Curriculum Vitae

REZA KAHKESHANI

September 15, 2024

Birth: May 21, 1978
                 Kashan, Iran
Gender: Male
Nationality: Iranian
Marital Status: Married

CONTACT

Address: Department of Pure Mathematics,
           Faculty of Mathematical Sciences,
           University of Kashan,
           Kashan,
           Iran
           Postal Code: 8731753153,
Phone: (+98) 31 5591 2364, (+98) 91 3277 3324
Fax: (+98) 31 5591 2332
Homepage: https://faculty.kashanu.ac.ir/kahkeshani/en
E-mail: *kahkeshanireza@kashanu.ac.ir*

EDUCATION

2006 Sep.-2011 July,   **Ph.D. in Mathematics**,
                       Tarbiat Modares University, Tehran, Iran
                       Thesis: *Construction of Designs and Codes Using Group Action*
                       Supervisors: Prof. Ali Iranmanesh, Prof. Mohammad R. Darafsheh
2001 Sep.-2004 Feb.,   **M.Sc. in Pure Mathematics**,
                       University of Tehran, Tehran, Iran
                       Thesis: *Minimal Free Resolution of Stanley-Reisner Rings*
                       Supervisor: Prof. Rahim Zaare-Nahandi
1996 Sep.-2001 Aug.,   **B.Sc. in Pure Mathematics**,
                       Sharif University of Technology, Tehran, Iran

POSITIONS

2012 fall-present,   **Assistant Professor**
                     at University of Kashan, Kashan, Iran

2011 fall-2012 spr.,	**Lecturer**
	at University of Qom, Qom, Iran
2011 win.-2012 spr.,	**Lecturer**
	at University of Kashan, Kashan, Iran
2010 Feb.-Aug.,	**Research Visitor**
	at RWTH Aachen University, Aachen, Germany
2006 sum. & fall,	**Lecturer**
	at Islamic Azad University of Kashan, Kashan, Iran
2005 fall,	**Lecturer**
	at University of Payame Noor Kashan, Kashan, Iran
2003 fall,	**Lecturer**
	at Islamic Azad University of Kashan, Kashan, Iran
2002 fall,	**Teaching Assistant**
	of Prof. Rahim Zaare-Nahandi

TEACHING

2024 fall,	*Coding Theory I, Iterative Decoding Algorithms* (Graduate Level), *Mathematics and Architecture,* at **University of Kashan**, Kashan, Iran
2024 win.,	*The Theory of Codes and Ciphers, Information Theory* (Graduate Level), *Calculus I, Philosophy of Mathematics* at **University of Kashan**, Kashan, Iran
2023 fall,	*The Theory of Codes and Ciphers* (Graduate Level), *Calculus II, Graph Theory and Its Applications, Combinatorics and Its Applications, History of Mathematics* at **University of Kashan**, Kashan, Iran
2023 win.,	*Coding Theory I* (Graduate Level), *Calculus II* at **University of Kashan**, Kashan, Iran
2022 fall,	*Information Theory* (Graduate Level), *Calculus I, Fundamentals of Logic and Set Theory, Combinatorics and Its Applications, History of Mathematics* at **University of Kashan**, Kashan, Iran
2022 sum.,	*Calculus II* at **University of Kashan**, Kashan, Iran
2022 win.,	*Linear Groups, Coding Theory I* (Graduate Level), *Calculus II, Philosophy of Mathematics* at **University of Kashan**, Kashan, Iran
2021 fall,	*Permutation Groups* (Graduate Level), *Calculus I, Mathematical Logic, History of Mathematics* at **University of Kashan**, Kashan, Iran
2021 sum.,	*Calculus I* at **University of Kashan**, Kashan, Iran
2021 win.,	*Calculus I, Calculus II* at **University of Kashan**, Kashan, Iran
2020 fall,	*Calculus I, Calculus II, Mathematical Logic, Combinatorics and its Applications,*

