects in Information and Management (AAIM 2014), published in Lecture Notes in Computer Science, Volume **8546** (2014) 275-287.
- Omoomi B., Roshanbin E., “**Star Colouring and Tree-Width of Kneser Graph $KG(n,2)$** ”, accepted to Journal of Utilitas Mathematica, 2013.

Preprints and Papers in Progress

- Roshanbin E., **An Improved Algorithm for Finding the Star Chromatic index of Trees**, preprint, 2020.
- Roshanbin E., “**Poisson Burning**”, in progress.
- Gao Y., and Roshanbin E., “**Burning number of some graph classes**”, in progress.

Research Reports

- Research collaboration report, With Nhan Bao Ho, Urban Larsen, and Angela Siegel, **Ferrer Subtraction Game**, Game Theory Workshop, Dalhousie, June 2012.
- Research report, Omoomi B., Roshanbin E., “**Star Colouring of Graphs, a Survey**”, 2011.

Teaching Certificate

- **Dalhousie University Certificate in University Teaching and Learning**, May 2016.

Teaching and Co-supervising

- **MSc Advisor**, Student: Mehrangiz Khazabi, Alzahra University, Jan 2021-present.
Project: A study on the burning number of graphs.
- **PhD Advisor**, Student: Marzieh Vahiddastgerdi, Isfahan University of Technology, Sept 2017-present.
Project: Star Edge Colouring of Graphs.
- **Teaching “Combinatorics and its Applications”** (to math, stat, and CS students), **“Graph Theory and its Applications”** (to math and CS students), **“Foundations of Combinatorics”** (to math and stat students), **“Calculus I”** (to engineering students), and **“Calculus II”** (to engineering and chemistry students), 2018 and 2019.
- **Teaching “Scratch”**, BEA/Dalhousie MATH CAMP, July 10-15, 2016.
- **Teaching “Discrete Structures I”** (to math and CS students), Dalhousie University, summer 2014.
- **Co-supervisor**, Summer undergrad project, Student: Daniel Boudreau, Dalhousie University, summer 2012.
- **Teaching “Coding Theory”** and **“Graph Theory”**, Department of Mathematics and Computer Science, University of Sheikh Bahaei, Baharestan, Isfahan, fall 2010 and winter 2011.
- **Part-time Instructor**, Leading Math classes and Problem Solving workshops for high school students and middle school students at Isfahan Mathematics House, 2004-2011.

Teaching Assistant

- **Math Challenge Club**, Dalhousie University, supported by AARMS, Sept 2015-June 2016.
- **Engineering Math II**, Dalhousie University, summer 2016.
- **Linear Algebra**, Dalhousie University, winter 2012 and 2016.
- **Presentation Team Member**, Nova Scotia Math Circles, Sept 2014-Aug 2016.
- **Teaching Assistant**, Learning Centre, Dalhousie University, Sept 2012-Aug 2016.
- **Tutorial of “Differential and Integral Calculus I”**, Dalhousie University, fall 2013 and 2015.
- **Tutorial of “Graph Theory”** (to math and computer engineering students), Isfahan University of Technology, winter 2009.
- **Tutorial of “Probability I”**, Isfahan University of Technology, fall 2007.

Research Collaboration

- **Visiting student, Graphs at Ryerson**, Ryerson University, Aug-Sept 2014.

External Refereeing and Marking

- **Reviewer** of AMS (Mathematical Reviews).
- **Reviewed papers** for the journals of **Internet Mathematics**.
- **Marker**, Canadian Open Mathematics Competition organized by Canadian Mathematics Society, Nova Scotia, fall 2012 and fall 2013.
- **Marker**, Tournament of Towns math competition for High School Students, Isfahan Mathematics House, 2004-2011.

