Curriculum Vitae

Personal Profile:

Name	:	Dr. Hilal Ahmad Ganie
Father's Name	:	Khazir Mohammad Ganie
Sex	:	Male
State	:	Jammu and Kashmir
Country	:	India
Phone no.	:	+91-9797262789; +91-7889441527
Email	:	hilahmad1119kt@gmail.com\\sumganie@gmail.com
Date of birth	:	15-01-1987(actual 1988).
Fluency	:	English, Urdu, Hindi and Kashmiri.
Marital status	:	Married
Nationality	:	Indian

Key Skills:

- Communication and interpersonal skills
- Versatile with multi-tasking skills.
- Idea generation and creative thinking.
- Analytical study and research.

Academic qualification:

1). B. Sc. from University of Kashmir in 2008.
2). M. Sc. In Mathematics from the Department of Mathematics, University of Kashmir in 2011.
3). Ph. D. in Mathematics from the Department of Mathematics, University of Kashmir in March 2016.

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https://scholar.google.co.in/citations?user=C63kSVEAAAAJ&hl=en

https://www.researchgate.net/profile/Hilal-Ahmad-2

Scientific Societies:-

International Linear Algebra Society

Interests:

- Reading books especially, The **Holy Quran, The** books related to Shariyah (Islamic Teachings) and The Mathematics books.
- Watching and playing Cricket.
- Research in Mathematics

Research Experience:

Worked as Research Scholar (Ph.D.) from Dec. 2012 to March 2016.

Active in the research work related to matrices in graphs and digraphs and topological indices.

Area of Research: Combinatorial Matrix Theory, Spectral Graph Theory (The study of Graph theory in the light of Linear Algebra and Matrix Theory), especially the spectral analysis of the adjacency matrix, the extended adjacency matrix, the general extended adjacency matrix, the Laplacian matrix, the signless Laplacian matrix, the generalized adjacency matrix, the distance Laplacian matrix, the distance signless Laplacian matrix, the generalized distance matrix, the Harary matrix, the reciprocal distance Laplacian/signless Laplacian Matrix, etc, associated with a graph. The generalized adjacency matrix of a digraph, the skew matrix, the skew Laplacian matrix of an oriented graph, etc. The normalized distance matrix, the distance Randic matrix, The Laplacian ABC-matrix, etc. The topological indices of graphs and digraphs.

Topic of Research during Ph.D.: Laplacian energy of Graphs and Digraphs.

List of Publications:-

Papers Submitted for Publication:-

1. **Hilal A. Ganie and Amal Alsaluli, New results on the Laplacian ABC-eigenvalues of a graph**, **Submitted to Mathematics (June 2026).**

1. Bilal A. Chat and **Hilal A. Ganie**, On the Laplacian ABC-eigenvalues of a graph, Submitted to **Discrete Applied Mathematics** (May 2026).

2. A. Alhevaz, M. Baghipur, **H. A. Ganie and Y. Shang, Some spectral properties of the generalized Harary matrix of graph**s, **Submitted (April 2026), ESCI, Scopus.**

2. **Hilal A. Ganie and Amal Alsaluli, Arithmetic-Geometric energy a** graph, **Submitted to AIMS Mathematics (April 2026).**

3. **Bilal A. Rather and Hilal A. Ganie,** Fuzzy indices of some graphs, Submitted to **Computational and Applied Mathematics** (Dec 2025).

4. **Hilal A. Ganie and Bilal A. Rather,** On the spectral and trace norms of generalized adjacency matrix of a digraph, **Submitted to Computational and Applied Mathematics (Dec 2025).**

5. **Hilal A. Ganie and Bilal A. Rather,** On the rank, vertex covering number and the general extended adjacency energy of a graph**, Submitted Linear Algebra and its Applications (Jan 2025)**

6. **Bilal A. Rather and Hilal A. Ganie,** Weighted adjacency spectral properties of some graphs**, Submitted to Rhio Operational Research (Jan 2025)**

7. **Nadeem Ur Rehman, Nazim, Hilal A. Ganie and Mohd Nazim**, A_α-Spectrum of the co-maximal graph of the ring $\mathbb{Z}_n$, **Submitted to Indian journal of pure and applied Mathematics (April 2024).**

