

Curriculum Vitae

Name

Gholamreza Baradaran Khosroshahi

Position

Professor,
University of Tehran, (Retired) and
Founding Fellow and Senior Researcher
Institute for Research in Fundamental Sciences (IPM)

Mailing Address

IPM
P.O.Box 19395-5746
Tehran-Iran.
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Academic Positions at other Institutions

- Visiting Scholar, Cornell University, Ithaca, USA (1974, 1977-78).
- Visiting Scholar, University of Illinois at Chicago (1978, 1984, 1986).
- Member of Scientific Council, Center for Theoretical Physics and Mathematics, Atomic Energy Organization of Iran (1986-1996).
- Member of Scientific Council, Institute for Research in Fundamental Sciences (IPM) (since 1989).
- Senior Associate, Abdus Salam International Center for Theoretical Physics (ICTP) (1990-1998).
- Visiting Associate Professor, Department of Mathematics, Statistics and Computer Science, University of Illinois at Chicago (1989-1990).
- Head, Combinatorics and Comput. Research Group, IPM.
- Associate Director of IPM and Head of School of Mathematics (1997-2007).
- Head of Information Center, IPM (since 1990).

Education

M.S. (1963) University of Tehran, Tehran;
M.S. (1969) Cornell University, Ithaca, N.Y.;
Ph.D. (1972) Cornell University, Ithaca, N.Y.;
Ph.D. Supervisor: L.E. Payne.

Courses Taught

Undergraduate:

Ordinary and Partial Differential Equations, Mathematical Analysis, Linear Algebra, History of Mathematics, Applied Abstract Algebra, Discrete Mathematics.

Graduate:

Functional Analysis, Spectral Theory, Partial Differential Equations, Theory of Combinatorial Designs, Combinatorics I & II, Topics in Combinatorics, Coding Theory I & II.

Research Interests

Combinatorial Design Theory, Coding Theory, and Graph Theory.

Fellowships and Grants

Iranian Ministry of Higher Education Fellowship (1977-78).
Fulbright Grant (1977-78).
Distinguished Researcher, University of Tehran (1991-92).
Winner of the Kharazmi International Award (2000) in Fundamental Research.
Distinguished Professor of the Country (2005).
Journal of Combinatorial Designs (JCD), **ISI**, **JCR**,
Published by John Wiley and Sons (2006-2015).

Professional Affiliations

American Mathematical Society, Member;
Mathematical Association of America, Member;
Iranian Mathematical Society, Member;
Institute of Combinatorics and its Applications, Fellow.

References

Professor **M.R. Larijani**, Director,
Institute for Research in Fundamental Sciences (IPM),
P.O.Box 19395-5746,
Tehran, Iran.

Professor A. Hedayat,
Dept. of Math., Statist., and Computer Science,
University of Illinois,
Chicago. IL., USA.

List of Publications of G.B. Khosrovshahi

Papers, Published

1977

1. *Nonexistence of nontrivial solutions of Schrödinger type systems*, SIAM J. Math. Anal. **8**(1977), 988-1013. **ISI**

1979

2. *On the positive spectrum of Schrödinger operators with long range potentials*, Trans. Amer. Math. Soc. **26**(1979), 211-228, with H. Levine and L.E. Payne. **ISI**

1981

3. *On nonexistence of L^2 solutions of second order differential equations*, Applicable Anal. **2**(1981), 125-137. **ISI**
4. *An algebraic study of BIB designs: A complete solutions for $v = 6$ and $k = 3$* , J. Combin. Theory Ser. A **30**(1981), 43-52, with A. Hedayat. **ISI**

1987

5. *A linear algebraic algorithm for reducing the support sizes of t -designs and generate a basis for trades*, Commun. Statist.-Simula. **16**(4)(1987), 1015-1038, with E.S. Mahmoodian.
6. *On BIB designs with various support sizes for $v = 9$ and $k = 3$* , Commun. Statist. Simula. **16**(4)(1987), 1015-1038, with E.S. Mahmoodian.

