



Dr. Zahid Raza

Associate Professor
Department of Mathematics, College of Sciences,
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United Arab Emirates
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Academic Positions

• Associate Professor	01-09-2015- till	Department of Mathematics, College of Sciences, University of Sharjah, Sharjah , UAE.
• Associate Professor	01.01.2014- 01-09-2015	National University of Computer and Emerging Sciences, Lahore Campus, Pakistan
• Assistant Professor	20.02.2010- 31.12.2013	National University of Computer and Emerging Sciences, Lahore Campus, Pakistan
• Post Doc Fellow	01.04.2009- 19.02.2010	Abdus Salam School of Mathematical Sciences, G.C. University, Lahore, Pakistan
• Post Doc Fellow	10.10.2008- 30.03.2009	Institute of Mathematics Academy of sciences of the Republic Czech
• Post Doc Fellow	10.05.2008- 09.10.2008	Abdus Salam School of Mathematical Sciences, G.C. University, Lahore, Pakistan

Short Term Visiting Fellowships

June-July, 2011	Visiting Fellow	ICTP, Trieste, Italy

Teaching

Post-Graduate and Undergraduate Mathematics Courses

- Introduction to Complex Analysis
- First Course in Functional Analysis
- Advanced Mathematical Inequalities
- Introduction to Measure Theory
- Introduction to Algebraic Geometry
- First Course in Number Theory
- Combinatorics
- Differential Equations and Applications
- Mathematical Methods

- Engineering Mathematics
- Calculus with Analytic Geometry
- Linear Algebra

Educational Background

• PhD	May, 2008	Government College University, Lahore, Pakistan Supervisor: Prof. Dr. Alexandru Dimca(France)
• M.Sc	2003	University of Punjab, Lahore, Pakistan
• B.Sc	2001	University of Punjab, Lahore, Pakistan

Areas of interest in Mathematics

Pure and Applied Mathematics

Scientific Publications

Research Papers Published in International refereed Journals

Accepted Papers

1. **Z. Raza**, M. T. Rahim, S. Tariq, Sandpile model on subdivided wheels $W_{\{n,l\}}$ **Utilitas Math.**, to appear.
2. A. Ali, A. A. Bhatti **Z. Raza**, Further Inequalities between Vertex-Degree-Based Topological Indices, **International Journal of Applied and Computational Mathematics**, DOI:10.1007/s40819-016-0213-4
3. **Zahid Raza**, S. Iqbal, On the sandpile group of a family of graphs, **JP Journal of Algebra, Number Theory and Applications**, to appear.
4. A. Ali, **Z. Raza**, A. A. Bhatti, Some vertex-degree-based topological indices of cacti, **Ars Combinatoria**, to appear.
5. N. Saleem, M. Abbas, **Z. Raza**, Fixed fuzzy point results of generalized Suzuki type F-contraction mappings in ordered metric spaces **Georgian Mathematical Journal**, to appear
6. **Z. Raza** and M. Ahmad, Unitary Unit subgroup of Group Algebra $F_2^n(QD_{16})$, **J. Algebra Appl.**
7. **Z. Raza**, H. M. Malik, Solution of Certain Pell Equations, **Asian-European J. Math.**, to appear

2017

1. S. Akhter, M. Imran, **Z. Raza**, Bounds for the general sum-connectivity index of composite graphs, **Journal of Inequalities and Applications**, Vol. 2017 :76, DOI 10.1186/s13660-017-1350-y (2017)
2. A. Ali, **Z. Raza**, On construction of some new types of semigroups, **Journal of Semigroup**

Theory and Applications, Article ID 4, (2017)

3. A. Ali, **Z. Raza**, On large arbitrary left path within a semigroup **Journal of Semigroup Theory and Applications**, Article ID 3, (2017)