8. **Hilal A. Ganie, Bilal A. Rather,** On the spread and energy of A_{ϕ}-matrix of a graph**, Submitted to Linear Algebra and its Applications(May 2025)**

9. Maryam Baghipur, Modjtaba Ghorbani, **Hilal A. Ganie,** On the generalized adjacency spectral radius of a uniform hypergraph**, Submitted to (Aug 2021) SCI, Scopus.**

10. Maryam Baghipur, Modjtaba Ghorbani, **Hilal A. Ganie,** On the sum of signless Laplacian reciprocal distance eigenvalues of a graph**, Submitted to (March 2021) SCI, Scopus.**

11. M. Baghipur, **H. A. Ganie**, **M. Ghorbani** and Endie New bounds for the generalized adjacency spread of a graph, **submitted to Computational and applied Mathematics (03 July 2021) SCI, Scopus.**

Papers Accepted/ Published

1. **Bilal A. Chat and Hilal A. Ganie,** Analyzing the borderenergetic graphs using line graphs**, Published in Communications in Combinatorial Optimization (Aug 2025).**

3. **Hilal A. Ganie and Amal A.**, On the spectral radius and energy of AM-GM matrix of graphs, Published in **Mathematics (Feb 2026) SCI Scopus**

4. **Hilal A. Ganie and Aala Atassan**, Extremal results for the extended adjacency energy, Published in **Indian Journal of Pure and Applied Mathematics (Dec 2025), SCI Scopus.**

5. **Hilal A. Ganie and S.Pirzada,** On digraphs with maximum first outdegree Zagreb index, **Communication in Combinatorics and Optimization (2025)**. https://doi.org/10.22049/cco.2025.30676.2573, ESCI, Scopus(Q1)

6. **Hilal A. Ganie and Amal A.**, On the extended adjacency eigenvalues and applications, Published in **Mathematics (Oct 2025) SCI Scopus.**

7. A. Alhevaz, M. Baghipur, **H. A. Ganie and Y. Shang,** On generalized Harary eigenvalues and generalized join of graphs, **Journal of Mathematics (Oct 2025), SCI, Scopus.**

8. **Hilal A. Ganie and Y. Shang**, On the spectral radius of extended adjacency matrix of a digraph, **Discrete Applied Mathematics (Nov 2025) SCI Scopus.**

9. **Hilal A. Ganie, Bilal A. Rather and Y. Shang,** Bounds for the first outdegree Zagreb index**, Published in Aequeous Mathematica (Sep 2025) SCI Scopus.**

10. **Hilal A. Ganie and Rezvan Ul Shaban,** On the skew eigenvalues and oriented graphs with equal skew energy**, Accepted for publication in Discrete Mathematics, Algorithms and Applications (June 2025) ESCI Scopus.**

11. **Bilal A. Rather and Hilal A. Ganie,** Distance signless Laplacian spectra: A survey**, Accepted for publication in Discrete Applied Mathematics (Dec 2025) SCI Scopus.**

12. **Bilal A. Rather and Hilal A. Ganie,** On the structural properties of a divisor graph**, Published in RAIRO Operations Research, SCI Scopus.**

13. Bilal A. Rather, **Hilal A. Ganie** and M. Imran**,** Bounds on the spread and the trace norm of the adjacency matrix of a graph**, Quaestiones Mathematica (2025),** https://doi.org/10.2989/16073606.2025.2550021. **SCI Scopus**.

14. **Hilal A. Ganie, Bilal A. Rather and Y. Shang,** Reciprocal distance Laplacian spectral radius of graphs, **Communication on Combinatorial Optimization,** https://doi.org/10.22049/cco.2025.29137.1857, ESCI Scopus**.**

15. Maryam Baghipur, Modjtaba Ghorbani, **Hilal A. Ganie and Endie,** Relation between the generalized distance spread and some topological indices**, Discrete Mathematics Algorithms and Applications,** https://doi.org/10.1142/S1793830925500363 **ESCI, Scopus.**

16. **Bilal Ahmad Rather, Hilal A. Ganie and Muhammad Imran**, On the energy of some tree dendrimers, **Discrete Math. Algorithms and Applications,** https://doi.org/10.1142/S1793830925500028, **ESCI, Scopus.**

17. **Hilal A. Ganie, A. Altassan and Y. Shang**, On the extended adjacency eigenvalues of a graph, **Information 15(10)(2024) 586, https://doi.org/10.3390/info15100586 SCI Scopus**