	at **University of Kashan**, Kashan, Iran
2020 win.,	*Information Theory and its Applications* (Graduate Level),
	Calculus II, Fundamentals of Combinatorics, Philosophy of Mathematics
	at **University of Kashan**, Kashan, Iran
2019 fall,	*Coding Theory I* (Graduate Level),
	Calculus I, Graph Theory and Its Applications,
	Fundamentals of Logic and Set Theory
	at **University of Kashan**, Kashan, Iran
2019 win.,	*Coding Theory II* (Graduate Level),
	Calculus II, Fundamentals of Combinatorics
	at **University of Kashan**, Kashan, Iran
2018 fall,	*Iterative Decoding Algorithms* (Graduate Level),
	Coding Theory I (Graduate Level), *Calculus II*
	at **University of Kashan**, Kashan, Iran
2018 win.,	*Coding Theory I* (Graduate Level),
	Calculus I, Combinatorics and its Applications
	at **University of Kashan**, Kashan, Iran
2017 fall,	*Information Theory* (Graduate Level),
	Calculus I
	at **University of Kashan**, Kashan, Iran
2017 win.,	*Fundamentals of Combinatorics,*
	Fundamentals of Logic and Set Theory, Fundamentals of Probability
	at **University of Kashan**, Kashan, Iran
2016 fall,	*The Theory of Codes and Ciphers* (Graduate Level),
	Calculus I, Fundamentals of Combinatorics
	at **University of Kashan**, Kashan, Iran
2016 win.,	*Coding Theory* (Graduate Level),
	Calculus II, Fundamentals of Logic and Set Theory
	at **University of Kashan**, Kashan, Iran
2015 fall,	*Permutation Groups* (Graduate Level),
	Calculus I, Fundamentals of Combinatorics, Probability I
	at **University of Kashan**, Kashan, Iran
2015 win.,	*Information Theory* (Graduate Level),
	Differential Equations, Fundamentals of Combinatorics,
	Fundamentals of Logic and Set Theory
	at **University of Kashan**, Kashan, Iran
2014 fall,	*Combinatorial Analysis I* (Graduate Level),
	Calculus I, Fundamentals of Combinatorics,
	at **University of Kashan**, Kashan, Iran
2014 win.,	*Information Theory* (Graduate Level),
	Calculus II, Fundamentals of Mathematics,
	at **University of Kashan**, Kashan, Iran
2013 fall,	*Coding Theory* (Graduate Level),
	Calculus I, Fundamentals of Logic, History of Mathematics,
	at **University of Kashan**, Kashan, Iran
2013 win.,	*Calculus II, Combinatorics and its Applications, Differential Equations,*
	Elementary Algebraic Geometry, Fundamentals of Logic and Set Theory
	at **University of Kashan**, Kashan, Iran

2012 fall,	*Calculus I, Fundamentals of Combinatorics, Fundamentals of Mathematics,* at **University of Kashan**, Kashan, Iran	
2012 win.,	*Calculus III, Fundamentals of Combinatorics, Graph Theory, Linear Algebra* at **University of Qom**, Qom, Iran	
2012 win.,	*Elementary Algebraic Geometry, Fundamentals of Combinatorics, Fundamentals of Logic and Set Theory* at **University of Kashan**, Kashan, Iran	
2011 fall,	*Algebra III, Calculus I* at **University of Qom**, Qom, Iran	
2011 win.,	*Discrete Mathematics, Fundamentals of Combinatorics* at **University of Kashan**, Kashan, Iran	
2006 fall,	*Calculus I and Elementary Statistic, Preuniversity Mathematics* at **Islamic Azad University of Kashan**, Kashan, Iran	
2006 sum.,	*Calculus I and Elementary Statistic, Preuniversity Mathematics* at **Islamic Azad University of Kashan**, Kashan, Iran	
2005 fall,	*Mathematical Analysis I, Discrete Structures, Calculus II* at **University of Payame Noor Kashan**, Kashan, Iran	
2003 fall,	*Engineering Mathematics, Calculus II, Preuniversity Mathematics* at **Islamic Azad University of Kashan**, Kashan, Iran	
2002 fall,	*Linear Algebra,* Teaching Assistant at **University of Tehran**	

PUBLICATIONS IN JOURNALS

- S. H. Sadrolhoffaz and **R. Kahkeshani**, On the subspace distance of the subspace codes, *Alg. Struc. Appl.* (2024) In press.

