Curriculum Vitae

Dr. Imran Ahmed

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Date of Birth: July 6, 1980

Objective

Work to excel my skills as a pure mathematics professional in a challenging educational and research environment.

Professional Experience

December 2019 – Date
Working as **Associate Professor (Tenured)** at COMSATS University Islamabad (CUI) - Lahore Campus, Defence Road, Off Raiwind Road, Lahore, Pakistan
May 2008 – December 2019
Worked as Assistant Professor at COMSATS University Islamabad (CUI) - Lahore Campus, Defence Road, Off Raiwind Road, Lahore, Pakistan
February 2002 – April 2008
Worked as Lecturer/Research Associate at COMSATS University Islamabad (CUI) - Lahore Campus, Defence Road, Off Raiwind Road, Lahore, Pakistan
February 2002 – September 2002
Worked as Acting Deputy Controller Examinations at COMSATS University Islamabad (CUI) - Lahore Campus, Defence Road, Off Raiwind Road, Lahore, Pakistan

Post-Doctorate under TWAS-CNPq Funding (August 2009 – September 2010)
Instituto de Ciências Matemáticas e de Computação (ICMC-USP),
Universidade de São Paulo, São Carlos, Brazil
Post-Doctorate under FAPESP Funding (October 2010 – December 2012)
Instituto de Ciências Matemáticas e de Computação (ICMC-USP),
Universidade de São Paulo, São Carlos, Brazil
Research Work
My field of specialization is Singularity Theory and Algebraic Geometry. Professor Dr. Maria Aparecida Soares Ruas was my supervisor during post-doctorate. Singularity theory draws on ideas and techniques from algebraic and analytic geometry, algebraic and differential topology, and functional analysis. It is applied to problems in differential geometry, dynamical systems, and the physical and life sciences. Current areas of research of the singularity theory include the study of the geometry of finitely determined singularities in terms of their multiple point schemes, and the relationship between the invariants of these schemes and the topology of the maps and their generic deformations, as well as the study of the transition from geometrical questions to algebraic ones, based on Newton diagrams associated to the singularities. My research publications have been cited below.

Publications

1. I. Ahmed and S. Muhmood, Algebraic Characterization of SSC of Uni-Cyclic Multigraphs, Algebra Colloquium, 30 (2023), no. 2, 325-338. [I.F. 0.421, HEC Cat. X]
2. Li, H., Saleem, M.S., Ahmed, I. and Aslam, K. N. (2023), Hermite–Hadamard and Fejér-type inequalities for strongly reciprocally (p, h)-convex functions of higher order, Journal of Inequalities and Applications, 2023 (2023), no. 57, 1-20. [I.F. 2.021, HEC Cat. W]
3. Qi, H., Saleem, M.S., Ahmed, I., Sajid, S. and Nazeer, W., Fractional version of Ostrowski-type inequalities for strongly p-convex stochastic processes via a k-fractional Hilfer-

Katugampola derivative, Journal of Inequalities and Applications, 2023 (2023), no. 12, 1-19. [I.F. 2.021, HEC Cat. W]