1988

7. *BIB $(9, 18t, 8t, 4, 3t)$ designs with repeated blocks*, J. Statist. Plann. Inf. **18**(1988), 125-131, with E.S. Mahmoodian. **ISI**

1990

8. *On some support sizes for BIB designs with $v = 9$ and $k = 4$* , J. Statist. Plann. Inf. **26**(1990), 83-92, with F. Vatan and S. Ajoodani-Namini. **ISI**
9. *A new basis for trades*, SIAM J. Disc. Math. **3**(1990), 364-372, with S. Ajoodani-Namini. **ISI**
10. *On trades and designs*, Comput. Statis. & Data Anal. **10**(1990), 163-167. **ISI**

1991

11. *On $3-(8, 4, \lambda)$ designs*, Ars Combin. **32**(1991), 115-120, with F. Vatan. **ISI**
12. *Combining t -designs*, J. Combin. Theory Ser. A **58**(1991), 26-34, with S. Ajoodani-Namini. **ISI**

1992

13. *An infinite family of 6-designs exists*, Sankhya: Special Vol. **54**(1992), 259-264, with S. Ajoodani-Namini. **ISI**

14. *On the structure of basic trades*, J. Combin., Information and System Sciences **17**(1992), 102-107, with D. Majumdar and M. Widel.

1993

15. *A prospect for a general method of constructing t -designs*, Discrete Appl. Math. **42**(1993), 31-50, with A. Hedayat and D. Majumdar.**ISI**
16. *The spectrum of support sizes of BIB designs with $v = 10$ and $k = 5$* , J. Combin. Math. and Combin. Comput. **14**(1993), 33-37, with S. Ajoodani-Namini, F. Vatan, and M. Widel.

1994

17. *More on halving the complete designs*, Discrete Math. **135** (1994), 29-37, with S. Ajoodani-Namini.**ISI**
18. *On 4 -(10,5,6 m) designs with repeated blocks*, Ars Combin. **37**(1994), 275-287, with F. Vatan.**ISI**

1995

19. *A note on labeling graphs*, Linear and Multilinear Algebra **39**(1995), 165-169, with R. Torabi.**ISI**
20. *On the bases for trades*, Linear Algebra Appl. **226-228**(1995), 731-748, with CH. Maysoori.**ISI**
21. *Some simple and automorphism-free 2 -(15,5,4) designs*, J. Combin. Designs **3**(1995), 285-292, with A. Nozari-Dalini and R. Torabi.**ISI**

1996

22. *Intersections of triple systems: small orders*, J. Combin Math. Combin. Comput. **20** (1996), 33-52 with S. Ajoodani-Namini and A. Shokoufandeh.
23. *On a conjecture of A. Hartman*, Combinatorics Advances, C.J. Colbourn and E.S. Mahmoudian (eds.), Kluwer Academic Press, (1996), 1-12, with S. Ajoodani-Namini.
24. *Magic labeling in graphs: bounds, complexity and an application to a variant of TSP*, Networks **28** (1996), 211-219, with B. Kalantari.**ISI**
25. *Construction of some cyclic anti-Pasch Steiner triple systems of small orders*, J. Combin. Inform. System Sci. **21**(1996), 1-4, with H. Yousefi-Azari.
26. *Octahedrals in Steiner quadruple systems*, Utilitas Math. **51**(1996), 33-39, with H. Yousefi-Azari.**ISI**

1997

27. *Further characterization of basic trades*, J. Statist. Plann. Inf. **58**(1997), 87-92, with N.M. Singhi.**ISI**

28. *Trading signed designs and some new 4-(12, 5, 4) designs*, Des. Codes Cryptogr. **11**(1997), 279-288, with A. Nozari-Dalini and R. Torabi.**ISI**
29. *Smallest defining sets for 2-(10, 5, 4) designs*, Australas. J. Combin. **15**(1997), 31-35, with H.R. Maimani.
30. *On maximum size anti-Pasch sets of triples*, in: Geometry, Combinatorial Designs and Related Structures (J.W.P. Hirschfeld, S.S. Maglivera, and M.J. de Resmini, eds.), London Math. Soc. Lecture Note Ser. **245**, Cambridge Univ. Press, Cambridge, 1997, pp. 7-14, with S. Akbari, CH. Maysoori, and SH. Shahriari.