- **R. Kahkeshani**, Two proofs from Āzarkhor Ashtāz Goshnasp, *Math. Soc.* (2024) In press. [in persian].

- **R. Kahkeshani**, Some codes and designs invariant under the groups S_7 and S_8, *J. Mahani Math. Res.* Vol. 13, No. 1 (2023) 511-524.

- **R. Kahkeshani**, 1-Designs Constructed from the Groups $PSL_2(81)$ and $PSL_2(89)$, *J. Mahani Math. Res.* Vol. 11, No. 2 (2022) 1-8.

- M. R. Darafsheh and **R. Kahkeshani**, Ternary codes from primitive representations of the group $PSL_2(9)$ and a new 2-(15,7,36) design, *J. Indian Math. Soc.*, Vol. 89, No. 1 (2022) 19-31.

- **R. Kahkeshani**, On the generating function and minimum free distance for a class of convolutional codes, *Karafan (Quarterly Scientific Journal of Technical and Vocational University)* Vol. 19, No. 3 (2022) 647-661 [in persian].

- **R. Kahkeshani**, Quaternary codes and a class of 2-designs invariant under the ggroup A_8, *Alg. Struc. Appl.* Vol. 9, No. 1 (2022) 1-12.

- **R. Kahkeshani**, On the entropy rate of a random walk on t-designs, *Math. Interdisc. Res.* Vol. 5, No. 4 (2020) 295-301.

- **R. Kahkeshani**, On some designs constructed from the groups $PSL_2(q)$, $q = 53, 61, 64$, *Alg. Struc. Appl.* Vol. 7, No. 1 (2020) 59-67.

- M. Yazdani-Moghaddam and **R. Kahkeshani**, On the permutation code of the group V_{8n} and its parameters, *Indian J. Math.*, Vol. 61, No. 2 (2019) 161-174.

- **R. Kahkeshani**, 1-Designs from the group $PSL_2(59)$ and their automorphism groups, *Math. Interdisc. Res.* 3 (2018) 147-158.

- **R. Kahkeshani** and M. Arab, A generalized Binet formula that counts the tilings of a $(2 \times n)$-board, *INTEGERS* Vol. 18 (2018), Article A91.

- **R. Kahkeshani**, The tilings of a $(2 \times n)$-board and some new combinatorial identities, *J. Integer Seq.* Vol. 20 (2017), Article 17.5.4.

- **R. Kahkeshani** and R. Kazemi, The translation of "X. Wang, Volumes of generalized unit balls, Math. Magazine, Vol. 78, No. 5, 390-395 (2005)", *Farhang va Andisheh-ye Riazi* 35, No. 2 (2017) [in Persian].

- M. Yazdani-Moghaddam and **R. Kahkeshani**, The remoteness of the permutation code U_{6n}, *Alg. Struc. Appl.*, Vol. 3, No. 2 (2016) 71-79.

- Zaghiyan, A. Majlesi, **R. Kahkeshani** and H. Shabani, Binary codes from the group $PSU_2(16)$, *U.P.B. Sci. Bull., Ser. A* Vol. 76, Iss. 3 (2014) 55-62.

- **R. Kahkeshani**, H. Shabani, A. Zaghiyan and A. Majlesi, The projective special unitary group $PSU_2(16)$ and their codes, *Electron. Notes Discrete Math.* 45 (2014), 177-180.

- H. Shabani and **R. Kahkeshani**, On the first Zagreb index of polygraphs, *Electron. Notes Discrete Math.* 45 (2014), 147-151.

- **R. Kahkeshani**, A Generalization of the Catalan Numbers, *J. Integer Seq.*, Vol. 16 (2013), Article 13.6.8.

- E. Lashani, A. Iranmanesh, **R. Kahkeshani** and O. Khormali, The graphs G that both G and $L(G)$ contain 1-perfect codes, *Int. Math. Forum*, Vol. 7, No. 43 (2012) 2099-2106.

