Dr. Faqir M Bhatti

(Recipient of Lifetime Achievement Award)

Professor of Mathematics
Funding Director (2016-2023)
Riphah Institute of Computing and Applied Sciences(RICAS)
Riphah International University
Gulberg, Lahore.
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Academic Qualifications

Degree	Institute	*Year*
PhD (Applied Mathematics)	Univ. of London, UK	1986
M.Sc. (Applied Math) *(First Class Stood First)*	Pakistan	1975
B.Sc. (Mathematics) (First Division)	Pakistan	1973

Scholarships and Awards

Prestigious **Central Overseas Scholarship** holder, awarded for doctorate studies at the University of London, England.

1973-75   Merit Scholarship holder awarded for postgraduate studies.
1970-73   Merit Scholarship holder for undergraduate studies.
1964-69   Merit Scholarship holder Directorate of Education,

Country of Birth: Pakistan

Position	Dates	Institute

- **Prof of Mathematics &Founding Director**, Since Jan 2016- 23   Riphah Institute of Computing and Applied Sciences (RICAS) Lahore.
- **Scientific Director** October 2011-Jan 2015 Centre for Advanced Studies in Mathematics (CASM), LUMS,
-     Lahore, Pakistan.
- **Associate Professor** Jan 03-Dec 2015 Lahore Univ. of Management Science, Lahore (LUMS). Pakistan
- **Senior Lecturer** 11.01.02-11-01.03   Multimedia University, Melaka, Malaysia
- (Mathematics and Information Technology)
- **Senior Lecturer** 25.12.91- 31.12.99   University of Brunei Darussalam, (Mathematics)   Brunei Darussalam
- **National Director for AMC 1995-1999 University Brunei Darussalam and Ministry of Edu. Brunei**

- **In-charge Head (Computer. Science)** 9.7.87 to 23.12.91Shah Abdul Latif University, Khairpur. Khairpur

- **Associate Prof**. 5.3.88 to 23.12.91   Shah Abdul Latif University, Khairpur.
  (Mathematics)

- **Assistant Prof.** 27.11.86 to 4.3.88   Shah Abdul Latif University, Khairpur.
  (Mathematics)
- **Lecturer**   10.01.77 to 26.11.86   Shah Abdul Latif University, Khairpur. (Mathematics)

- **Lecturer**   28.4.76 to 7.01.77   Univ. of Baluchistan, Quetta, Pakistan.
  (Mathematics)

Short Term Visiting Fellowships Overseas.

UK

$$\left. \begin{array}{l} Dec.93 - Ja.94 \\ June - July\ 96 \\ July - August\ 98 \\ July - August\ 2004 \\ July \_ August\ 2007 \\ August,\ 2008 \\ July\ 2010 \end{array} \right\} Queen\ Mary((QMUL)\ \&\ Royal\ Holloway\ University\ of\ London,(RHUL)\ UK$$

Japan
May 9- June 9, 2000   Visiting Associate Professor, Chuo University, and Tokyo, Japan.
                  (Also visited Kobe Univ., Nara Woman Univ., Univ. of Osaka)
Thailand
June-July 2004   Visiting Professor Chiang Mai University, Thailand (Also visited   King Mangat Institute of Technology North Bangkok and Kasetsart University, Bangkok)
August 2010   Visiting Prof. Chiang Mai University with Prof. Jin Ho
Kwak (Korea)
Korea
1-31 August 2006   Visiting Professor, Com^2Mac, Pohang University of Science
                 &Technology, Pohang Korea.
Aug 15-Sep 2007   Visiting Professor, Com^2Mac, Pohang University of Science
                 And Technology, Pohang, Korea.
Aug-Sep 2008,   Visiting Professor COM^2Mac POSTECH, Pohang
July –August 2011   Visiting Professor Mathematical Modeling BK 21 HRD
                  Division, Sungkyunkwan Univ., South Korea

Czech Republic
July -August2008 Doppler Institute, Czech Technical University, Prague. Czech Republic.

B.Sc. Senior Project (9) , PhD Supervision(1), and RA supervision in Brunei, LUMS and Riphah.

1993   . Miss Sarina Yahya.: Comparison Study of Some Computational Methods for Ordinary Differential Equations

1994   Miss Sarinah Tampoi: Numerical Methods for Percolation Models
1995   Mr. Radzman Ibrahim. : Some Properties of Directed Percolation Processes

1995   Miss Haslina Abdul Ghafar: Comparison Study of Some Computational Methods for Partial Differential Equations).

1996   Mr. Mohammad Salleh Tuah: Computational Methods for Unconstrained Optimization
1997   Mr. Khoo Seng Leong: Comparison of Principal Methods of Power Series Analysis
1998   Miss Loo Memeriahneh: Some Computational Methods for Constrained Optimization.
1998   Miss Norhayati bte Hj Yahya: Some Applications of Graphs
1999 Miss Fatimah Binte Hj: Muhamad Yousuf: Some Applications of Digraphs Cyclic and Acyclic
BS Mathematics Projects, LUMS, Lahore
   (a)   Rameez Raghib (BS Senior Project)[Spring 2013]
   (b)   Hassan Ashfaq Baloch (BS senior Project Spring 2014]
   (c)   Syed Talal Ahmed BSc (2012) Senior Project

   (i)   **Khawaja M Fahad PhD (Applied Graph Theory,), LUMS 2018**
   (ii)   **Five PhD students registered with me for PhD at Riphah International Univ.**