1998

31. *On compressing complete designs*, J. Statist. Plann. Inf. **74**(1998), 193-201, with R. Naserasr.**ISI**

1999

32. *Maximal trades*, Ars Combin. **51**(1999), 211-223, with R. Torabi.**ISI**
33. *On 2-(v, 3) Steiner trades of small volumes*, Ars Combin. **52**(1999), 199-220, with H.R. Maimani.**ISI**
34. *On the structure of higher incidence matrices*, Bull. Inst. Combin. Appl. **25**(1999), 13-22, with CH. Maysoori.
35. *On trades: an update*, Discrete Appl. Math. **95** (1999), 361-376, with H.R. Maimani and R. Torabi.**ISI**
36. *Hypergraphical codes arising from binary trades*, Des. Codes Cryptogr. **18** (1999), 183-186, with R. Naserasr.**ISI**
37. *Classifications of simple 2-(6, 3) and 2-(7, 3) trades*, Austral. J. Combin. **19** (1999), 55-72, with H.R. Maimani and R. Torabi.

2000

38. *On halvings of the 2-(10, 3, 8) design*, J. Statist. Plann. Inf. **86** (2000), 411-419, with Z. Eslami and B. Tayfeh Rezaie.**ISI**
39. *Classification of some large sets and designs*, J. Geom. **67** (2000), 105-110, with Z. Eslami.
40. *A complete classification of 3-(11, 4, 4) designs with a nontrivial automorphism group*, J. Combin. Des. **8** (2000), 419-425, with Z. Eslami.**ISI**

2001

41. *An automorphism-free 4-(15, 5, 5) design*, J. Combin. Math. Combin. Comput. **37** (2001), 187-192, with H.R. Maimani and R. Torabi.

42. *Ternary trades and their codes*, J. Statist. Plann. Inf. **95** (2001), 237-243, with R. Naserasr and B. Tayfeh-Rezaie.**ISI**
43. *On classification of 2-(8, 3) and 2-(9, 3) trades*, J. Combin. Math. Combin. Comput. **38** (2001), 231-242, with Z. Eslami and B. Tayfeh-Rezaie.
44. *A new proof of a classical theorem in design theory*, J. Combin. Theory Ser. A **93** (2001), 391-396, with B. Tayfeh-Rezaie.**ISI**
45. *Some new 6-(14, 7, 4) designs*, J. Combin. Theory Ser. A **93** (2001), 141-152, with Z. Eslami.**ISI**
46. *A note on 3-factorizations of K_{10}* , J. Combin. Des. **9**(2001), 379-383, with Ch. Maysoori and B. Tayfeh-Rezaie.**ISI**

2002

47. *On the smallest edge defining sets of graphs*, Ars. Combin. **63** (2002), 293-303, with S. Akbari.**ISI**
48. *Classification of 6-(14, 7, 4) designs with nontrivial automorphism groups*, J. Combin. Des. **10** (2002), 180-194, with M. Mohammad-Noori and B. Tayfeh-Rezaie.**ISI**
49. *Some designs of small orders and their codes*, J. Combin. Math. Combin. Comput. **43** (2002), 101-117, with E. Emamy and Ch. Maysoori.

2003

50. *Some results on the existence of large sets of t -designs*, J. Combin. Des. **11** (2003), 144-151, with B. Tayfeh-Rezaie.**ISI**
51. *Root cases of large sets of t -designs*, Discrete Math. **263** (2003), 143-155, with B. Tayfeh-Rezaie.**ISI**
52. *Some Bush-type Hadamard matrices*, J. Statist. Plann. Inf. **113** (2003), 375-384, with F. Kamali and H. Kharaghani.**ISI**

2004

53. *Some indecomposable t -designs*, Des. Codes Cryptogr. **32** (2004), 235-238, with B. Tayfeh-Rezaie.**ISI**
54. *Enumeration of t -designs through intersection matrices*, Des. Codes Cryptogr. **32**(2004), 185-191, with Z. Eslami and M. M. Noori. **ISI**
55. *On the existence of trades of large volumes*, Ars. Combin. **73**(2004), 45-48, with A. Hoorfar.**ISI**
56. *Some new 4-designs*, Ars Combin.**73**(2004), 225-229, with Z. Eslami, M. M-Noori, and B. Tayfeh-Rezaie.**ISI**

2005

57. *On the nonexistence of Steiner t - (v, k) trades*, Ars. Combin. **75**(2005), 195-204, with A. Hoorfar. **ISI**
58. *On large sets of t -designs of size four*, Bayreuth. Math. Schr. **74**(2005), 136-144, with R. Laue and B. Tayfeh-Rezaie.