Presentations

- **The graph burning problem for some families of graphs**, 5th International Conference on Combinatorics, Cryptography, Computer Science and Computing, March 2021.
- **Stirling's formula and its applications**, Alzahra University, Tehran, Dec 2019.
- **Star edge colouring of graphs**, CANADAM 2019, Simon Fraser University, Vancouver, May 2019.
- **Burning number of graphs**, Alzahra University, Tehran, April 2019.
- **Invited speaker: Graph burning**, IPM, Isfahan, Oct 26, 2017.
- **How to Burn a Graph**, Isfahan University of Technology, Isfahan, Oct 24, 2017.
- **Graph burning**, Workshop on Random Geometric Graphs and Their Applications to Social Networks, Fields Institute, Toronto, June 10-23, 2017.
- **Graph burning and burning number of graph products**, East Coast Combinatorics Conference 2016, Mount Saint Vincent University, Halifax, July 18-19, 2016.
- **How to burn a graph**, Dalhousie University, Nov 2015.
- **Invited speaker: On the Complexity of the Graph Burning**, GRASTA-MAC 2015, Université de Montréal, Montréal, Oct 19-23, 2015.
- **Graph burning**, 2015 CMS Summer Meeting, University of PEI, Charlottetown, June 5-9, 2015.
- **Graph burning, G@R (Graphs at Ryerson)**, Ryerson University, Sept 15, 2014.
- **The competitive diffusion game in classes of graphs**, 2014 Algorithmic Aspects in Information and Management Conference (AAIM 2014), Simon Fraser University, Vancouver, July 8-11, 2014.
- **A game based on a model for the diffusion of influence through social networks**, 2013 Science Atlantic Math, Stats and CS Conference, University of Prince Edward Island, fall 2013.
- **Competitive Diffusion of Influence in Social Networks**, Dalhousie University, fall 2013.
- **Problems in Number Theory**, Nova Scotia Math Circles, Dalhousie University, Nov 2013.
- **Some Counting problems**, CMS math camp, Dalhousie University, July 2013.
- **Learning How to Count**, Nova Scotia Math Circles, Dalhousie University, May 2013.

- **Star Colouring of Graphs**, Dalhousie University, fall 2012.
- With Jullien Ross, **Graph Theory**, CMS math camp, Dalhousie University, July 2012.
- With Sanaz Khademolqorani, **Star Shapes and Mathematical Concepts**, 11th Iranian Mathematics Education Conference, Mazandaran, July 2010.
- **On the Star Colouring of Graphs**, Isfahan Mathematics House and Isfahan University of Technology, Isfahan, 2010.
- With Dr. Behnaz Omoomi, **On the Star Colouring of graphs**, 40th Annual Iranian Mathematics Conference, Sharif University of Technology, Tehran, summer 2009.
- **Matroid Theory**, Isfahan Mathematics House and Isfahan University of Technology, Isfahan, 2006.

Recognitions

- Certificate of Appreciation, from the Canadian Math Kangaroo Contest for organization and invigilation of the contest, Dalhousie University, 2016.
- Distinguished university student as a teaching leader in Isfahan Mathematics House, 2009 and 2011.
- **Fourth** rank in Pure Math (BSc), Department of Mathematical Sciences, Isfahan University of Technology (**IUT**), 2003 - 2007.
- Being a representative of the 5 member team of IUT at the 31th Annual Iranian Mathematics Competition, Ferdowsi University of Mashhad, May 2007.
Our team ranked **4th** among more than 34 university teams.
- Being a representative of the 5 member team of IUT at the 14th International Mathematics Competition for university students, American University of Bulgaria, Aug 2007.
Our team ranked **17th** among 60 university teams from around the world.
- Achieved the Honorable Mention in the 14th International Mathematics Competition for University Students, American University of Bulgaria, 2007.
- **First** rank in mathematics among the students of Isfahan University of Technology in the national entrance exam, 2003.
- Selected in the National Organization for Development of Exceptional Talents Entrance Exam for High School, 1998.
- Selected in the First Stage of National Computer Olympiad in High School, 2000 and 2001.
- Selected in the First Stage of National Mathematics Olympiad in High School, 2001.

Event Participation

- **Celebrating the second "Women in Mathematics" day**, Alzahra University, Tehran, May 2020.
- **The 21th Workshop on Applied Stochastic Processes**, Alzahra University, Tehran, Nov 19-21, 2019.