             Riphah International University
             MPhil Student Supervision

1	Usman Iftikhar	(2015)	Distributed algorithms for self-assembly robot using graph spectra.
2	Nida Munawar	(2015)	Some properties of Hosoya index and polynomial for few families of acyclic and unicyclic graphs.
3	Iqra Zaman	(2018)	Some structural and spectral properties of Youngs Fibonacci family of graphs.
4	Sadia Aslam	(2018)	Hosoya index for some families of graphs.
5	Hafiz Muhammad Fraz	(2018)	Some methods for construction of Co-spectral graphs.
6	Zia ul Haque	(2019)	Some properties of percolation theory.
7	Tabasum Naz	(2019)	Topological indices of Generalization of Young- Fibonacci Graphs.
8	Aniqa Amin	(2019)	Generalization of He-matrix for inner dual graphs of hexagonal system and its spectral properties.
9	Mansoora Ishaq	(2020)	Rainbow Connection for Product of Graphs
10	Maryam Jamshaid	(2020)	Construction of Integral Graphs
11	Ghulam Ghous	(2020)	Combinatorial Techniques of Young Tableaux
12	Nida mary	(2020)	Relationship between different Combinatorial identities with applications
13	Hafiz Muhammad Humza	(2020)	Computational Graph Spectra Methods For Water Distribution Network
14	Sawaira Sikander	(2020)	Computation of Topological indices for inner dual graphs of Honeycomb graph

15	Memoona Gul Afsheen	(2020)	Bounds for the Skew Energy of Diagraphs constructed with integer Partitions
16	Ali Akber	(2020)	Special radius of Some family of Direct Graphs
17	Adeel Ahmed	(2020)	Properties of Spectral Radius of some family of Graphs
18	Muhammad Zeeshan	(2020)	Generalization of Shortest path on inner Dualist graphs of Honeycomb Lattice
19	Adeela Nazeer	(2020)	A few Application of Graphs and their line graphs
20	Seerat Zulfiqar	(2020)	Bounds for Laplacian Energy of families of Graphs Constructed with Integer Partitions

Research Assistant

(d)   RA Miss Fariha Khalid (completed two papers and one published 2011)
(e)   RA Mr. Syed Ali Ahmed (completed three papers, two published)
(f)   RA Mr..Khizer Rashid(worked on problems for book on Combinatorics for Enumerative Mathematics)
(g)   RA Muhammad Usman Haider worked in CASM.
(h)   Iqra Zaman, RICAS.
(i)   Aniqa Aslam, RICAS
(j)   Tabassum Naz.

Fund Raised and projects Funded since 2005

(i)   **Funding** for Conference (LICM05) through PITBRs.1.4988 Million
(ii)   **Funding** for Conference (LICM08) through PITB+HECRs.2.42million
(iii)   **Funding Agency: 1470 Pounds London Mathematical Society (2010)** ProjectPartially ordered sets for Bose and Fermi Walks on planar graphs (collaborators   Prof. D K Arrowsmith and J W Essam Univ of London)

(Iv)   **Funding Agency: USD 2500** BK 21 Math Modeling, SKKU, Korea (2009)Project: Fibonacci Sequences and the Winning Conditions of the Blackout games (collaborators Prof. S G Lee and D S Kim, South Korea)Outcome: One research paper published.

(v)   **Funding Agency: 1440 Pounds London Mathematical Society(2008- 2009)**Project: Fermi and Bose Walk Configurat on the Square Lattice(collaborators Prof. D k Arrowsmith and J W   Essam, Univ of London, UK).Outcome Two Rese papers(one paper published in J.Phys.A: Math &Theor(2010)

(vi)   **HEC Awarded a Project for two years (2013-2015) on** "Spectral Graph Theory Methods for Self Assembly of Hexagonal Systems" **Rs. 1.46 million**

(vii)   **Received Rs, 423,300** from HEC to organize Workshop on 'Recent Advances in Commutative Algebra and Algebraic Geometry (March 2014).

(viii)   **HEC** awarded Rs. 562500 to organized National workshop on Applied Nonlinear Analysis in December 2014.

(ix)   **International Congress of Mathematics** (South Korea) Awarded **SD 1600** to attend ICM2014.

(x)   **Fund raised** Rs. 85000 from various Workshops Registration (June 2013-March 2014)

(xi)   Ministry of Education awarded **Airfare+ Rs. 0.4 million** to CASM for the visit of Two Pakistani Mathematicians under 'President's Program for Care of Highly Qualified Pakistani(PPQP) (2014)

Academic Linkage Established with LUMS and CASM

1. Established Academic linkage between LUMS and Universiti Sains Malaysia (USM), Penang, Malaysia (initially for five years 2007-2012)
2. 2009-2014 Between SSE and Sungkyunkwan University, South Korea
3. 2011-2015 Federation Agreement between CASM and ICTP
4. 2011-2014 CASM and TWAS-UNESCO, Italy
5. Chiang Mai University, Chiang Mai, Thailand.

Institutional Contributions(until 2012)

Conducted Open houses for B.Sc/PhD and M.BA (2003-2012)and gave presentations. University of Karachi

- **(a)** Agha Khan University
- **(b)** Marriot Hotel Karachi
- **(d)** Army Public School, Sukkur
- **(e)** University of Sindh
- **(f)** Shah Abdul Latif Univ. Khairpur Mirs9Sindh)
- **(g)** IBA City Campus, Karachi
- **(h)** Isalmia University, Bahawalpur
- **(i)** Bahud-Din Zakriya Univ. Multan
- **(j)** Quid-i-Azam University, Islamabad
- **(k)** Islamia College, Gujranwala
- **(l)** Kinnaird College, Lahore
- **(m)** Lahore College for Women University
- **(n)** Queen Mary College Lahore
- **(o)** SSE, LUMS
- **(p)** Supervised written tests for Trade Officers, Ministry of Commerce, Pakistan in Quetta and Islamabad

Future Directions in Teaching and Research (2013 and onwards)

(i)   **Teaching**

- **(a)** Spectral Graph Theory with applications (Postgraduate Course)
- **(b)** Technique in Optimization
- **(c)** Visualization of Linear Algebra and Calculus I and II
- **(d)** Continue to teach LA and Differential. Equations, Cal. I and II
- **(e)** Advanced Graph Theory (Postgraduate Course)
- **(f)** Enumerative Combinatorics (Graduate and Postgraduate course)
- **(g)** Introduction to Diff. Equations
- **(h)** Data Science