4. M. Tanveer, I. Ahmed, A. Raza, S. Nawaz and Y-P Lv, New Escape Conditions with General Complex Polynomial for Fractals via New Fixed Point Iteration, AIMS Mathematics, 6 (2021), no. 6, 5563-5580. [I.F. 2.739, HEC Cat. W]
5. L. Chen, J. Zhang, M.S. Saleem, I. Ahmed, S. Waheed and L. Pan, Fractional Integral Inequalities for h-Convex Functions via Caputo-Fabrizio Operator, AIMS Mathematics, 6 (2021), no. 6, 6377-6389. [I.F. 2.739, HEC Cat. W]
6. I. Ahmed and S. Muhmood, Computational aspects of Line Simplicial Complexes, Journal of Intelligent and Fuzzy Systems, 39 (2020), no. 1, 35-42. [I.F. 1.637, HEC Cat. W]
7. Q.Z. Li, A.R. Virk, K. Nazar, I. Ahmed and I. Tlili, Valency-based descriptors for Silicon Carbides, Bismuth (III) Iodide and Dendrimers in Drug Applications, Journal of Chemistry, Volume 2020, Article ID 8616309, 17 pages. [I.F. 1.790, HEC Cat. W]
8. I. Ahmed and M.A.S. Ruas, Determinacy of Determinantal Varieties, Manuscripta Mathematica, 159 (2019), no. 1, 269-278. [I.F. 0.610, HEC Cat. W]
9. S. Muhmood, I. Ahmed and A. Liaquat, Gallai Simplicial Complexes, Journal of Intelligent and Fuzzy Systems, 36 (2019), no. 6, 5645-5651. [I.F. 1.637, HEC Cat. W]
10. A. Adeel, M. Akram, I. Ahmed and K. Nazar, Novel m-Polar Fuzzy Linguistic ELECTRE-I Method for Group Decision-Making, Symmetry, 11 (2019), no. 4, 471. [I.F. 2.645, HEC Cat. W]
11. Z. Chen, A.A. Shahid, T.J. Zia, I. Ahmed and W. Nazeer, Dynamics of Antifractals in Modified S-iteration Orbit, IEEE Access, 7 (2019), no. 1, 113114-113120. [I.F. 4.098, HEC Cat. W]
12. Y. Li, M. Rafaqat, T.J. Zia, I. Ahmed and C.Y. Jung, Flip and Neimark-Sacker Bifurcations of a Discrete Time Predator-Pre Model, IEEE Access, 7 (2019), no. 1, 123430-123435. [I.F. 4.098, HEC Cat. W]
13. Z.Q. Chu, S. Nazeer, T.J Zia, I. Ahmed and S. Shahid, Some New Results on Various Graph Energies of the Splitting Graph, Journal of Chemistry, Volume 2019, Article ID 7214047, 12 pages. [I.F. 1.790, HEC Cat. W]
14. Z. Chen, A.R. Virk, M. Habib, T.J. Zia, I. Ahmed, C. Shi and W. Nazeer, Irregularity Indices of Dendrimer Structures used as Molecular Disrupter in QSAR Study, Journal of Chemistry, Volume 2019, Article ID 5371254, 21 pages. [I.F. 1.790, HEC Cat. W]
15. S.Ashraf, I. Ahmed and H. Rashmanlou, A new technique to solve fuzzy differential equations, Journal of Intelligent and Fuzzy Systems, 34 (2018), 2171-2176. [I.F. 1.637, HEC Cat. W]
16. I. Ahmed, M.A.S. Ruas and J.N. Tomazella, Invariants of Topological Relative Right Equivalences, Mathematical proceedings of Cambridge Philosophical Society, 155 (2013), No. 2, pp 307-315. [I.F. 0.832, HEC Cat. W]
17. Imran Ahmed, Weighted Homogeneous Polynomials with Isomorphic Minor Algebras, Journal of Prime Research in Mathematics, 8 (2012), 106-114. [HEC Cat. Y]
18. I. Ahmed and M.A.S Ruas, Invariants of Relative Right and Contact Equivalences, Houston Journal of Mathematics, 37 (2011), No. 3, 773-786. [I.F. 0.43, HEC Cat. W]
19. Imran Ahmed, Polar Cremona Transformations and Monodromy of Polynomials, Studia Sci. Math. Hungarica, 47 (2010), no. 1, 81-89. [I.F. 0.627, HEC Cat. W]
20. Imran Ahmed, Homogeneous Polynomials with Isomorphic Milnor Algebras, Czechoslovak Mathematical Journal, 60 (2010), No. 1, pp. 125-131. [I.F. 0.294, HEC Cat. W]
21. N. U. Abbas, I. Ahmed and A. A. Kiran, Cohen-Macaulayness of Total Simplicial Complexes, preprint.
22. I. Ahmed, I. Tariq and N. Ali, A Note on Average Fuzzy Ideals and Homomorphisms, preprint.
23. Imran Ahmed, Algebraic Properties of SSC of Multigraphs, preprint.

Conference Papers

1. Imran Ahmed, Polar Cremona Transformations and Milnor Algebras, Workshop on Dynamical Systems (2011), Salvador, Brazil.

2. Imran Ahmed, Mixed Bruce-Roberts Numbers, 10th Mini workshop in Singularities, Geometry and Differential Equations (2015), UFC, Brazil.

Achievement

The Higher Education Commission, Pakistan has approved me as Ph.D. supervisor due to my outstanding contribution at national and international level to my field.

Scientific Visits

1. Visited ICMC-USP Brazil for research collaboration during July-August 2018 under ICMC-USP funding.
2. Visited ICMC-USP Brazil for research collaboration during October-November 2017 under FAPESP funding.
3. Visited ICMC-USP Brazil for research collaboration during April-May 2015 under ICMC-USP / CNPq funding.
4. Visited ICMC-USP Brazil for research collaboration during July 2013 under ICMC-USP funding.