2016

1. **Z. Raza**, The edge version of geometric arithmetic index of polyomino chains of 8-cycles and arbitrary carbon nanocones, **Journal of Computational and Theoretical Nanoscience**, Vol. 13, 1–5, 2016
2. **Z. Raza**, N. Saleem, M. Abbas, Optimal coincidence points of proximal quasi-contraction mappings in non-Archimedean fuzzy metric spaces, **The Journal of Nonlinear Science and Applications**, Vol. 9, no.6, 3787-3801(2016).
3. A. Ali, **Z. Raza**, A. A. Bhatti, Extremal pentagonal chains with respect to degree-based topological indices, **Canadian Journal of Chemistry**, Vol. 94, no. 10 , 870-876(2016).
4. S. Akhter, M. Imran, **Z. Raza**, On the general sum-connectivity index and general Randic index of cacti **Journal of Inequalities and Applications**, Vol. 2016:300, DOI 10.1186/s13660-016-1250-6.(2016)
5. N. Saleem, M. Abbas and **Z. Raza**, Optimal Coincidence Best Approximation Solution in Non-archimedean Fuzzy Metric Spaces, **Iranian Journal of Fuzzy Systems** Vol. 13, no. 3, 113-124(2016).
6. **Z. Raza**, A. A. Bhatti, A. Ali, More on Comparison Between First Geometric-Arithmetic Index and Atom-Bond Connectivity Index, **Miskolc Mathematical Notes**, Vol. 17, no. 1, 561–570(2016).
7. Ali, **Z. Raza**, A. A. Bhatti, bond incident degree (BID) indices, nanostructures , **Optoelectronics Adv. Materials-Rapid Commun**, Vol. 10, no. 1-2, (2016).
8. Ali, **Z. Raza**, A. A. Bhatti, Bond Incident Degree (BID) Indices of Polyomino Chains: A Unified Approach, **Applied Mathematics and Computation**, Vol.287(9), 28–37, (2016)
9. A. Ali, **Z. Raza**, A. A. Bhatti, On the Augmented Zagreb Index, **Kuwait Journal of Science** 43 (2) 123-138, (2016).
10. A. Ali, A. A. Bhatti, **Z. Raza**, The augmented Zagreb index, vertex connectivity and matching number of graphs, **Bull. Iranian Math. Soc.** Vol. 42, no. 2, 417-425, (2016)
11. **Z. Raza**, H. M. Malik, Solution of Certain Quartic Equations, **Science International**, 28(4), 3609-3612, (2016).
12. Ali, A. A. Bhatti, **Z. Raza**, Topological study of tree-like polyphenylene systems, spiro hexagonal systems and polyphenylene dendrimer nanostars, **Quantum Matter**, Vol. 5, no. 4, 534-538(2016).

2015

1. **Z. Raza**, S. A. Waheed, GCED and reciprocal GCED matrices, **Hacettepe Journal of Mathematics and Statistics**, Vol. 44 (3) , 633 – 640 (2015).
2. I. Anwar, **Z. Raza**, Quasi-Linear Quotients and Shellability of Pure Simplicial Complexes, **Communications in Algebra**, Vol. 43, no.11, 4698-4704, DOI: 10.1080/00927872.2014.937952 (2015)
3. I. Anwar, **Z. Raza** and A. Kashif, Spanning simplicial complexes of uni- cyclic graphs, **Algebra Colloq**, Vol., 22, no. 4, 707-710, DOI: 10.1142/S1005386715000590 (2015)
4. A. Ali, A. A. Bhatti, **Z. Raza** Vertex-degree-based topological indices of a smart polymer and some dendrimer nanostars, **Optoelectronics Adv. Materials-Rapid Commun.**, Vol. 9, no. 1-2, 256-259, (2015).
5. A. Ali, A. A. Bhatti, **Z. Raza**, Some vertex-degree-based topological indices of polyomino chains, **J. Comput. Theor. Nanosci.**, Vol., 12, no. 9, 1-7, (2015).
6. M. F. Shamir, **Z. Raza**, Locally Rotationally Symmetric Bianchi Type I Cosmology in $f(R)$ Gravity, **Can. J. Phy.**, Vol., 93, no. 1, 37-42, (2015).