(ii)   **Research**

(a)   **Future collaboration with**

- Prof. D K Arrowsmith, Queen Mary University of London, UK
- Prof. John W Essam University of London, UK
- Prof. Sang-Gu Lee, Sungkyunkwan University, South Korea
- Dr. Kinker C Das, Sungkyunkwan University, South Korea
- Prof. Jin Ho Kwak, POSTECH/ China South Korea
  Completing the HEC funded project on Spectral Graph Theory Methods for Self-Assembly of Hexagonal Systems' with Dr. Abubakr Muhammad (EE, SSE) (2013-2015)

(iii)   **Organized 13Workshops since 2011-onwrads at LUMS.**

1) CASM Conference on 'Qualitative & Quantitative Techniques for Differential Equations & Applications', (June 4-6, 2015)
2) National Workshop on Applied Nonlinear Analysis (December 12-13, 2014)
3) Workshop on Recent Advances in Commutative Algebra with Algebraic Geometry (March 28-29, 2014).
4) Workshop on Black- Scholes and Beyond: Pricing Equity Derivatives (May 16-18, 2014).
5) Workshop on Recent Advances in Commutative Algebra with Algebraic Geometry (March 28-29, 2014)
6) National Workshop on Recent Advances in Graph Theory and Combinatorics (November 22-24, 2013)
7) CASM – PIEAS Workshop on Computational Fluid Dynamics and Scientific Computing (November 8-9, 2013)
8) National Workshop on Mathematical Aspects of Quantum Information Science (22-23 May, 2013) in collaboration with Physics Dept of SBA SSE.
9) Workshop on Algebraic and Topological Aspects of Arrangements and Applications (November 9-10, 2012)
10) Technical Workshop on System Validation (April 10, 2012) with IEEE Collaboration.
11) Spring Workshop on Recent Advances in Graph Theory and Combinatorics (February 17-19, 2012)
12) National Workshop on Mathematical Modeling and Information Technology for Health (December 30 – 31, 2011)
13) Conference on Recent Advances in Mathematical Methods, Models & Applications (April 16-17, 2011)

Workshops and seminars will be arranged throughout the years and more MoUs will be signed with International Repute Centers in Mathematics and allied Science.

Supervised the following activities:

(i) Supervised LUMS Mathematics Challenge in April 2015
(ii) Arranged SUDUKO Competition in LUMS for undergraduate students
(iii) Arranged Math Mania in LUMS for undergraduate students four times for many Years.
 iv)Mathematics teams won the first prize in All Pakistan GIKI Mathematics
Olympiad in October 2011

Graduate Entry Tests and LCAT

Formulated mathematics questions for LCAT three timesand for SSE entry tests for PhD program in Mathematics

TEACHING *at* LUMS, Lahore. Pakistan

(a). Undergraduate and Post-graduate Mathematics Courses
I have introduced the following subjects after joining LUMS in 2003

1. Math 355 Combinatorics
2. Math 451 Graph Theory
3. Math 222 Linear Algebra II
4. Math 552 Advanced Graph Theory (PhD Level)
5. Math 541 Advanced Numerical Analysis (PhD level)
6. Math 692b Young Tableaux (PhD Level).

Also taught the following courses at LUMS
8. Math 101 Calc-I
9. Math 102 Calc-II
10 Math 103 Calc-III
12. Math 120 Linear Algebra and Differential Equations
13Math 343 Optimization Techniques
14Math 112 Ordinary Differential Equations
15Math 343 Numerical Analysis
16. Math 311 Numerical Solutions of ODEs

Major Fields of Research
(i) *Graph Theory and Spectral Graph Theory*
(ii) *Percolation Theory (Directed & Undirected)*

(iii) *Enumerative Combinatorics and Young Tableau*
(iv) *Discrete Optimization*
(v) *Scientific Computing and Visualization of Mathematics*

Scientific Publications since 1984
Chapter in Book and Editor of Proceedings/ Journal(s)
   (a) Citations: 233(b) Impact factor:30

<u>Research Papers published in International refereed Journals and Book</u>

Chapters

54   **Bhatti FM** and Essam JW, Applications of Graphs in Chemistry and Physics:
       Discrete Applied Mathematics (1988)
       (Edited by Kennedy JW and Quintas, USA)', 85-112(**North-Holland).**

53   Wei-Chi Yang, Sung Chi Chu, Tilak De Alwis **F M Bhatti** 'Proceedings of 7th
       Asian Technology Conference in Mathematics, December 2002, Malaysia.

52   A D R Choudhary and **F M Bhatti (editor)** 'Proceedings of World Conference on
       21st Century Mathematics 2004, September 2004, Pakistan.

51   **Editor-in-chief** Journal of Prime Research in Mathematics' (2005-2015)

50   Gullaya Dhompongsa, **F M Bhatti** and Quentin C. Kitson "Proceedings
       for International Conf. on 21st Century Information Technology in Mathematics
       Education 2006, Thailand

49   H Baskoroputro,F.M. Bhatti,M Humza, anA Y. Zakiyyah4 "The implementation of
       Hosoya index and Hosoya polynomial into some graphs related to cycles Journal of
       Prime Research in Mathematics (2024) accepted and under print.

48.   C Aryuni, Mediana; Miranda, Eka; Kumbangsila, Meyske; Richard; Zakiyyah, Alfi
       Yusrotisc; Sano, Albert Verasius Dian; Bhatti, Faqir M. Comparison of Nutritional
       Status Prediction Models of Children Under 5 Years of Age Using Supervised
       Machine Learning Lecture Notes in Electrical Engineering, Volume 1008, Pages
       265 – 277, 2023

47   **Miranda, Eka; Adiarto, Suko; Bhatti, Faqir M; Zakiyyah, Alfi Yusrotis; Aryuni,
       Mediana; Bernando, Charles "Understanding Arteriosclerotic Heart Disease
       Patients Using Electronic Health Records: A Machine Learning and Shapley
       Additive exPlanations Approach Healthcare Informatics Research, Volume 29,
       Issue 3, Pages 228 – 238, 2023 Doi: 10.4258/hir.2023.29.3.228**

46   Faqir M. Bhatti, Hasan Baloch, Mehar Ali Malik, Rameez Ragheb
       Realizable   degree sequences of inner dual graphs of benzenoid systems JPRM-Vol.
       18 (2022), Issue 2, pp. 125 – 143