2006

59. *The kernels of the incidence matrices of graphs revisited*, Linear Algebra Appl. **414**(2006), 617-625, with S. Akbari, N. Ghareghani, and H. R. Maimani. **ISI**
60. *$\{-1, 0, 1\}$ -basis for the null space of a forest*, Linear Algebra Appl. **414**(2006), 506-511, with S. Akbari, A. Alipour, and E. Ghorbani. **ISI**
61. *Large sets of t -designs through partinable sets, a review*, Discrete Math. **306** (2006), 2993-3004, with B. Tayfeh-Rezaie. **ISI**

2007

62. *t -Designs with $t \geq 3$* , Handbook of Combinatorial Designs, second edition (C.J. Colbourn and J.H. Dinitz, eds), Chapman & Hall/CRC, Boca Rton, 2007, pp 79-101, with R. Laue.
63. *Trades*, Handbook of Combinatorial Designs, second edition (C.J. Colbourn and J.H. Dinitz, eds), Chapman & Hall/CRC, Boca Raton, 2007, pp 644-648, with A.S. Hedayat.

2008

64. *On the Spectrum of simple $T(2, 3, v)$ Trades*, J. Statist. Plann. Inference. **138** (2008), 2236-2242, with M. Behbahani and B. Tayfeh-Rezaie. **ISI**
65. *Inclusion matrices and chains*, Combin. Theory. **A115** (2008), 878-887, with E. ghorbani, Ch. Maysoori and Mohammad-Noori. **ISI**

2009

66. *On zero-sum 6-flows of graphs*, Linear Algebra and its Applications **430** (2009), 3047-3052, with S. Akbari, N. Ghareghani, A. Mahmoody. **ISI**
67. *Classification of simple 2- $(11, 3, 3)$ designs*, Discrete Math. **309** (2009), 515-520, with B. Tayfeh Rezaie. **ISI**

2011

68. *Simple signed steiner triple systems*, Journal of Combinatorial Designs DOI, **10.1002** (2011), with E. Ghorbani. **ISI**
69. *Zero-sum flows in designs*, J. Combin. Des. **19** (2011), 355-364, with S. Akbari and A. Mofidi. **ISI**

2012

70. *A note on zero-sum 5-flows in regular graphs*, The Electronic Journal of Combinatorics **19**(2) (2012), with A. Akbari, N. Ghareghani, and S. Zare.

2013

71. *On optimality of designs with three distinct eigenvalues*, Electron. J. Combin. **20** (2013), P16, with M.R. Faghigi, , and S. Tat. **ISI** E. Ghorbani
72. *Nowhere-zero 6-flows: A linear algebraic approach*, Bull. Inst. Combin. Appl. (2013), , with S. Akbari, and A. Mofidi. **ISI**

2014

73. *Minimum cycle basis of direct product of $K_2 \times K_n$* , Linear Algebra and its Applications, **458** (2014), 671-678, with N. Ghareghani. **ISI**
74. *More on the Wilson $W_{tk}(v)$ matrices*, The Electronic Journal of Combinatorics, **21**(2) (2014), P2.53, with M.H. Ahmadi, N. Akhlaghinia, and Ch. Maysoori. **ISI**
75. *On the inclusion matrix $W_{23}(v)$* , Linear Algebra and its Applications, **42-50** (2014), with M.H. Ahmadi, N. Akhlaghinia, and Ch. Maysoori. **ISI**

Papers, Submitted

1. *Ranks and signatures of adjacency matrices*, J. Graph Theory. with S. Akbari and P. J. Cameron.