7. M. F. Shamir, **Z. Raza**, Cylindrically symmetric solutions in $f(R, T)$ gravity, **Astrophys. Space Sci.**, Vol. 356, no.1, 111-118, (2015).
8. M. F. Shamir, Z. Ahmad, **Z. Raza**, Gravitational Dust Collapse in $f(R)$ Gravity, **Int. J. Theo. Phy.**, Vol.,54, no. 5, 1450-1460, (2015).
9. N. Saleem, B. Ali, M. Abbas, **Z. Raza**, Fixed points of Suzuki type generalized multi-valued mappings in fuzzy metric spaces with applications, **Fixed Point Theory App.** 2015:36 DOI: 10.1186/s13663-015-0284-7, (2015).
10. **Z. Raza**, On the critical group of certain subdivided wheel graphs, **Punjab University Journal of Mathematics**, Vol.47(2), 57-64 (2015)
11. **Z. Raza**, H. M. Malik, Solution of the Diophantine Equation $x_1x_2x_3\dots x_{m-1}=z^n$, **Punjab University Journal of Mathematics**, Vol.47(2), 83-88 (2015)
12. **Z. Raza** and R. Ali, On the Unitary Units of The Group Algebra $F_2^kQ_{16}$, **Asian-European J. Math.**, Vol. 8, no. 1 [7 Pages] DOI: 10.1142/S1793557115500138 (2015).
13. **Z. Raza**, A. Iqbal, Infinite log-concavity and r-factor, **Math. Sci. Letter**, Vol.4, no. 2, 1-7, (2015).
14. **Z. Raza**, S. A. Waheed, GCED and reciprocal LCEM matrices, **Notes on Number Theory and Discrete Mathematics**, Vol. 21, no. 1, 79-85, (2015).
15. **Z. Raza**, M. A. Ali, On The Norms of Some Special Matrices With Generalized Fibonacci Sequence, **J. Appl. Math. & Informatics** Vol. 33, no. 5 - 6, 593 – 605, (2015).
16. **Z. Raza**, S. A. Waheed, On the divisibility of LCEM and GCED matrices, **FAST-NU Research Journal**, Vol. 1, no. 1, 1-7, (2015).
17. **Z. Raza**, W. Shahzad, Counting of Binary Matrices Avoiding some 2×2 Matrices, **VFAST Transactions on Mathematics**, Vol. 6, no.1, 1-6, (2015).

2014-2013

1. **Z. Raza** and S. M. Waheed, On the sandpile model of modified wheels I, **Int. J. Nonlinear Sci. Numer. Simul.**, Vol. 15, no. 3-4, 207-213,(2014).
2. M. F. Shamir, **Z. Raza**, Dust Static Cylindrically Symmetric Solutions in $f(R)$ Gravity, **Commun. Theor. Phy.** Vol. 62, No. 3, 348--352, (2014).
3. A. Kashif, I. Anwar and **Z. Raza**, On the algebraic study of spanning simplicial complexes of r-cyclic graphs $G_{n,r}$, **ARS Comb.**, 115, 89-99 (2014).
4. N. Khan, M. T. Rahim and **Z. Raza**, A note on degree distance of 4-cyclic graphs, **Utilitas Math.**, Vol. 93, no. 2, 109-116, (2014).
5. **Z. Raza** and M. Ahmad, On the Structure of the Unitary Subgroup of the Group Algebra $F_2^q(D_2^n)$ **J. Algebra Appl.** Vol.13, no.4 [8 pages]DOI: 10.1142/S0219498813501399 (2014) .
6. A. Ali, A. A. Bhatti **Z. Raza**, A Note on The Zeroth-Order General Randic Index of Cacti and Polyomino Chains, **Iranian J. Math. Chem.**, Vol. 5, no.2, 143-152, (2014).
7. **Z. Raza** and M. Ahmad, On the unitary units of the group algebra $F_2^m(M_{16})$, **J. Algebra Appl.** Vol.12, no.8 [7 pages] DOI: 10.1142/S021949881350059X (2013)
8. **Z. Raza** and S. Faizi, Commuting graph of dihedral type groups, **Appl. Math. E-Notes**, Vol.13, 221-227, (2013).
9. **Z. Raza** and S. Faizi, None commuting graph of a finitely presented group, **Sci.Int.(Lahore)**, Vol.25, no.4, 883-885, (2013).
10. **Z. Raza**, On the critical group of a family of graphs, **Novi Sad J. Math.**, Vol. 43, no. 1, 113-120(2013).