8

45   Iqra Zaman and F M BhattiOn the Structural Properties and Some Topological Indices of Young-Fibonacci Graphs Punjab University Journal of Mathematics (2022),54(12),723-737 https://doi.org/10.52280/pujm.2022.5412035

44   F M Bhatti, M. Malook, ,J. Ahmed, Iqra Zaman and M. Usman 2022'
On Some Structural Properties of Integer-Based Graphs and Their Topological Indices', Journal of Mathematics', Volume 2022, Article ID 5481940, 1-6 pages https://doi.org/10.1155/2022/5481940

43   Eka Miranda, F M Bhatti, Mediana Aryuni and Charles Bernando "**Intelligent Computational Model for Early Heart Disease Prediction using Logistic Regression and Stochastic Gradient Descent (A Preliminary Study)",** 1st International Conference on Computer Science and Artificial Intelligence (IEEE) Page 1-6 (ICCSAI)(,Doi:10.1109/ICCSAI53272.2021.9609724)

42   F M Bhatti, Iqra Zaman and Tabasum Naz (2021)"Computation of Topological Indices for Inner Dual Graph of Honeycomb and Graphene Network", Journal of Prime Research in Mathematics Volume 17, 2, 138-148

41   F M Bhatti, Iqra Zaman and Tabasum Naz 'Integer Partitions using Generating Functions and their Application in Graph Theory', Proceedings of ATCM2021 Page

40   K. M Fahd and F M Bhatti (2020) Minimum Spanning Tree of the Inner Dualist of Honeycomb Graph', ARS Combinatoria, 151 ,63-75**(IF:0.258**)

39.   **Bhatti F M** and Eka Mirinda (2020) Model of e-Teaching and e-evaluation Methodology for Mathematics during COVID-19 Pandemic in Indonesia and Pakistan, Scopus Proceedings of ATCM2020 Page 227-235

38.   Bhatti F M, Iqra Zaman and Tabasum Naz (2020) Teaching of the Graph Construction Techniques Using integer partitions, Scopus Index proceedings of ATCM2020 page No: 268 - 276

37.   K. M Fahd and F M Bhatti (2018) 'Learning and Teaching of Group Theory through visualization using Graphs', Proceedings of the 23rd Asian Technology Conference on Mathematics (Yogyakarta) 166-175.

36.   **Bhatti FM** K Ch Das and S A Ahmed (2013)' On the Energy and Spectral Properties of the He matrix of the Hexagonal Systems', Czechoslovak Mathematical Journal, 63, (135) 47-63**[IF 0.483]**

35.   D K Arrowsmith, **F M Bhatti** and J W Essam (2012) 'Generating functions and duality for non-crossing walks on a plane graph, J. Phys. A: Math & Theor 84008(19pages**) [IF-2.11]**

34.   D K Arrowsmith, **F M Bhatti** and J W Essam (2012) *Bose and Fermi Walk Configurations on Planar Graphs,* J.Phys.A: Math & Theor. 25003**[IF 2.11]**

33. **F M Bhatti "**Effective Use of Sage-Math In Visualization of Linear Algebra", Proceedings of the 12th International Congress of Mathematics Education, June 2012, COEX, Seoul, Republic of Korea(ICME2012) page 7072-7079 (With Sang-Gu LEE, Hye-In Jeong and Hee-Dong Yoon, South Korea)

32. **F M Bhatti** and Fariha Khalid "Improving Mathematics Education in Developing Countries", Proceedings of the 4th International Conf. on Science and Math Education in Developing Countries, (2011),58-70 Zaman University, Cambodia.

31. KC Das**, FM Bhatti**, SG Lee, I Gutman "Spectral Properties of the He Matrix of Hexagonal Systems, MATCH Communications in Mathematical and in Computer Chemistry (V. 65 (2011) Volume 3, 353-374**[IF 1.849]**

30. **Bhatti FM** and S. Ali Ahmed, Spectral Properties of Honeycomb using He Matrix: Brief Survey. Proceedings of the International Workshop on Pure and Applied Mathematics, IW2010, (2010) 96-113

29. DK Arrowsmith, **Bhatti FM and** JW Essam 'Maximal Fermi walk Configurations on the Square Lattice and Young Tableaux, J. Phys. A: Math & Theory.**43.(2010)** 145206**[IF 2.11]**

28. Duk-Sun Kim, Sang-Gu Lee, and FM Bhatti, *Fibonacci Sequences and the Winning Conditions of the Blackout Game*, International J. Contemporary. Mathematics and Sciences, Vol. 5 (**2010**) No.30 ,1471-1485

27. **F M Bhatti** and J W Essam (2006) J. Physics **42** Generating Function Rationality for Anisotropic Vicious Walk Configurations on the Directed Square Lattice.25-3 **Australia(IF : 0.601)**

26. **Bhatti FM** Proceedings of Combinatorics Workshop 2006 'Fermi Walk and Bose Walk Configurations on Acyclic Two Rooted Directed Square Lattice', 161-171 South **Korea**

25. **Bhatti F M** and Toor S K Proceedings of Thailand International Conf. on 21st Century IT in Mathematics Edu. (2006) 'The e-learning Methodology in Teaching and Assessment of University Level Mathematics in 21st Century', II',127-142 Thailand**.**

24. N A Abu, **Bhatti F M** and N.M Yousuf Proceedings of Thailand International Conf. on 21st Century IT in Mathematics Edu. (2006) 'Multimedia Learning System on Mathematics II',51-65 Thailand**.**

23. **FM Bhatti** and JW Essam (2006) J. Physics**42** Generating Function Rationality for Anisotropic Vicious Walk Configurations on the Directed Square Lattice.25-34 **Australia**

22. **FM Bhatti** and JW Essam (2005) 'Journal of Prime Research in Mathematics', V-1, N0.1' Fermi, Bose and Vicious Walk Configurations on the Directed Path', 156-177(Pakistan).