18. **Bilal A. Rather, Hilal A. Ganie and Y. Shang** On signless Laplacian ABC-spectral properties of a graph**, Mathematics,12(15)(2024) 2366, SCI Scopus.**

19. **Hilal A. Ganie, Bilal A. Rather and Y Shang,** Relation between distance, distance Laplacian and distance signless Laplacian energies, **Heliyon (Accepted on Sep 2024), SCI Scopus.**

20. **Hilal A. Ganie, Archana Ingole,** On the skew eigenvalues of joined union of oriented graphs and applications**, Quaestiones Mathematicae 47(10)(2024) 2035-2051, SCI Scopus.**

21. **Hilal A. Ganie, Archana Ingole, Ujwala Deshmukh and Yilun Shang**, On the skew characteristics polynomial/eigenvalues of operations on bipartite oriented graphs and applications, **Research in Mathematics 11(1) (2024) 2313343. SCI Scopus.**

22. S. Pirzada, **Hilal A. Ganie** and Rezwan ul Shaban, On the Ky Fan k norm of the signless Laplacian matrix of a graph, **Computational and Applied Mathematics 43**, 26 (2024). https://doi.org/10.1007/s40314-023-02561-x. **SCI, Scopus,.**

23. **Bilal A. Rather, Hilal A. Ganie and M. Aouchie,** On the distance Laplacian invariants of brooms and their complements**, Communications in Combinatorics and Optimization, https://doi.org/10.22049/cco.2024.28835.1743 (Nov 2023). ESCI Scopus**

24. **Bilal A. Rather, Hilal A. Ganie, K. C. Das and Y. Shang,** On the general extended eigenvalues and energy of Chain graphs**, Mathematics 12(2), (2024),** https://doi.org/10.3390/math12020192. SCI Scopus

25. **J. Carmona and Hilal A. Ganie,** Some bounds for the A_{α}-spectral radius of digraphs**, Discrete Math Algorithms and Applications, 16(08) (2024) 2350107.** https://doi.org/10.1142/S1793830923501070. ESCI Scopus

26. **Hilal A. Ganie,** Hermitian skew Laplacian matrix of oriented graphs, **Discrete Math. Algorithms Applications,** https://doi.org/10.1142/S1793830924500265 **(Nov 2023). ESCI Scopus**

27. **Hilal A. Ganie and S. Pirzada,** On the first Outdegree Zagreb index of a digraph**, Discrete Mathematics 374(1), (2024) 113726. SCI Scopus**

28. Rizwan Bhat**, M. Imran and Hilal A. Ganie**, Bounds for the α-adjacency energy of graphs, **Journal of Mathematical inequalities, 1(18) (2024) 127-141.** SCI Scopus

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33. **Hilal A. Ganie**, Rizwan Bhat, Bilal Rather and S. Pirzada, On distance Laplacian energy, vertex connectivity and independence number of graphs, **Czech. Journal Math. 73 (2023) 335-353, SCI, Scopus.**

34. **Bilal A. Rather, Hilal A. Ganie and X. Li,** On Laplacian $ ABC $-eigenvalues and Laplacian $ ABC $-energy of graphs**, Quaestiones Mathematica 46(11) (2022) 2403-2419.**

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38. **Hilal A. Ganie, Bilal A. Rather and K. C. Das,** On the distance normalized Laplacian eigenvalues of a graph, **Applied Mathematics and Computations 438 (2023) 127615.**

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41. **Hilal A. Ganie and Bilal A. Rather,** On the spectra of distance Randi\'c matrix of graphs**, Bulletin of Brazilian Math. Society 53(2022), 1449-1467.**

42. Bilal A. Rather, **Hilal A. Ganie** and S. Pirzada, On the A_{α}-spectrum of joined union and its applications to power graphs of certain finite groups, **Journal of Algebra and its Applications** 22(12)(2023) 2350257. SCI, Scopus

43. **Hilal A. Ganie and J. Carmona,** An (increasing) sequence of lower bounds for the spectral radius and the energy of digraphs**, Discrete Mathematics, 346(1) (2023) 113118.**

44. A. Alhevaz, M. Baghipur, **H. A. Ganie** and Kinker Das, On the A_{α}-spectral radius of connected graphs, **Ars Mathe Contemp 23(2022), #P1.06 SCI, Scopus.**