11. H. Bashir and **Z. Raza**, On the fuzzy subgroups of finite Abelian groups, **Int. Math. Forum**, Vol. 8, no. 4, 181-190, (2013).
12. **Z. Raza**, M. T. Rahim and A. N. Bajwa, Parity of the Catalan Numbers and Related Sequences, **INFORMATION**, Vol.16, no.11, 7811-7816, (2013).

2012

1. A. Iqbal, S. Nazir, **Z. Raza** and Z. Saleem, Generalization of Nekrasov-Okounkov identity, **Ann. Comb.**, Vol. 16, no. 4, 745-753, (2012).
2. **Z. Raza** and S. Nazir, On the elliptic curves arising from 4-bar mechanisms, **Rocky Mountain J. Math.**, Vol. 42, no.4, 1359-1365, (2012).
3. **Z. Raza** and N. Saleem, The critical group of C_{mvP_2} , **Sci.Int.(Lahore)**, Vol, 24, no.4, 333-336, (2012).
4. **Z. Raza** and S.A.Waheed, On the critical group of W_{4n} , **J. Appl. Math. & Informatics**, Vol. 30, no.5-6, 993-1003, (2012).
5. Z. Raza and S. A. Waheed, LCEM and Reciprocal GCED Matrices, **Int. J. Pure and Applied Math.**, Vol. 80, no.5, 647-655, (2012).
6. B. Humera and **Z. Raza**, On the subgroup lattice of quasihedral group Q_{32} , **Int. J. Algebra**, Vol. 6, no.25, 1221 – 1225, (2012).

2011-2008

1. **Z. Raza**, Topology of Plane Curves and Discriminant, **Bull. Math. Soc. Sc. Math. Roumanie**, Vol. 54, 281-293, (2011).
2. **Z. Raza**, Broughton Polynomials and Characteristic Varieties, **Studia Sci. Math Hungarica**, Vol.47, 214-22, (2010).
3. S. Nazir and **Z. Raza**, Admissible local systems for a class of line arrangements, **Proc. Amer. Math. Soc.** Vol.135 no. 4, 1307-1313, (2009).
4. **Z. Raza**, Contractible fibers of polynomial functions, **J. Prime Research Math.**, Vol.4, 148-153, (2008).

Research Papers Submitted in International refereed Journals

1. **Z. Raza**, A. Rana, $(1-2u^k)$ -constacyclic codes over $F_p + uF_p + u^2F_p + \dots + u^kF_p$, [arXiv:1512.02332](https://arxiv.org/abs/1512.02332)
2. **Z. Raza**, S. T. Tehrim, Achievement and Avoidance Games on Some Finite Non-Abelian Groups
3. **Z. Raza**, S. A. Waheed, LCEM and reciprocal LCEM matrices
4. **Z. Raza**, M. Riaz, M. A Ali, On some inequalities on the norms of special matrices with generalized Tribonacci and generalized Pell Padovan sequences, [arXiv:1510.1369](https://arxiv.org/abs/1510.1369)
5. **Z. Raza**, Faiz Ullah, On the sandpile model of modified wheels
6. **Z. Raza**, Imran, On the Structure of Involutions and Symmetric Spaces of Quasi-Dihedral Groups, [arXiv:1401.0112](https://arxiv.org/abs/1401.0112)
7. A. Ali, A. A. Bhatti, **Z. Raza**, Vertex-degree-based topological indices of polyomino chains of $4k$ -cycles.

Research/Dissertation Supervision(PhD Theses Supervision)

- | | |
|---------|---|
| • 2010- | Noether Symmetries and Exact Solutions for Physical Models on Curved Surfaces |
|---------|---|

2014	(Ms. Sumaira Sharif, HEC Scholar) Thesis defense: 01-10-2014, (Supervisor).
• 2011-2015	Exact Solutions and Symmetries in f(R) Gravity (Mr. Farasat Shamir) Thesis defense: 06-06-2015, (Supervisor).
• 2011-2015	Algebraic Characterization of Spanning Simplicial Complexes (Mr. Agha Kashif Khan) Thesis defense: 28-07-2015, (Supervisor).