21. S. Tariq and **Bhatti FM** (2004) 'Computational Technique for Solving Nonlinear Schrödinger Equation Arising for Modulation Instability in Fiber Optics' Proceedings of the World Conference on 21st Mathematics 2004, Lahore.234-243

20. Nurhayati Yusoff and **Bhatti F M** (2002) 'Survey on the Application of Large Graph Based Techniques in Visualization of Data Mining', Presiding Persidangan Mathematik Teknologi Asia, Malaysia, 111-122

19. Nur Azman Abu and **Bhatti F M (2002) '**The strength of Graphical Elements in Pre-Calculus', Proceedings of ATCM2002, 235-243(**USA)**

18. **Bhatti F M** (2002)'Simple Technique for Computing the Resistance of Coverable Two -Rooted Graph', Proceedings of ATCM2002, 505-512(**USA)**

17. Nur Azman Abu and **Bhatti F M** (2002)'Pre-Calculus in Additional Mathematics', Realities in Science Mathematics and Technical Education', 300-309 (**Brunei Darussalam)**

16. **Bhatti FM** and Azman N A(2002)' Some Properties of Weight factors arising in Low-Density Expansion for Percolation Models', Journal of the Physical Society of Japan. Vol.71 No.1, Page No. 43-48(**Japan)[IF 1.579]**

15. **Bhatti F M,** Azman NA and Zuraifah Mohd Adnan (2001)"The Use of ICT as an Aid to Enrich Teaching and Learning Process of Mathematics at Secondary School level', Proceeding of ICPSME(2001), 98-108 Malaysia.

14. Norio Inui, M. Katori and **Faqir M Bhatti** (2001) Journal of Physical Society of Japan, Volume No. 70, No.2, February, 2001"Low-Density Series Expansions for the Domany-Kinzel Model., Page No. 359-366(**Japan)[IF 1.579]**

13. **Faqir M Bhatti** (2000) Journal of the Physical Society of Japan, Vol 69, No.10, October' Estimates of Resistance and Conductive Exponents in Two   and Three dimensions Using Extended Perimeter Method', Page No. 3223-3227(**Japan)[IF 1.579]**

12. **Bhatti FM**, Khan MZ and Jalbani Sindh.Univ Res. Journal (Sc. Series) (1998) 'On Theorems for Estimating Eigenvalues of Some Class of Operators in Banach Spaces', Volume 30(2)33-37**. (Pakistan)**

11. Tandon PN and **Bhatti FM**, Asean Journal on Science & Technology Development **15(2)** (1998)' A Simple Mathematical Model for the Oxygen Diffusion in an Artificial Heart-Lung Device', 13-26 (**Philippines).**

10. **Bhatti FM**, Brak R, Essam J W, and Lookman T, J. Phys. A: Math. & Gen **30**(1997)' Series Expansion Analysis of the Backbone Properties of Two Dimensional Percolation Clusters', 6215-6232 (**UK)[IF 1.996]**

9. **Bhatti FM**, Algebraic Combinatorics and Related Topics (1994)'Embedding Algorithm for Two-rooted Acyclic Directed Graphs', 12-20 (**Philippines).**

8. **Bhatti FM** and Khan MZ Mehran Univ. Res. Journal (1990) 'On theorem for Some Classes of Operators in Lorentz Space', 35-40 (**Pakistan**).

7. **Bhatti FM** and Essam JW, Discrete Applied Mathematics (Special Edition) , 1**9** (1988) 'Low Density Series expansion for Backbone properties of Percolation Clusters', 85-112 (**Holland).[IF .983]**

6. **Bhatti FM,** Proc. of the 9th All Pakistan Mathematical Conference Hyderabad', (1987) 'Disjoint Parallel Paths on the Directed Square lattice', **71-76 (Pakistan).**

5. Essam JW, K. De' Bell, Adler J, and **Bhatti FM**, Phys. Rev. **B-33** (1986) 'Analysis of extended series of Bond Percolation on the Directed Square lattice', 1982-1986 (**USA**)**[IF 3.575]**

4. **Bhatti FM** and Essam JW, J. Phys. A: Math. & Gen. **19** (1986) 'Series expansions study of the distribution of currents in the elements of a random diode-insulator Networks', L519-L525 (**UK**)**[IF 1.996].**

3. Essam JW and Bhatti FM, J. Phys. A: Math. & Gen. 18 (1985) 'Series Expansions evidence supporting the Alexander-Orbach conjecture in two dimensions', 3577-3584 (**UK**)**[IF 1.996]**

2. **Bhatti FM** and Essam JW, J. Phys. A: Math. & Gen. **17** (1984) 'The Resistive Susceptibility of random diode-insulator Networks', L67-L73 (**UK**)**[IF 1.996]**

1. **Bhatti FM**, J. Phys. A: Math. & Gen. **17** (1984) 'The resistive susceptibility of three dimensional diode-insulator Network', 1771-1773 (**UK**)**[IF 1.996]**

Papers submitted /to be published in 2024

1. **F M Bhatti**, Fariha Khalid, Hasan Baloch Rameez Ragheb, 'On Graphical Realization of Degree Sequence and Generating Functions of Inner Dual Graphs of Hexagonal Systems with Maximum Degree, submitted to Electronic Journal of Graph Theory and Applications (2016)

2. K M Fahd and **F M Bhatti**(2016)'Unreliable Postman Problem', to be Submitted

3. **F M Bhatti,** S A Ahmed and Sang-Gu Lee(2016) 'Spectral Properties of He-matrix and He Laplacian for some class of Hexagonal Systems' to be submitted

41 **F M Bhatti**, Shahen Nazir and Ahmed Umar Ashraf(2016) 'Angular Energy of Inner Dual of Honeycomb Graph', to be submitted in 2016

RESEARCH/DISSERTATION SUPERVISION (in University of Brunei Darussalam, Brunei).