- M. R. Darafsheh, A. Iranmanesh and **R. Kahkeshani**, Self-dual designs and their binary codes obtained from the group $PSL_2(13)$, *Creat. Math. Inform.* 18, No. 2 (2009) 172-181.

- M. R. Darafsheh, A. Iranmanesh and **R. Kahkeshani**, Designs from the groups $PSL_2(q)$ for certain q, *Quaest. Math.* 32 (2009), 297-306.

- M. R. Darafsheh, A. Iranmanesh and **R. Kahkeshani**, Some designs and codes invariant under the groups S_9 and A_8, *Des. Code Cryptogr.* 51 (2009), 211-223.

CONFERENCES

- **Co-Participant-Speaker** (with S. A. Mohammadiyeh) The 7th International Conference on *Combinatorics, Cryptography, Computer Science and Computation*, Iran University of Science and Technology, Tehran, Iran, November 16-17, 2022.

- **Scientific Committee**, *51th Annual Iranian Mathematics Conference*, University of Kashan, Kashan, Iran, February 16-19, 2021.

- **Scientific Committee**, The Third Conference on *Computational Algebra, Computational Number Theory and Applications*, University of Kashan, Kashan, Iran, December 12-14, 2018.

- **Chair of Organizing Committee**, *9th Iranian Group Theory Conference*, University of Kashan, Kashan, Iran, February 1-3, 2017.

- **Co-Participant-Speaker** (with H. Shabani) *International Conference on Combinatorics, Cryptography and Computation*, Iran University of Science and Technology, Tehran, Iran, September 1-2, 2016.

- **Scientific Committee & Workshop Speaker**, The second Conference on *Computational Algebra, Computational Number Theory and Applications*, University of Kashan, Kashan, Iran, October 13-15, 2015.

- **Co-Participant-Speaker** (with N. Moghaddasi-Risse, G. H. Fath-Tabar) The Third Conference on *Algebra and its Applications*, University of Mohaghegh Ardabili, Ardabil, Iran, August 12-14, 2014.

- **Scientific Committee & Workshop Speaker**, The First Conference on *Computational Algebra, Computational Number Theory and Applications*, University of Kashan, Kashan, Iran, December 17-19, 2014.

- **Co-Participant-Speaker** (with N. Zarrin), *A Note on Channel Coding and Lossy Source Coding*, The Proceedings of the First Conference on Computational Group Theory, Computational Number Theory and Applications (2014), 177-181.

- **Co-Participant-Speaker** (with M. Yazdany Moghaddam) *A Note on the Capacity of some Gaussian channels*, The Proceedings of the First Conference on Computational Group Theory, Computational Number Theory and Applications (2014), 171-174.

- **Co-Participant-Speaker** (with M. A. Mohammad Ghasemi) *A Review on Extension Theorems for Linear Codes*, The Proceedings of the First Conference on Computational Group Theory, Computational Number Theory and Applications (2014), 143-144.

- **Co-Participant-Speaker** (with N. Moghaddasi-Risse, G. H. Fath-Tabar) *Codes from some classes of graphs and their line graphs*, Proceedings of the 23th Iranian Algebra Seminar, Khansar, November 21-22 (2013).

- **Participant-Speaker** (with H. Shabani) *On the Zagreb Index of Polygraphs*, Proceedings of the 6th Conference and Workshop on Mathematical Chemistry, (2013).

- **Participant-Speaker** (with M. R. Darafsheh, A. Iranmanesh) *Designs and codes from the group $PSL_2(2^n)$*, Proceedings of the 3rd Conference and Workshop on Group Theory, (2011) 89-90.

- **Participant-Speaker** (with M. R. Darafsheh, A. Iranmanesh) *Some designs and codes from the groups $PSL_2(q)$ for certain q*, Proceedings of IEEE Conference "Coding Theory Days in St. Petersburg", (2008) 27-30.

BOOKS

- Translation of *R. Andersen, Set Theory and the Construction of Numbers, University of Wisconsin Publication (2009)* to Persian, In redaction.

- Translation of *V. Kac, P. Cheung, Quantum Calculus, springer-Verlag (2002)* to Persian, Sokhanvaran-University of Kashan Publication, 2015.