Research/Dissertation Supervision(MS Theses Supervision)

• 2011	Combinatorial Aspects of Semigroups (Mr. Ajmal Ali)
• 2011	On the Critical Group of $C_{nv}P_2$ (Mr. Naeem Saleem).
• 2011	Party of Catalan Numbers and Related Sequences (Mr. Ali Nawaz Bajwa).
• 2011	Structure and Divisibility Properties of GCED and LCEM Matrices (Ms. Seemal Abdul Waheed).
• 2012	Fuzzy Subgroups of some Finite Groups (Ms. Humaira Bashir).
• 2012	Graphs Associated with Dihedral type Groups (Mr. Shahzad Faizi).
• 2012	Infinite Log-Concavity and r-Factor (Mr. Anjum Iqbal).
• 2012	The Structure of the Unitary Units of some Finite Group Rings (Mr. Maqsood Ahmad).
• 2012	Critical Groups of some Families of Graphs (Mr. Mohammad Aamer).
• 2013	Subgroup Commutativity and S- Commutativity degrees of Finite Groups (Mr. Mohammad Shahbaz)
• 2013	Conserved Quantities of the Different Line Elements via Noether 's Approach (Mr. Syed Tauseef Saeed)
• 2013	On the Structure of Involutions and Symmetric Spaces of Quasi-Dihedral Groups (Mr. Imran)
• 2013	Sandpile Model on Subdivided Wheels (Ms. Saleha Tariq)
• 2013	Unitary Unit Group of Finite Group Algebra (Mr. Riasat Ali)
• 2013	Subgroups Lattice and Fuzzy Subgroups of Finite Groups (Mr. Nadeem Ahmad)
• 2013	Invariant Polynomial Transformations of Integer Sequences(Mr. Qasim Noor)
• 2013	On Generalized Fibonacci Quaternions (Ms. Laila Yawar)
• 2014	Solutions of some Diophantine Equations (Ms. Hafsa Masood Malik)
• 2014	On the Norms of Special Matrices with Integer Sequences (Mr. Muhammad Asim Ali)

• 2015	Algebraic Properties of Quasi-Dihedral Group(Mr. Jamshed Afzal)
• 2015	On the Critical Group of a Family of Graphs(Ms. Sidra Iqbal)
• 2015	Achievement and avoidance games on finite none Abelian groups(Ms. S. Tayyba Tehrim)
• 2015	Fixed point of expansive and non-expansive mappings in Banach space(Mr. Shahid Bashir)
• 2016	Constacyclic codes over some finite rings(Ms. Amrina Rana)
• 2016	Factorization of Group Determinant of a Non- Abelian Group(Mr. Muzamil Ejaz)

Research Collaborators

- Dr. Aamer Iqbal (USA/Pak)
- Dr. M. Imran, (UAEU, UAE)
- Dr. Akbar Ali, (UOG, Pak)
- Dr. Imran Anwar, (COMSATS, Pak)
- Dr. Imran Javaid, (BZU, Pak)
- Dr. Akhlaq Ahmad Bhatti, (NUCES, Pak)

External Examiner and Professional Activities

- External Examiner in Mathematics at the Bahauddin Zakaria University, Multan, Pakistan
- External Examiner in Mathematics at COMSATS Institute Of Information Technology, Lahore, Pakistan
- External Examiner in Mathematics at the University of Education, Lahore, Pakistan
- Member of the organizing committee of the 6th World Conference on 21st Century Mathematics 2013, March, Pakistan.

Administration

- Deputy Controller of Examination in NUCES Lahore(2010-2014)
- Member of the Library Committee at NUCES Lahore(2010-15)
- Member of the Interview committee for PhD Admissions at NUCES Lahore (2010-).
- Advisor of the Support Society in NUCES Lahore(2012-2014)
- Coordinate of the Graduate Program at NUCES Lahore (2010-15).