• Books, Publication

1. Proceedings of Conferences (editor)

1. *Theoretical Aspects of Computer Science, Advanced Lectures*, Lecture Notes Comput. Sci. **2292**, Springer, Berlin, with A. Shokoufandeh and A. Shokrollahi, 2002.
2. *Discrete Mathematics*, “International Workshop on Combinatorics, Linear Algebra, and Graph Coloring”, **306**, December, with R. A. Brualdi, S. Hedayat, H. Kharaghani, and S. Shahriari, Published by Elsevier B.V., 2006.
3. *Linear Algebra and Its Applications*, Special issue devoted to selected papers presented at the “First IPM Conference on Algebraic Graph Theory”, **429**, with R. Brualdi, B. Mohar, and P. Rowlinson, Published by Elsevier Inc, 2008.
4. *Discrete Mathematics*, “International Workshop on Design Theory, Graph Theory, and Computational Methods - IPM Combinatorics II”, **309**, with J. Dinitz, H. Kharaghani, and S. Shahriari. Published by Elsevier B.V., 2009.

- 5. *Combinatorics and Graphs*, “Twentieth Anniversary Conference of IPM Combinatorics”, 531, with Richard A. Brualdi, Samad Hedayat, Hadi Kharaghani and Shahriar Shahriari, Published by American Mathematical Society (AMS), 2009.

2. Books, translated into Farsi

1. Hochstadt, H., *Special Functions of Mathematical Physics*.

توابع خاص فیزیک ریاضی، نوشته هاری هوخشتاب، ترجمه غلامرضا برادران خسروشاهی، فرخ حضرتی آشتیانی، تهران: ستاد انقلاب فرهنگی، مرکز نشر دانشگاه، ۱۳۶۲.

2. Crossly, J.N. and others, *What is Mathematical Logic?*, 4th impression, Oxford University Press, London, 1979.

منطق ریاضی چیست؟ ج. ن. کراسلی ... (و دیگران)؛ ترجمه شاپور اعتماد و غلامرضا برادران خسروشاهی، تهران: نشر روز، ۱۳۶۳.

3. Enderton, H.B., *A Mathematical Introduction to Logic*, Academic Press, New York, 1972.

آشنایی با منطق ریاضی، هربرت ب. اندرتون؛ ترجمه غلامرضا برادران خسروشاهی، محمد رجیبی طرخورانی، تهران: مرکز نشر دانشگاهی، ۱۳۶۶.

4. Struik, D.J., *A Concise History of Mathematics*, 3rd edition, Dover Publication, Inc., New York, 1966.

تاریخ فشرده ریاضیات، درک ج. استرویک؛ ترجمه غلامرضا برادران خسروشاهی، حشمت الله کامرانی، تهران: نشر نو، ۱۳۶۳.

5. G. B. Thomas, Jr., *Limits*, Addition-Wesley Publishing Company, Inc., Reading, 1963.

G. B. Thomas, Jr., *Continuity*, Addition-Wesley Publishing Company, Inc., Reading, 1963.

حد و پیوستگی، جورج ب. توماس؛ ترجمه غلامرضا برادران خسروشاهی و محمد رجیبی طرخورانی، تهران: نشر علوم پایه، ۱۳۶۸.

6. Batschelet, E., *Introduction to Mathematics for Life Scientists*, Springer-Verlag, Berlin, 1982.

ریاضیات در علوم زیستی، ادوارد باچلت؛ ترجمه غلامرضا برادران خسروشاهی، و ابوالقاسم شریفیان، تهران: مرکز نشر دانشگاهی، ۱۳۷۶.

3. IPM Lecture Notes

- *IPM Lecture Notes Series 1*, “A course on Foundations of Nonstandard Analysis”, V. Kanovei, G.B. khosrovshahi (Managing Editor), Published by IPM, 1994.
- *IPM Lecture Notes Series 2*, “Arithmetic Groups: An Introduction to Trace Formula and Hecke Operators”, S. Shokranian, G.B. khosrovshahi (Managing Editor), Published by IPM, 1997.