- **CANADAM 2019**, Simon Fraser University, Vancouver, May 28-31, 2019.
- **25th Birthday Celebration of the Electronic Journal of Combinatorics**, Simon Fraser University, Vancouver, May 27-28, 2019.
- **IPMCCC 2019**, IPM, Tehran, April 16-18, 2019.
- **Iranian-Hungarian Workshop on Combinatorics**, IPM-Isfahan, May 12-14, 2018.
- **Focus Program on Random Graphs and Applications to Complex Networks**, Fields Institute, Toronto, May 29-June 23, 2017.
- **Graph Searching in Canada (GRASCan) Workshop 2016**, July 20-21, 2016.
- **20th Annual Dalhousie Conference on University Teaching and Learning (DCUTL)**, April 27-28, 2016.
- **AMS Sectional Meeting: Fall Eastern Sectional Meeting (Meeting #1103)**, Dalhousie University, Oct 18-19, 2014.
- **Graphs at Ryerson**, Ryerson University, Aug - Sept 2014.
- **2014 Algorithmic Aspects in Information and Management Conference (AAIM 2014)**, Simon Fraser University, Vancouver, Canada, July 8-11, 2014.
- **A Short Course on the 2-colouring Number**, by Dr. Hal Kierstead, Dalhousie University, Halifax, May 26-28, 2014.
- **Game Theory Workshop**, Dalhousie University, June 2013.
- **AARMS Summer School**, Memorial University, summer 2012.
- **Game Theory Workshop**, Dalhousie University, June 2012.
- **Workshop on Algorithms and Models for the Web Graph (WAW 2012)**, Dalhousie University, June 2012.
- **SIAM Conference on Discrete Mathematics**, Dalhousie University, June 2012.
- **IUT Combinatorics Day**, Isfahan University of Technology, Isfahan, Iran, Feb 2011.
- **Topological Combinatorics Workshop**, Shahid Beheshti University, Tehran, Iran, Oct 2009.
- **IPM 20 – Combinatorics 2009 Conference**, Tehran, Iran, May 2009.
- **14th International Mathematics Competition for university students**, American University of Bulgaria, Aug 2007.

Community and Volunteer Engagement

- **Advisor** of the first year students in mathematics, Alzahra University, 2020.

- **Member of the scientific and organizing committee, Celebrating the second “Women in Mathematics” day**, Alzahra University, Tehran, 2020.
- **Member of the math competitions committee**, department of mathematics, Alzahra University, 2020.
- **Teaching Graph Theory and Combinatorics** to the students of the 5 member team of Alzahra University at the 43rd Annual Iranian Mathematics Competition for university students, 2019.
- **Guest Speaker**, Society for Learning in Retirement (SLR), Kelowna, March 9 and March 16, 2017.
- **Organizer**, Canadian Math Kangaroo Contest, Dalhousie University, 2016.
- **Organizer**, Weekly seminars in Graphs and Games group, Department of Mathematics, Dalhousie University, July 2013-June 2015.
- **Volunteer in Learning Centre**, Dalhousie University, fall 2013.
- **Vice President of Mathematics and Statistics Graduate Students Association (CMSGSA)**, Dalhousie University, Sept 2012 - Aug 2013.
- **Chaperone**, CMS math camp for high school students organized by the department of Mathematics and Statistics, Dalhousie University, July 2012 and July 2013.
- **Volunteer in Organizing the SIAM Conference on Discrete Mathematics**, Dalhousie University, June 2012.
- **Member of Organizing Committee, the First Data Mining National Competition**, Isfahan Mathematics House, Iran, Sept - Oct 2010.
- **Organizer**, Tournament of Towns math competition for High School Students, Isfahan Mathematics House, 2004 - 2011.
- **Organizer**, Math Workshops for High school and Middle school students, Farzanegan Amin School (National Organization for Development of Exceptional Talents), Isfahan, Iran, 2003 - 2010.
- **Course Development**, Organizing (and participating in) the “Lattice Theory” and “Logic & Computational Complexity” courses at Isfahan Mathematics House, 2010.

Computer Skills

- Python
- C++
- Maple
- Latex
- Microsoft Office

Hobbies and Interests

- Pilates, Badminton, Hiking
- Reading
- Painting, Handicrafts