Research Projects

1. Imran Ahmed, Principal Investigator, Analytic and Topological Invariants of Singularities, NRPU-HEC, 2017-2020.
2. Imran Ahmed, Principal Investigator, Classification of Determinantal Singularities, NRPU-HEC, 2018-2021.
3. Imran Ahmed, Co-PI, Approximate Common Solution of Equilibrium Problems and Variational Inequality Problems with Fixed Point Problems, 2018-2020.

Research Supervision

Ph.D. Mathematics

1. Najam Ul Abbas, Algebraic and Topological Properties of Simplicial Complexes, Ph.D. Math, in progress.

MS Mathematics

1. Tatheer Zahra, Spanning Simplicial Complexes of Multi-Wheel Graphs, 2022.
2. Imtiaz Tariq, Classification of Fuzzy Varieties, MS Math., 2021.
3. M. Nasim Aftab, Cohen-Macaulayness in Codimension for Line Simplicial Complexes, MS Math., 2021.
4. Arslan Kaleem, Topological Indices of Fuzzy Graphs, MS Math., 2021.
5. Danial Hussain, Fundamental Group and Singular Homology, MS Math., 2021.
6. Sana Zahoor, Classification of Determinantal Singularities, MS Math., 2019.
7. Zuha Manzoor, Cohen-Macaulayness of Simplicial Complexes, MS Math., 2019.
8. M. Awais, Topological Characterizations of Spanning Simplicial Complexes, MS Math, 2018.
9. Adnan Liaquat, Characterizations of Gallai Total Simplicial Complexes, MS Math, 2018.
10. Ayesha Kiran, Characterizations of Line Total Simplicial Complexes, MS Math, 2018.
11. M. Farooq Hader, Degree of Weighted Gradient Maps, MS Math., 2015.
12. Ayesha Bashir, A Note on Determinantal Varieties, MS Math., in progress.
13. Aakash Ahmed, A Note on Stanley-Reisner Ideal Theory, MS Math., in progress.

BS Mathematics

1. Sana Zahoor, Betti Numbers of Gallai Simplicial Complexes, BS Math., 2017.
2. Umar Qureshi, Polynomial Rings and Simplicial Complexes, BS Math, 2017.

3. Bisma Atiq, Rimsha Imran and Sania Masood, Computational aspects of Space Curves, BS Math., in progress.
4. Rimsha Amber, Rana Faysal and Shiza Sajjad, Computational aspects of SSC of Wheel Multigraphs, BS Math., in progress.

Major Courses Taught

1. Algebraic Topology MTH 621 Course Feedback Average: 4.8/5
2. Advanced Topology MTH 620 Course Feedback Average: 4.2/5
3. Advanced Modern Algebra with Applications MTH 634 Course Feedback Average: 4.2/5
4. Theory of Groups MTH 635 Course Feedback Average: 4.2/5
5. Introduction to Algebraic Geometry MTH 655 Course Feedback Average: 4.2/5
6. Differential Geometry MTH 352 Course Feedback Average: 4/5
7. Set Topology MTH 251 Course Feedback Average: 4.2/5
8. Abstract Algebra MTH 232 Course Feedback Average: 4/5
9. Complex Analysis MTH 324 Course Feedback Average: 4.5/5
10. Advanced Complex Analysis MTH 423 Course Feedback Average: 4.55/5
11. Linear Algebra MTH 231 Course Feedback Average: 4.5/5
12. Ordinary Differential Equations MTH 241 Course Feedback Average: 4.5/5
13. Differential Equations MTH 242 Course Feedback Average: 4.3/5
14. Calculus I MTH 101 Course Feedback Average: 4.5/5
15. Calculus II MTH 102 Course Feedback Average: 4.4/5
16. Calculus and Analytic Geometry MTH104 Course Feedback Average: 4.4/5
17. Multivariable Calculus MTH105 Course Feedback Average: 4.7/5
18. Calculus III MTH 203 Course Feedback Average: 4.5/5
19. Discrete Mathematics MTH 211 Course Feedback Average: 4.1/5

Education

Ph.D. Mathematics (September 2004 – May 2008)
Abdus Salam School of Mathematical Sciences, GC University, Lahore, Pakistan
Course Work
I have taken various courses in mathematics during my doctorate, but the courses directly related to my field and which I am interested in teaching include Linear Algebra, Abstract Algebra, Complex Variables, Algebraic Topology, Algebraic Geometry and Singularity Theory.
Research Work
My field of specialization is Singularity Theory and Algebraic Geometry. My research and doctoral thesis is on Polar Cremona Transformations, Monodromy and Milnor Algebras. Professor Alexandru Dimca was my Ph.D. supervisor.

