

# CURRICULUM VITAE

for

**Manouchehr Zaker**

**DATE OF BIRTH:** September 19, 1971

**POSITION:** Associate Professor of Mathematics

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Chairman of Mathematics Department of IASBS (since June 2009)  
(including Pure Math., Financial Math. and Computer Science)

## CURRENT ADDRESS

Institute for Advanced Studies in Basic Sciences (IASBS)  
Department of Mathematics, 45195–1159, Zanjan, IRAN.  
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## EDUCATION

University of Tabriz, Tabriz,  
B.S. in pure mathematics in 1994.

Sharif University of Technology, Tehran,  
M.S. in pure mathematics in 1997.  
M.S.thesis:

*Defining sets in vertex coloring of graphs and Latin rectangles*

Sharif University of Technology, Tehran,  
Ph.D. in mathematics in 2001.  
Major field: Combinatorics and Graph Theory  
Minor field: Advanced Algorithms and Computational Complexity  
Ph.D. thesis:  
*On-line Greedy Colorings and Grundy Number of Graphs*  
Supervisor: E. S. Mahmoodian.

## **HONORS**

- Outstanding graduate student in Sharif University of Technology 2001
- Distinguished researcher in Zanjan province 2008
- Distinguished researcher in Zanjan province 2010

## **TEACHING**

- Graph Theory (Bondy, Murty 2008 + Diestel 2001)
- Algorithmic Graph Theory (My own notes)
- Probabilistic Methods in Graph Theory (Molloy, Reed 2002 + My own notes)
- Random Graph (Janson, Luszczak and Rucinski 2000)
- Coding theory: Source coding, data compression and error correcting codes (My own lecture note)
- Cryptography: Public key cryptography and secret sharing schemes (Stinson 2000)

## **Ph.D. STUDENTS**

- Fateme Mousavi, graduated in 2010 from IASBS (advisor)
- Hossein Soltani, IASBS (supervisor)
- Mitra Nemati, IASBS (supervisor)
- Kaveh Khoshkhah, IASBS (supervisor)
- Saeed Shabani, IASBS (advisor)

## **M.S. Projects Supervised**

- Iraj Rahmani (Cryptography)
- Narges Sariolghalam (Cryptography)
- Azam Kazemi (Combinatorics)
- Ali Pirayesh (Graph Theory)
- Shahla Molahajloo (Graph Theory)
- Ghafar Raeisi (Graph Theory)
- Aram Emami (Graph Theory)
- Somaye Heydarvand (Coding Theory)
- Ali Bahremandpour (Ramsey Theory)
- Hamed Gholamian (Hadamard Matrices)
- Zeinab Khodaie (Spectral Graph Theory)
- Farzin Maniei (Visual Cryptography)
- Vahab Mostafapour (Random Graph)
- Maryam Rahmaninia (Computer Science)
- Mehdi Khosravian (Computer Science)
- Mansoor Eyvazi (Information Theory)
- Bahman Ghandchi (Graph Theory)
- Zeinab Saeedi(Computer Science)

## **EXECUTIVE POSTS**

- Chair of Mathematics and Computer Science department in IASBS since June 2009
- Member of the research committee of IASBS (2006 - 2009)
- Representative of the Mathematics department in MONTAKHAB committee (2006 - )
- Member of the scientific committee of the 2nd Seminar on Finanacial Math. and Mathematics of Social Networks, IASBS, February 2011

- Member of the executive committee of the International Workshop on Grobner Basis and Applications, IASBS, June 2004
- Member of the scientific committee of 38th annual Iranian mathematics conference, Azarbaijan university, September 2007
- Organizer of the Seminar on Combinatorics, IASBS, February 2002

## PUBLICATIONS

1. E.S. Mahmoodian, R. Naserasr, and M. Zaker, *Defining sets in vertex colorings of graphs and latin rectangles*, Discrete Math. **167/168** (1997) 451–460.
2. H. Hajiabolhassan, M.L. Mehrabadi, R. Tuserkani, and M. Zaker, *A characterization of uniquely vertex colorable graphs using minimal defining sets*, Discrete Math. **199** (1999) 233–236.
3. M. Zaker, *Greedy defining sets of graphs*, Australasian Journal of Combinatorics, vol. **23** (2001) 231–235.
4. M. Zaker, *The Grundy chromatic number of the complement of bipartite graphs*, Australasian Journal of Combinatorics, vol. **31** (2005) 325–330.
5. M. Zaker, *Results on the Grundy chromatic number of graphs*, Discrete Math. **306** (2006) 3166–3173.
6. M. Kouider and M. Zaker, *Bounds for the b-chromatic number of some families of graphs*, Discrete Math. **306** (2006) 617–623.
7. M. Zaker, *Greedy defining sets in graphs and Latin squares*, Electronic Notes in Discrete Math. **24** (2006) 299–302.
8. M. Zaker, *Maximum transversal in partial Latin squares and rainbow matchings*, Discrete Applied Math. **155** (2007) 558–565.
9. M. Zaker, *Inequalities for the Grundy chromatic number of graphs*, Discrete Applied Math. **155** (2007) 2567–2572.
10. M. Zaker, *Greedy defining sets in Latin squares*, Ars Combinatoria **89** (2008) 205–222.
11. M. Zaker, *New bounds for the chromatic number of graphs*, J. Graph Theory **89** (2008) 110–122.
12. M. Zaker, *More results on greedy defining sets*, to appear in Ars Combinatoria (2009).
13. M. Zaker, *Some results for chromatic and coloring number of graphs*, The proceedings of 40th Annual Iranian Mathematics Conference, Sharif university Press

(2009) 633–635

14. M. Zaker, *Bounds for chromatic number in terms of even-girth and booksize*, Discrete Math. 311 (2011) 197-204.

15. M. Zaker, *On lower bounds for the chromatic number in terms of vertex degree*, Discrete Math., 311 (2011) 1365-1370.