1993 Comparison Study of Some Computational Methods for Ordinary Differential Equations. (Miss Sarina Yahya).

1994 Numerical Methods for Percolation Models (Miss Sarinah Tampoi).

1995 Some Properties of Directed Percolation Processes (Mr.Radzman Ibrahim).

1995 Comparison Study of Some Computational Methods for Partial Differential Equations (Miss Haslina Abdul Ghafar).

1996 Computational Methods for Unconstrained Optimization (Mr. Mohammad Salleh Tuah).

1997   Comparison of Principal Methods of Power Series Analysis (Mr. Khoo Seng Leong.

1998   Some Computational Methods for Constrained Optimization (Miss Loo Memeriahneh.

1998   Some Applications of Graphs (Miss Norhayati bte Hj Yahya).

1999   Some Applications of Digraphs Cyclic and Acyclic (Miss Fatimah binte Hj. Muhamad Yousuf).

1999   Extrapolation Methods (Miss Faeizah bte Hj. Yakop),

External Examiner and Professional Activities

- External Examination for PhD, NUST Islamabad.
- Examiner for PhD, Univ of the Punjab, Lahore.
- External Examiner in Mathematics MPhil, Univ. of Eng. & Tech., Lahore.
- External Examiner for MPhil and PhD, Univ. of the Punjab, Lahore.
- External Examiner for MSc, GC University, Lahore
- External Examiner for PhD, FAST, Lahore
- External Examiner for MPhil, University of Karachi.
- External Examiner for PhD and subject expert, Abdus Salam School of Mathematical Science, Lahore
- Subject Expert Mathematics (Selection Board), Lahore College for Women University, Lahore
- Subject Expert in Mathematics, Selection Board, University of the Punjab, Lahore.
- Subject Specialist member of the selection committee of Mehran University of Engineering and Technology, Pakistan,
- External Examiner in Mathematics and Computer Science, Mehran University of Engineering and Technology, Pakistan.
- External Examiner in MPhil and PhD Mathematics at the University of Baluchistan,

- External Examiner in Mathematics at the University of Sindh.
- Convener of the Computer Inspection Team appointed by the Sindh Board of Technical Education, Sindh, Pakistan
- External Examiner for MS Sukkur IBA, Sukkur.

ADMINISTRATION

Riphah International University Lahore(Since 2016)

Director, Riphah Institute of Computing and Applied Sciences
Head Mathematics, Computer Science, and Physics
Chair BoS in Mathematics, CS and Physics
Member, Board of Faculty, Board of Advanced Studies and Research(BASR), Academic Council
Member, Counseling Committee, and Shahbaz Sharif Punjab Provincial Scholarships

Lahore University of Management Sciences (2002-2015) (LUMS) Pakistan

- **Coordinator** LUMS Colloquium (Mathematics), LUMS (**2003-2015)**
- **Member -**---Scientific Committee, International Conference on Recent Advances in Pure and Applied Mathematics, , Turkey 2014, 2015, 2016, 2017.
- **Member** Convocation Committee, LUMS (2014-2015)
- **Convener** SSE-ICTP(Italy) Committee (2014-2015).
- **Member**, Organizing Committee for International Workshop on Discrete Structures, March 2014, NUST, Islamabad.
- **Convener** LUMS Faculty Housing Committee (209- May20011, 2012-13
- **Member**, Plagiarism Standing Committee, GCU, Lahore (2013)
- **Member** National Organizing Committee, World Conference on 21st Century Mathematics, Lahore, Pakistan March 2013.
- **Member** Student Disciplinary Appeals Committee (2012-)
- **Member,** Physical Planning and Space Allocation Committee (2011-12)
- **Member** LUMS Salary and Equity Committee (2009-10)
- **Member** LUMS Graduate Council (2010)
- **Convener,** LUMS 2nd International Conference on Mathematics and its Application in Information Technology (9-12 March 2008)
- **Chairman International** Program Committee of 2nd International Conference on 21stCentury Information Technology in Mathematics Education (6-8 May 2008),Bangkok, Thailand
- **Chairman** National Organizing Committee, 3rd International Conference on 21st Century Mathematics, Lahore, Pakistan 4-7 March 2007
- **Co-Chair**, International Program Committee, 3rd International Conference on 21st Century Mathematics, Lahore, Pakistan 4-7 March 2007
- **Chairman IPC** for Thailand International Conference on 21st Century Information Technology in Mathematics Education, Chiang Mai, Thailand
- 17-20 September 2006
- **Chair** Organizing Committee for the 2nd World Conference on 21st Century Mathematics 2005, March 2005, Lahore (wc2005.sms.edu.pk)
- **Co-chair** International Program Committee for 2nd World Conference on 21st Century Mathematics 2005, March 2005, Lahore.
- **Convener** LUMS International Conference on Mathematics and its Applications in Information Technology Nov 2005 (web.lums.edu.pk/~licm05)
- **Co-Chair IPC f**or International Conference on 21st Century Graph Theory July 2005 Chiang Mai, Thailand

- **Co-Chair** International Program Committee (IPC), World Conference on 21st
- Century Mathematics 2004, Lahore (18-20 March 2004)
- **Secretary** Organizing Committee for the World Conference on 21st Century Mathematics 2004, March 2004, Lahore
- **Member** Board of Governors, National Centre for Mathematics, GC University, Lahore.
- **Coordinato**r BSc Program in Mathematics, LUMS since August 2004

Multimedia University Melaka (Malaysia)(2000-2003)

- **Chairman** of the local organizing committee for the 7th Asian Technology Conference in Mathematics (ATCM2002) to be held in December 2002.

- **Member** of the International Program Committee of ATCM2001(Melbourne, Australia) and referee for the Proceedings.

- ➢ **Member** of the International Program Committee (IPC) of ATCM2001(Melaka, Malaysia and referee for the Proceedings.

- ➢ **Member** of the TECHNICAL COMMITTEE for the 'International Conference on Science and Mathematics Education for Primary and Secondary Schools **2001**', organized by the "Academy of Science Malaysia", and Ministry of Education Malaysia, (held from 21-24 October, 2001 at SunWay Lagoon, KL).

- ➢ **Member** of the International Program Committee of ATCM2000 (Chiang Mai, Thailand) and referee for the Proceedings of ATCM2000.