- *IPM Lecture Notes Series 3*, “Ten Lectures on Tight Closure”, I. Swanson, G.B. khosrovshahi (Managing Editor), Published by IPM, 2001.
- *IPM Lecture Notes Series 4*, “Combinatorics and Groups: Peter Cameron’s IPM Lecture Notes”, P. Cameron, G.B. khosrovshahi (Managing Editor), Published by IPM, 2001.
- *IPM Lecture Notes Series 5*, “Very Basic Noncommutative Geometry”, M. Khalkhali, G.B. khosrovshahi (Managing Editor), Published by IPM, 2005.
- *IPM Lecture Notes Series 6*, “Scaling Limits for Microscopic Models”, Fraydoun Rezakhanlou, G.B. khosrovshahi (Managing Editor), Published by IPM, 2007.
- *IPM Lecture Notes Series 7*, “Lecture on Classical Analytic Theory of L-function”, Amir Akbary, G.B. khosrovshahi (Managing Editor), Published by IPM, 2008.
- *IPM Lecture Notes Series 8*, “Lecture on Combinatorics I”, A. E. Brouwer, W. H. Haemers, E. Konstantinova, and R. M. Wilson, G.B. khosrovshahi (Managing Editor), Published by IPM, 2008.

• Editorial Board of Periodical Publications

1. Nashr-i-Ryazy, (a mathematics journal), in Farsi, (1988-1990).
2. Jong-i-Ryazy Daneshjoo, (a student mathematics journal) founder and supervisor, in Farsi, (1987-1994).
3. Associate Editor, Bulletin of Iranian Mathematical Society, (1992-1998).
4. Editor-in-Chief, Akhbar, (a newsletter of IPM), in Farsi.
5. Editor, Journal of Combinatorial Designs (JCD), Published by John Wiley and Sons (starting from 2006-2014).
6. Honorary Editor Journal of Combinatorial Designs(JCD),Published by John Wiley and Sons(2015).

Invited Speaker

1. 22nd British Combinatorial Conference (BCC-22), 2009, University of St Andrews, *On Trades and t -designs*.
<http://bcc2009.mcs.st-and.ac.uk/invited.html>
2. Invariants of Incidence Matrices, (March 29-April 3) 2009, Banff, Canada, *Some Remarks on $(t-k)$ Inclusion Matrices*.
3. ALCOMA '05, (April 3-10) 2005, Thurnau, Germany, *On the recursive constructions of large sets of t -designs*.
4. 22nd Annual Iranian Mathematics Conference, (March 13-16) 1991, Ferdowsi University of Mashhad, Iran, *A critique of two construction methods of t -designs*.

Conference Organizing (chairman)

2003

- *Workshop on Combinatorics, Linear Algebra & Graph Coloring*, IPM, Tehran (August 9-14).

2004

- *Workshop on Parallel Computing*, IPM, Tehran (July 14),
- *Workshop on Quantum Computing*, IPM, Tehran (August 1-5).

2006

- IPM Combinatorics II,
Design Theory, Graph Theory, and Computational Methods, IPM, Tehran (April 22-27).

2007

- *The First IPM Conference on Algebraic Graph Theory*, IPM, Tehran (April 21-26).

2009

- *IPM 20-Combinatorics 2009*, IPM, Tehran (May 15-21).

2012

- *ICTP-IPM Workshop and Conference in Combinatorics and Graph Theory*, ICTP, Trieste, (September 3-14). **Co-chairman**

فهرست فارغ‌التحصیلان دکتری زیر نظر دکتر خسروشاهی

نام و نام خانوادگی	عنوان رساله	تاریخ دفاع از رساله
حسن یوسفی آذری	پیکربندهای خاص در دستگاههای اشتابیری	دی ۱۳۷۴
حمیدرضا میمنی	تریدها و مجموعه‌های تعیین کننده طرحها	اسفند ۱۳۷۵
روزبه ترابی	تریدها و تریدپذیری در طرحها	مهر ۱۳۷۷
فرحبخش کمالی	نتایجی در ماتریسهای آدامار	مهر ۱۳۷۷
بهروز طایفه رضایی	مجموعه‌های بزرگ t -طرحهایی از اندازه‌های اول	بهمن ۱۳۷۸
زیبا اسلامی	طرحهای نیمه	اسفند ۱۳۷۸
مزگان امامی	تریدها و کدها	دی ۱۳۷۹
عبدالحسین هورفر	مسائل وجودی تریدهای $(t - v, k)$	خرداد ۱۳۸۲
مرتضی محمدنوری	برخی جنبه‌های محاسباتی t -طرحها، حدس بیژان و واژه‌های اشتورنی	مرداد ۱۳۸۴
نرگس غرقانی	مسائلی در مورد ماتریسهای وقوعی و مجاورت گرافها	بهمن ۱۳۸۷