16. A. Gyarfas, M. Zaker, *On  $(\delta, \chi)$ -bounded families of graphs*, Accepted for publication in Electronic Journal of Combinatorics (2011).

17. M. Zaker, *On dynamic monopolies of graphs with general thresholds*, submitted, arXiv:1103.1112.

18. K. Khoshkhan, M. Nemati, H. Soltani, M. Zaker, *A study of monopolies in graphs*, submitted to Discrete Applied Mathematics.

19. M. Zaker, *Extensions to  $\lambda$ -coloring of graphs with emphasis on  $K_n \square K_n$* , Submitted.

20. M. Zaker, *Visual cryptography of graph access structures*, Manuscript.

## HOT PAPERS and CITATIONS

- 4-th rank in TOP 25 papers of Discrete Math. for “Bounds for the  $b$ -chromatic number of some families of graphs”
- 21-st rank in TOP 25 papers of Discrete Math. for “Results on the Grundy chromatic number of graphs”
- 21-st rank in TOP 25 papers of Discrete Math. “Maximum transversal in partial Latin squares and rainbow matchings”
- One year free subscription of Journal of Graph Theory for “New bounds for the chromatic number of graphs”
- CITATIONS in Mathscinet 46 times by 58 authors
- Erdős Number 2

## REFEREED PAPERS FOR JOURNALS

- Discrete Mathematics (USA)
- Discrete Applied Mathematics (USA)

- Discrete Mathematics and Theoretical Computer Science (FRANCE)
- Journal of Graph Theory (USA)
- Journal of Combinatorial Designs (USA)
- Australasian Journal of Combinatorics (Australia)

## Visits

- From November 16 to 20 (2004) at the Institute Leibniz, IMAG, Grenoble, France.
- From November 20 to December 21 (2004) at Institute LRI, University of Paris-Sud, Orsay, Paris, based on a research grant from French government.
- From September 12 to 24 (2005) at the Advanced School on Recent Trends in Combinatorics, held in the institute CRM, Barcelona.
- From September 7 to 10 (2006) at Koc university in Istanbul, Turkey
- From September 18 to 21 (2006) at Gdansk technical university, Poland
- From October 21 to 27 (2007) at The ADONET-CIRM School on Graphs and Algorithms, Trento, Italy (supported by the school)
- From July 18-31 (2010) at Alfred Renyi institute of mathematics in Budapest, Hungary.

## CONFERENCE TALKS

1. *Minimal defining sets in vertex coloring of graphs*, Proceeding of the 28th Annual Iranian Mathematics Conference, Part 1 (Tabriz, 1997), 587–589, Tabriz Univ. Ser., 377, Tabriz Univ., Tabriz, 1997.
2. *New trends in graph colorings concerning greedy coloring*, Proceeding of the 31th Annual Iranian Mathematics Conference, (Tehran, 2000), Tehran.
3. *A variation of subgraph isomorphism problem and its applications*, Proceeding of Second Joint Seminar on Applied Mathematics organized by Baku State University and Zanzan University, (Zanzan, 2000).
4. *Results and problems in Grundy and First-Fit coloring of graphs*, The international workshop/conference on Combinatorics, Linear Algebra and Graph Coloring, Aug 9–14 2003 Institute for Studies in Theoretical Physics and Mathematics (IPM), (Tehran, 2003).
5. *Results on some coloring parameters of a graph*, The Fourteenth workshop on

Cycles and Colourings (C&C05), Sept. 4–9 2005, Tatranska Strba, Slovakia.

6. *Bounds for the chromatic number of graphs*, IPM Combinatorics II, April 22–27 2006 Institute for Studies in Theoretical Physics and Mathematics (IPM), (Tehran, 2006).

7. *Greedy defining sets in graphs and Latin squares*, Fifth Cracow Conference on Graph Theory, Sept. 11–15 2006, Ustron, Poland.

8. *Results for the chromatic and First-Fit chromatic number of sparse graphs*, Enumeration and Probabilistic Method in Combinatorics, CRM, Sept. 15–21 2007, Barcelona, Spain.

9. *Bounds for chromatic number in terms of booksize of graphs*, Graph Theory 2008 (60-th birthday of Carsten Thomassen), Sept 2008, Sandbjerg Manor, Denmark.

10. *Some results for chromatic and coloring number of graphs*, 40-th Iranian Annual Mathematics Conference, August 2008, Sharif University of Technology, Iran.

11. *An analysis of some problems in philosophy of mathematics using the theory of lebensform*, 40-th Iranian Annual Mathematics Conference, August 2008, Sharif University of Technology, Iran.

12. *A survey of results on First-Fit chromatic number*, October 2009, Minsk, Belarussia.