- ➢ **Member**, Faculty Research and Consultancy Committee

- ➢ **Member**, Credit Transfer Committee

- ➢ **Team Leader of Task Force for Lan**(Mathematical Science courses)

- ➢ **Chairman,** Labs Committee for Open Day, 2001

- ➢ **Chairman** of the Organizing Committee for 7th the Asian Technology Conference in Mathematics (7th ATCM2002), Melaka, Malaysia (17-21 December 2002).

- ➢ **Member of Senate** Multimedia University, Malaysia until January 2003.

Universiti Brunei Darussalam, Brunei Darussalam (1992-1999)
- ➢ **National Director** of the Australian Mathematics Competition for Brunei Darussalam (1995-9) under Australian Mathematics Trust (AMT) Canberra, Australia.
- ➢ **Member**, Board of the Faculty of Science (1991-9)
- ➢ **Chairman/ Consultant,** Australian Mathematics Competition National Coordinating Committee, Ministry of Education, Brunei (1995-9)
- ➢ **Seminar Coordinator** (January 1992-July 1997)
- ➢ **Chairman**, Local Committee for travel, accommodation, and hospitality: International Conference on Mathematical Modeling (ICMM 1995)
- ➢ **Member,** Organizing Committee and Programming Committee (ICMM 1995) Member, Restructuring Committee for B.Sc. (Hon.) Mathematics and Computer Science (1996-1997)
- ➢ **Member,** Faculty of Science Research Bulletin Committee (1996-1997).
- ➢ **Coordinator**, Undergraduate Examinations (1997-9)
- ➢ **Library Coordinator** for Mathematics books (July1997-July 1998)

University of London, UK

Assistant Warden of Philppot Hall, Westfield College, University of London, UK.
(October 1983 to March 1986.)

Abdul Latif University, Pakistan

My administrative experience at Shah Abdul Latif University has been quite   significant. I established the Computer Science department and was appointed the first Founding Chair of the department (1987-1991). I was responsible for recruiting staff and installation of IBM RISC

System 6000 and generally to provide computer services to all other departments in the university. I served as a member of the following academic committees:

- Member Academic Council
- Member AdvancedStudies and Research Board
- Member Board of Studies in Mathematics
- Member Board of Studies in Computer Science

Referee for International Journal and Proceeding of Conferences

- **Editor-in-Chief** Journal of Prime Research in Mathematics since 2005-2015
- **Invited referee** for the 'ASEAN Journal on Science &Technology for Development'.
- **Referee** Proceedings of the International Conference on Education and Information System Technologies and Applications, Orlando, USA (July 2004).
- **Member** of the **Editorial Board** (reviewer) of JOURNAL OF THREORTICS INFORMATION/Notices, USA(ISSB No. 1529.3548)
- **Assistant Editor**, Proceedings of 7^h Asian Technology Conference in Mathematic (ATCM2002), Malaysia (published in USA) published in 2002
- **Member Editorial Board**, Thai Journal of Mathematics, Thailand.
- **Member Editorial Board** Indonesen Journal of Combinatorics, Indonesia.
- **Member Editorial Board**, Iranian Journal of Optimization, Iran.
- **Member Editorial Board of** Journal of Nepal Mathematical Society, Nepal.
- **External Reviewer** Multimedia Cyberscape Journal published by Multimedia University, Malaysia.
- **Referee** for J. Phys A: Math &Theory since 2015
- **Reviewer** for EISTA.

Invited/Keynote Speakers at International Conferences/Workshops (Total 65)

2024 Pakistan The Third National Conference On "Recent Advances In Pure And Applied Mathematics", NawabShah(keynote Speaker)

2024 Pakistan National Conference on Pure and Applied Mathematics Sargodha (keynote Speaker)

2020 Indonesia Asian Technology Conference in Mathematics (presented two papers.

2018 Pakistan International Conference on Mathematics and its Applications, GCU Lahore (Keynote Speaker)
2018 Pakistan 4th UMT international Conference on Pure and Applied Mathematics, Lahore (Invited Speaker).
2017Pakistan Attended CASM Conference on Applied Mathematics, LUMS, May 2017 and Member of Scientific Committee.
2016 Pakistan Second Workshop on Modern Aspects of Algebra and Graph Theory, November 2016(COMSATS Lahore).(Keynote Speaker)
2016 Pakistan: Recent Advances in Pure and Applied Mathematics, QUEST, Nawab Shah (Keynote Speaker), 20-22, January 2016(Keynote Speaker)
2016 Pakistan: International Conference on Differential Equations and Applications, LUMS, Lahore. (May 2016)

2015   Pakistan Workshop on Modern Aspects of Algebra and Graph Theory, COMSATS, Lahore (March 27-28)(Keynote Speaker)

2015   Pakistan1St National Conference on mathematics and Computer Science, Nawab Shah (January 2015).(Keynote Speaker)

2014 South Korea Com2MaC*Workshop on Lifting and Related Problems* (August) (Pohang)(Keynote Speaker)

2014   South Korea Mathematics in Emerging Nations: Achievements and Opportunities (MENAO) Symposium (August 2014)

2014   South Korea International Congress of Mathematicians, Seoul, August 2014 Speaker)

2014Pakistan, International Workshop on Discrete Structures, March 201 NUST, Islamabad (Keynote Speaker)

2014   Thailand   International Conference on Discrete Mathematics and Applied Sciences (May 2014) Bangkok (Invited Speaker)

 2013   Pakistan 6th World Conference on 21st Century Mathematics (March 2013), Abdus Salam School of Mathematical Sciences, Lahore.