M.Sc. Thesis

- S. Razzaghi, *Reaction and timing attacks against cryptosystems based on sparse parity-check codes*, 2023 February (Supervisor: **R. Kahkeshani**).

- H. Khosrowbeigi, *Construction of self-dual matrix code*, 2023 February (Supervisor: M. Mazroei, Advisor: **R. Kahkeshani**).

- E. H. Jafari, *Some classes of primitive BCH codes with their related codes*, 2021 September (Supervisor: **R. Kahkeshani**).

- M. T. Eghbali, *Idempotent convolutional codes and their cyclic distances*, 2021 September (Supervisor: **R. Kahkeshani**).

- S. Hasanvand, *Duplication-correcting codes and their properties*, 2021 July (Supervisor: **R. Kahkeshani**).

- K. Rashidi, *Construction of girth-8 quasi-cyclic low density parity check codes*, 2021 May (Supervisor: **R. Kahkeshani**).

- F. Safaei, *Pseudocodeword-free criterion for codes with cycle-free Tanner graph*, 2020 January (Supervisor: **R. Kahkeshani**).

- M. Moghaddas, *Construction of some terminated LDPC convolutional codes*, 2019 September (Supervisor: **R. Kahkeshani**).

- F. Reisi Vastgani, *Quantum MDS codes with large minimum distance*, 2018 September (Supervisor: M. Mazroei, Advisor: **R. Kahkeshani**).

- M. Bozorg, *Cylinder-type block-circulant codes and their properties*, 2018 July (Supervisor: **R. Kahkeshani**, Advisor: M. Mazroei).

- F. Jafari, *Centraliser codes*, 2018 July (Supervisor: M. Mazroei, Advisor: **R. Kahkeshani**).

- S. M. Mousavi Aliabadi, *Lattice codes for the Gaussian Relay Channel*, 2018 July (Supervisor: **R. Kahkeshani**).

- S. S. Hezarkhani, *Capacity of the memoryless additive inverse Gaussian noise channel*, 2016 September (Supervisor: **R. Kahkeshani**).

- A. R. Sayyadi, *Constrained source-coding with side information*, 2015 September (Supervisor: **R. Kahkeshani**).

- N. Zarrin, *Channel coding and lossy source coding*, 2015 September (Supervisor: **R. Kahkeshani**).

- N. Moghaddasi-Risse, *Codes obtained from the incidence matrices of Paley graphs and line graphs*, 2015 September (Supervisor: G. H. Fath-Tabar, Advisor: **R. Kahkeshani**).

- M. A. Mohammad Ghasemi, *Some generalized extension theorems for linear codes*, 2015 September (Supervisor: **R. Kahkeshani**).

Ph.D. Thesis

- S. H. Sadrolhoffaz, *Subspace codes and some their related topics*, 2024 September (Supervisor: **R. Kahkeshani**).

- L. Rahimi Pordanjani, *3D convolutional codes and minimum free distances of some classes of convolutional codes*, 2024 September (Supervisor: **R. Kahkeshani**).

- M. Yazdani-Moghaddam, *Some permutation codes and their properties*, 2018 October (Supervisor: **R. Kahkeshani**, Advisor: A. R. Ashrafi).

Memberships

- A member of editoral board of **MathLab Journal** (`https://purkh.com/mathlab/index`).

Research Interests

Coding Theory, Information Theory and Cryptography
Combinatorics, Design Theory
Quantum Calculus

Languages

Persian (Mother tongue)
English
Arabic (Basic)

References

- **Prof. Mohammad R. Darafsheh**
  School of Mathematics, Statistics and Computer Science,
  College of Science,
  University of Tehran,
  Tehran, Iran
  darafsheh@ut.ac.ir

- **Prof. Ali Iranmanesh**
  Department of Pure Mathematics,
  Faculty of Mathematical Sciences,

Tarbiat Modares University,
Tehran, Iran
iranmanesh@modares.ac.ir

- **Prof. Rahim Zaare-Nahandi**
  School of Mathematics, Statistics and Computer Science,
  College of Science,
  University of Tehran,
  Tehran, Iran
  rahimzn@khayam.ut.ac.ir