45. M. Baghipur, **H. A. Ganie, M. Ghorbani** and Endie On the spectral radius of generalized adjacency matrix of a digraph, **Linear Algebra and its Applications 653(2022), 287-313 SCI, Scopus.**

46. Maryam Baghipur, Modjtaba Ghorbani, **Hilal A. Ganie and S. Pirzada,** On the eigenvalues and spread of the generalized distance matrix of a graph**, Computational and applied Mathematics 41(2022) 215 SCI, Scopus.**

47. **Hilal A. Ganie and Y. Shang,** On the spectral radius and energy of signless Laplacian matrix of digraphs, **Heliyon (Elsevier) 8(3)(2022),** e09186**.**

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50. **Hilal A. Ganie** and M. Baghipur, Bounds for the A_{α}-spectral radius of a digraph, **Math. Vesnik 74(2)(2022) 119-129, ESCI, Scopus. http://www.vesnik.math.rs/inpress/mv2020_100.pdf**

51. Bilal A. Chat and **Hilal A. Ganie**, On the skew Laplacian spectral radius of a digraph, **Discrete Math Algorithms and Applications** 14(5)(2022) 2150155, ESCI, Scopus. https://doi.org/10.1142/S179383092150155X

52. A. Alhevaz, M. Baghipur, **H. A. Ganie and K. C. Das,** Bounds and extremal graphs for Harary energy, **Discrete Math Algorithms and Applications** 14(5)**(2022) 2150149, ESCI, Scopus.** https://doi.org/10.1142/S1793830921501494

53. S. Pirzada, Bilal Rather, **Hilal A. Ganie and** Rezwan Bhat, On α-adjacency energy of graphs,**AKCE International journal of Graphs and Combinatorics, 18(1)(2021),39-46, SCI, Scopus. https://doi.org/10.1080/09728600.2021.1917973**

54. Maryam Baghipur, Modjtaba Ghorbani, **Hilal A. Ganie and V. Shang,** On the second largest reciprocal distance signless Laplacian eigenvalue**, Mathematics (2021), 9, 512. https://doi.org/10.3390/ math9050512, SCI, Scopus.**

55. **Hilal A. Ganie**, S. Pirzada, Bilal Rather and Rezwan Bhat ,On Laplacian eigenvalues and Brouwer's conjecture, Journal of **Ramunajun Math Society** Volume 36, Issue 1, March 2021 pp. 13–21. **SCI, Scopus.**

56. **Hilal A. Ganie**, On the A_{α}-spectrum of joined union of digraphs, **Discrete Mathematics, Algorithms and ApplicationsVol. 14, No. 01, 2150086 (2022),ESCI, Scopus**. https://doi.org/10.1142/S1793830921500865

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58. Bilal A. Chat, **Hilal A. Ganie** and S. Pirzada, Bounds for the skew Laplacian energy of weighted digraphs, *Afrika Matematika* **volume 32**, pages745–756 (2021)**, ESCI, Scopus.** https://doi.org/10.1007/s13370-020-00858-2

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60. Alhevaz, M. Baghipur, **Hilal A. Ganie**, and G. Tain, On the spectral radius of D_{α} matrix of a connected graph, **Acta Mathematica Sapentia(Accepted on 05 Dec 2020), ESCI, Scopus.**

61. **Hilal A. Ganie**, Alhevaz and M. Baghipur, On the sum of the generalized distance eigenvalues of graphs, **Discrete Mathematics, Algorithms and Applications Vol. 13, No. 01, 2050100 (2021),ESCI, Scopus.**

62. **Hilal A. Ganie**, S. Pirzada and V. Trevisan, Brouwer's conjecture for two families of graphs, *Mediterranean Journal of Mathematics* **volume 18**, Article number: 15 (2021),**SCI, Scopus.** https://doi.org/10.1007/s00009-020-01676-3

63. S. Pirzada**, Hilal A. Ganie**, Bilal A. Chat, On the real or integral skew Laplacian spectrum of digraphs, Submitted to **Operators and Matrices** Volume 14, Number 4 (2020), 795–813**, SCI, Scopus. dx.doi.org/10.7153/oam-2020-14-50**