Referee

Invited referee for the following international journals

- World Applied Sciences Journal
- Science International (Lahore)
- Journal of Prime Research in Mathematics
- Journal of Chemometrics
- Journal of Applied Mathematics and Computing
- Canadian Journal of Chemistry
-

Conference/Workshops/Summer Schools Attended

• 2004	1 st International Conference on 21 st Century Mathematics, Lahore, Pakistan, March 18-20, 2004
• 2005	2 nd International Conference on 21 st Century Mathematics, Lahore, Pakistan, March 4-6, 2004
• 2005	Hyperplane arrangements and Constructible sheaves in Constanza (Romania) organized by CIMPA in September 2005.
• 2005	LUMS International Conference on Mathematics and its Applications in Information Technology, Lahore, Pakistan, November 27-30, 2005.
• 2006	New trends in Singularity Theory in Madrid (Spain) organized by CIMPA in August 2006.
• 2007	Configuration space and Applications in Lahore (Pakistan) organized by CIMPA in February 12-18, 2007.
• 2007	3 rd International Conference on 21 st Century Mathematics, Lahore, Pakistan. March 4-7, 2007 (Presented a Paper)
• 2007	Hyperplane arrangements and Singularity Theory in Istanbul (Turkey) organized by CIMPA in June 2007.
• 2007	1 st Mathematics Conference at CASPAM Bahauddin Zakariya University, Multan-Pakistan, July 27-28, 2007 (Presented a Paper).
• 2007	8 th International Pure Mathematics Conference on Algebra, Analysis & Geometry Islamabad, August 24-26, 2007 (Presented a Paper).
• 2008	LUMS 2 nd International conference on mathematics and its applications in information technology on March 9-12, 2008 (Presented a Paper).
• 2008	Discrete and Computational Geometry, Lahore (Pakistan) organized by CIMPA in March 23-30, 2008.
• 2009	The 29th Winter School Geometry and Physics, Srni (Czech Republic), January 17 - 24, 2009 (Presented a Paper).
• 2009	The 2 nd MSJ-SI conference on arrangements of hyperplanes in Sapporo (Japan) August 1-August 13, 2009
• 2010	Summer school and conference on Hodge theory and related topics ICTP (Italy), 14 June 2010- 02 July 2010.

• 2010	11 th International Pure Mathematics Conference on Algebra, Analysis & Geometry Islamabad, Pakistan, August 06-08, 2010(Presented a Paper).
• 2012	Seminar Series NUST- Center for Advanced Mathematics and Physics, Islamabad, November, 07, 2012(Presented a Paper).
• 2012	Workshop on Algebraic and Topological Aspects of Arrangements, LUMS, Lahore, Pakistan, November, 09-10, 2012(Presented a Paper).
• 2014	International Workshop on Discrete Structure (IWODS14), NUST, Islamabad, Pakistan, March, 5-7, 2014(Presented a Paper).
• 2014	Symposium on Mathematics and Statistics, COMSATS, Lahore, May 03, 2014(Presented a Paper).
• 2014	Conference on Mathematics and its Applications-2014 (CMA-2014), Kuwait, November 14 - 17 (2014) Kuwait(Presented a Paper).
• 2015	1st UMT National Conference on Pure and Applied Mathematics, Lahore Pakistan, March 7-8, 2015(Presented a Paper).
• 2016	1st UMT International Conference on Pure and Applied Sciences, Lahore Pakistan, March 5-7, 2016(Presented a Paper).
• 2016	14th UAE Math Day New York University Abu Dhabi Campus, March 12, 2016 (Presented a Paper).
• 2016	Seminar Series of the department of mathematics at American University of Sharjah, UAE, April, 12, 2016(deliver a talk).
• 2016	2nd International workshop on modern aspects of algebra and graph theory, Comsats Lahore, Pakistan November 2-3, 2016
• 2016	2nd International Conference in Pure and Applied mathematics, University of Sargodha, Pakistan, November 26-27, 2016

Conferences/Workshops Organized

- Conference chair of the 15th UAE Math Day, University of Sharjah, Sharjah, March 11th 2017.
- Member of the organizing committee of the 6th World Conference on 21st Century Mathematics 2013, March, Pakistan.
- Member of the organizing committee of the Workshop on Algebraic and Topological Aspects of Arrangements, LUMS, Lahore, Pakistan, November, 09-10, 2012

Contact

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