M.Sc. Applied Mathematics (1999-2001)
University of Engineering and Technology, Lahore, Pakistan
Course Work
I have taken various courses in applied mathematics during my M.Sc. but the courses that I am interested in teaching include Ordinary and Partial Differential Equations, Methods of Mathematical Physics and Fluid Dynamics.
Research Project
Educational Research on Legendre Polynomials
B.Sc. Mathematics and Physics (1997-1999)
University of Punjab, Lahore, Pakistan

Presentations in Conferences and Workshops

1. 15th International Workshop on Real and Complex Singularities, Determinacy of Determinantal Varieties, Sao Carlos, Brazil, July 16-27, 2018.
2. 10th Mini Workshop in Singularities, Geometry and Differential Equations, Mixed Bruce Roberts Numbers, Fortaleza, Brazil, May 11-13, 2015.
3. Mini Colloquium, Mixed Bruce Roberts Numbers, Sao Carlos, Brazil, April 16-17, 2015.
4. Workshop on Teoria Algébrica de Singularidades, Invariants of Relative Right and Contact Equivalences, Niteroi, Brazil, February 1-3, 2012.
5. 13th International Pure Mathematics Conference, Classification of Weighted Homogeneous Polynomials, Islamabad, Pakistan, September 1-3, 2012.
6. 12th International Workshop on Real and Complex Singularities, Invariants of Topological Relative Right Equivalences, Sao Carlos, Brazil, July 16-27, 2012.
7. 8° Miniworkshop de Singularidades, Geometria e Equações Diferenciais, Polar Cremona Transformations and Milnor Algebras, Sao Carlos, Brazil, February 3-4, 2011.
8. Workshop on Teoria Algébrica de Singularidades, Polar Cremona Transformations and Monodromy of Polynomials, Niterói, Brazil, February 22-24, 2010.
9. Seminar Series of Singularity Theory, Polar Cremona Transformations and Milnor Algebras, Sao Carlos, Brazil, Fall 2009.
10. VII Encontro Regional de Topologia, Polar Cremona Transformations and Monodromy of Polynomials, Maresias, Brazil, October 19-22, 2009.
11. LUMS 2nd International Conference on Mathematics and its Applications in Information Technology, Polar Cremona Transformations and Monodromy of Polynomials, Lahore, Pakistan, March 10-12, 2008.
12. 3rd International Conference on 21st Century Mathematics, Polar Cremona Transformations and Milnor Algebras, Lahore, Pakistan, March 04-07, 2007.

Participation in Events

1. Workshop on Dynamical Systems, Salvador, Brazil, October 17-21, 2011.
2. Workshop on Conservative Dynamics and Symplectic Geometry, Rio de Janeiro, Brazil, August 1-5, 2011.
3. Homotopical Group Theory and Topological Algebraic Geometry, Bonn, Germany, June 23-27, 2008.
4. School on Discrete and Computational Geometry, Lahore, Pakistan, March 24-29, 2008.
5. CIMPA School on Configuration Spaces and Applications, Lahore, Pakistan, February 12-17, 2007.
6. Workshop on Computer Aided Geometric Design and its Applications, Lahore, Pakistan, February 26 - March 02, 2007.
7. All Pakistan Mathematical Conference, Islamabad, Pakistan, June 7-9, 2007.
8. CIMPA School on New Trends of Singularity Theory, Madrid, Spain, August 14-21, 2006.
9. Second World Conference on 21st Century Mathematics, Lahore, Pakistan, March 4-7, 2005.
10. LUMS International Conference on Mathematics and its Applications in Information Technology, Lahore, Pakistan, November 28-30, 2005.
11. World conference on 21st Century Mathematics, Lahore, Pakistan, March 18-20, 2004.
12. International Conference on Models and Methods in Fluid Mechanics, Abbotttabad, Pakistan, June 23-27, 2003.
13. Professional Development Workshop on Communication Skills, Lahore, Pakistan, December 4-20, 2006.
14. Faculty Development Workshop, Lahore, Pakistan, August 25-27, 2003.