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66. S. Pirzada**, Hilal A. Ganie**, A. Alhevaz, M. Baghipur, On the spectral spread of the generalized distance matrix of a graph, Accepted for publication in **Linear and Multilinear Algebra, Accepted for publication (19 Aug 2020). A referred journal of international repute, index in SCI, Scopus. https://doi.org/10.1080/03081087.2020.1814194**

67. **Hilal A. Ganie**, S. Pirzada, Bilal A. Chat and X. Li, On Skew Laplacian spectrum and energy of digraphs, **Asian-European Journal of Mathematics, Vol. 14, No. 04, 2150051 (2021), referred journal of international repute, ESCI, Scopus.** https://doi.org/10.1142/S1793557121500510

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95. S. Pirzada and **Hilal A. Ganie**, On the construction of L-equienergetic graphs, **AKCE International Journal of Graphs and Combinatorics, 12(2015) 141-154, referred**

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96. S. Pirzada and **Hilal A. Ganie**, On the Laplacian-energy-like invariant and Incidence energy**, Transactions on Combinatorics, Vol. 4, No. 3(2015) 41-51, referred journal of international repute, index in ESCI, Scopus (ISSN** 2251-8657(print), 2251-8665(online)), **ESCI, Scopus.**

97. T. A. Chishti, **Hilal A. Ganie** and S. Pirzada, Properties of strong double graphs, **Journal of Discrete Mathematical Sciences and Cryptography, Vol. 17 (2014), No. 4, 311-319, referred journal of international repute, index in ESCI, Scopus (ISSN** 0972-0529 (print), 2169-0065 (online)), **ESCI, Scopus.**

98. **Hilal A. Ganie**, S. Pirzada and Antal Ivanyi, Energy, Laplacian energy of double graphs and new families of equienergetic graphs, **Acta Univ. Sapientiae, Informatica, 6, 1 (2014) 89-117, referred journal of international repute, index in ESCI** (ISSN-L 1844-6086), **ESCI**.

Book Chapters/Books published:

1. S. Pirzada and **Hilal A. Ganie**, Spectra, energy and Laplacian energy of strong double graphs, in: D. Mug-nolo(Ed.), Mathematical Technology of Networks, in: Springer Proc. Math. Stat., vol. 128, **Springer International Publishing Switzerland, (2015),(ISBN** 978-3-319-16618-6(print), 978-3-319-16619-3(online)), **SCI, Scopus.**

Editorial Board Member of the Journals:

1. **Journal of Discrete Mathematics and its Applications**
2. **Edelweiss Applied Science and Technology**

Membership:

1. **International Society of Linear Algebra**

Achievements:

1. Served as the guest editor for the special issue "**Discrete Mathematics, Graph Theory and Applications**" published in **Mathematics(MDPI) Q1 journal(Among the top 8% journals in Mathematics), 2024.**

2. Best researcher award in Spectral Graph Theory by Network Science, 2025. https://networkscience-conferences.researchw.com/hilal-ganie-spectral-graph-theory-best-researcher-award-2996/

List of Conferences and Workshops:

- Participated in 3-Day International Webinar **on "The role of Applied Mathematics in present Global crisis" Organized by the Department of Applied Mathematics with Oceanology and Computer Programming, Vidyasagar University, Midnapore-721102, West Bengal, India, 05-07 Aug, 2020.**
- Participated in TEQIP-III sponsored one week online Short Term course on **"Mathematics without Boundaries", Organized by Department of Mathematics, National Institute Technology, Srinagar, J&K, during 23-27 November, 2020.**
- Participated in International Conference **on "Recent trends in Mathematics and its Applications to Graphs, Networks and Petri nets", Organized by the School of Computational and Integrative Sciences, Jawaharlal Nehru University, New Delhi-110067, India, held online during July 20-24, 2020.**
- Participated in International Conference **on "Graph Labeling and its Applications, ICGLA-2020", Organized online by the Department of Mathematics, Goa University, Goa-India, during September 17-19, 2020.**
- Participated in **"The first online Conference on Modern Fractional Calculus and its Applications", Organized by the Biruni University, Istanbul, Turkey,, Goa, December 4-6, 2020.**
- Participated and Presented a paper entitled **"Skew Laplacian spectra of digraphs" in the "Ist International Conference on Recent Developments in Science, Humanities and Management-2018", held at Amar Singh College Cluster University, Srinagar, during 17-18 April 2018.**
- Participated in 2-Day National Level Workshop **on "Geometrical Interpretation of Mathematical Concepts" Organized by the Department of Mathematics University of Kashmir, Srinagar- J & K in Collaboration with Kashmir Mathematical Society-(KMS) and Dass Scientific Research Laboratory-(DSRL), Ahmedabad, 28-29 Aug, 2018.**

- Presented a talk on "On the Laplacian eigenvalues of a graph and Brouwer's conjecture" in **CIMPA Research School-Graph Theory, held at Labanese University Beirut Labanon, 13-22 Feb 2017.**
- Presented a paper entitled "Relation between energy and Laplacian energy" in Research Promotion Workshop on **"Introduction to Graph and Geometric Algorithms", held at University of Kashmir, Srinagar, 18-20 May 2015.**
- Participated in the week long National Level Workshop on **"Mathematics and its Applications", held at University of Kashmir, Srinagar, 5-11 October 2015.**
- Presented a paper entitled "On the sum of Laplacian eigenvalues of a graph and Brouwer's conjecture" **in the "11th JK Scinence Congress on "Scientific, Social and Economic Dimensions of Climate change", held at University of Kashmir, Srinagar, 12-14 October 2015.**
- Participated in ATM (Advanced training in Mathematics) Workshop **on "Algebraic Graph Theory" held at CEMS, S.S.J. Campus, Kumaun University Almora, Uthrakhand, 13-23 October, 2013.**

Teaching Experience:

- Worked as a Graduate teacher at "Army Goodwill High School", Ziran Tangmarg, Baramulla, J&K from April 2010 to May 2011.
- Worked as a +2 Lecturer at "**Baramulla Public School Baramulla**", J&K from May 2011 to December 2011.
- Worked as Guest Lecturer at "**Post-Graduate Department of Mathematics" Boys College Baramulla,** for one semester (2015).
- Worked as Lecturer at "**Post-Graduate Department of Mathematics" University of Kashmir, Srinagar, J&K** from May 2016 to May 2017.
- Presently working as a +2 Lecturer at "**Government School Education Department, Jammu & Kashmir"**, from 24 Aug 2017 to 12 June 2025.
- Presently working as Assistant Professor at "**Department of Higher Education, Jammu & Kashmir, India"**, from 12 June 2025.

International Collaboration:-

1. **Professor Endie Andrade, Portugal**
2. **Professor Gutman, Serbia**
3. **Professor** Antal Ivanyi, Hungry
4. **Professor** Edy Tri Baskoro, Indonesia
5. **Professor** Ahmad M. Alghamdi, Saudi Arabia
6. **Professor** X. Li, China
7. **Professor** V. Trevisan, Brazil
8. **Professor (Associate)** A. Alhevaz, Iran
9. **Professor** Y. Shang, UK
10. **Professor** G. Tain, China
11. **Professor, K. C. Das South Korea**
12. **Professor (Assistant) Maryam**, Iran
13. **Professor** Modjtaba Ghorbani, Iran
14. **Professor M. Aouchie, UAE**
15. **Professor Carmona, Chile**
16. **Professor Imran UAE**
17. **Professor A. Altassan Saudi Arabia**
18. **Professor Bilal Ahmad Uzbekistan**
19. **Professor Amal Alsauli Saudi Arabia**

Reviewed Papers for the Journals:

1. **Linear Algebra and its Applications**
2. **Discrete Applied Mathematics**
3. **Discrete Mathematics**
4. **American Math Society**
5. **Journal of Applied Mathematics and Computing**
6. **Electronic Journal of Graph Theory and Applications**
7. **Carpathian Mathematical Publications**
8. **Zbmath**
9. **AIMS Mathematics**
10. **Journal of Mathematics, Hindwi**
11. **AKCE International journal of Graphs and Combinatorics**
12. **International Journal of Computer Mathematics: Computer Systems Theory**
13. **Journal of Algebra Combinatorics Discrete structures and Applications**
14. **MPDI Journal (Mathematics, Axioms and Symmetry)**
15. **Journal of Algebraic Structures**
16. **Polycioues**
17. **Open Mathematics**
18. **Indian journal of pure and Applied Mathematics**

19. Computational and Applied Mathematics

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