2012   Indonesia the International Workshop on Optimal Network Topologies (IWONT) in Bandung, Indonesia (Invited Speaker)

2012 Italy   ICTP-IPM workshop and Conference on Graph Theory and Combinatorics, ICTP, Italy (September 2012) (Speaker)

2010   Thailand. International Workshop on Pure and Applied Mathematics, February 2010 Chiang Mai. (Keynote Speaker)

2010Pakistan First National Conference on Mathematics organized by Univ of Karachi, March 2010, Pakistan (Keynote Speaker)

2010 UK Popular Lecture arranged by London Mathematical Society at QMUL on 'Some Properties of the Energy and Spectrum of the Planar Honeycomb Graphs (July 2010)

2010   Thailand, International Conference on Recent Development in Applied Computational Mathematics, January 2011.

2008 Thailand 2nd International Conference on 21st Century Information Technology in Mathematics Education, Bangkok, Thailand.(Keynote Speaker)

2007   Pakistan organized 3rd International Conference on 21stCentury Mathematics, Lahore, March 4-7, 2007

2007Thailand International Conference on Discrete Mathematics, Srinakharinwirot University, Bangkok, (May 29-31, 2007) Thailand. (Speaker)

2006   Thailand International Conference on 21 century Information Technology in Mathematics Education September 17-20.

2005Pakistan attended the Second World Conference on 21st Century Mathematics Lahore (March 4-6) and presented a paper.

2005UAE(United Arab Emirates) attended Third UAE Mathematics Day at Al-Ain and presented a paper April2005. (Speaker)

2005 Thailand organized and attended the 'International Conference on 21stCentury Graph Theory', ChiangMai14-17 July 2005.

2005 Pakistan organized the 'LUMS international Conference on Mathematics and its Applications in Information Technology, Lahore Pakistan, 27-30 November 2005.

2005   Pakistan International Symposium on PhD Programs on Mathematics Today and Tomorrow, Lahore, Pakistan December 1, 2005.

2004Pakistan attended the World Conference on 21st Century Mathematics 2004, Lahore (18-20 March 2004) and presented a paper.

2004Pakistan attended LUMS Mathematics Day at LUMS and presented a paper.
2004Singapore attended 9th Asian Technology Conference in Mathematics (December 2004 Nanyang Technological University, Singapore).(Invited Speaker)

2003 Pakistan attended a conference on 'Issue in Education' at Kinnaird College for Woman, Lahore (5-6 April 2003)

2003Pakistan attended the 'LUMS Mathematics Day', July 3rd, 2003 and presented a paper.

2002Malaysia Attended 7th Asian Technology Conference in Mathematics (17-21 December, 2002) Melaka Malaysia.(Chaired session and presented two papers).

2001 Malaysia -attended the International Conference on Primary and Secondary Schools Science and Mathematics Education, Sunway Pyramid Convention Centre (21-24 October, 2001) (chaired a session).

2001 Malaysia attended a round table conference on 'challenges of the Muslim S&R Academicians in the 21st Century', August 2001 IIUM, Kuala Lumpur.

2000   Thailand Attended the 5th Asian Technology Conference in Mathematics (17-21 December 2000) (presented two papers and chaired one session).

1999Australia-AAMT99 Conference, Adelaide, Australia, January 1999.
1998   Australia-The 34th Applied Mathematics Conference a, Gold Coast, Australia (Invited Speaker)

1998 Brunei –The International conference on 'Science, Mathematics and Technical Education For National Development', 29th June-2nd July 1998.

1997   Australia-The 33rd Australian Applied Mathematics Conference, Lorne, and Geelong, Victoria (presented a paper).

1997   Brunei- International Conference on 'Innovation in Science and Mathematics Curricula', University of Brunei (presented a paper).

1997   Australia-AAMT'97 conference in Melbourne and presented a talk (Melbourne)(Invited Speaker)

1995   Brunei-First International Conference on Mathematical Modelling.

1995   Brunei-Given a Popular Lecture on' Impact of Computers on Mathematics', arranged by the Mathematical Society of Brunei Darussalam.

1995   Romania-The 4ᵗʰ International Conference on non-linear Analysis**,** Numerical Analysis and Applied Mathematics, Ovidiu's University Constanta, Romania(presented a paper and conducted a workshop).

1994   Philippines-Conference on Algebraic Combinatorics and Related Topics', Ateneo de Manila University (presented a paper).

1993   Hong Kong-Workshop and Conference on Number (presented a paper).

1993   Thailand-International Conference on Discrete Mathematics, Chiang Mai (presented a paper).

1993   Philippines-Ateneo Mathematics Colloquium, Ateneo de Manila University, Manila, Philippines (gave a talk).

1990   Italy-College on Recent Developments and Applications in Mathematics and Computer Science, I.C.T.P.

1990Italy-Trieste Conference on Topological Methods in Quantum Field Theory, I.C.T.P.

1990   Pakistan-Third National Symposium on Frontiers in Physics (presented a paper).

1990   Pakistan-Seminar and Workshop on 'INSIDE UNIX' at National Academy of Higher Education, University Grants Commission.

1989   Pakistan- All Pakistan Mathematical Conference (presented a paper).

1989   Pakistan-Regional Workshop on 'Application of Mathematics to operational Research and Mathematical Optimization' (chaired a **session)**.

1988Pakistan-Second National Symposium on 'Frontiers in Physics'(presented a paper).

1987 Pakistan- All Pakistan Mathematical Conference (presented a paper).

1987 Pakistan-30ᵗʰ Science Conference, Hyderabad, and Sindh (presented a paper).
1984   Portugal- Sixth Autumn School on Functional Integration and Critical Phenomena, Lisbon University.

1984 U.K-Solid State Physics Conference, Southampton University (Poster Presentation).

1978Pakistan-All Pakistan Mathematical Conference, NED Univ. Karachi.

Popular and Research Lectures to Graduate students and Staff on various topics of Mathematics in , POSTECH, and Sungkyunkwan University South Korea and (Over the period 2006-2011)

- ➢ Fermi walk and Bose Walk configurations on Acyclic Two Rooted Directed Square Lattice (August 2006) South Korea
  Fermi Walk and Bose Walks (two) Percolation Models
- ➢ Fermi Walk, Young Tableaux and Hook Formula.
- ➢ Some Interesting Properties on Partitions of Integers
- ➢ Fermi and Bose Walk on Acyclic two rooted
- ➢ Some Properties of Spectrum of Planar Honeycomb Graph Under Complete Set of Invariant.

- ➢ Some Properties of Eigenvalues and Eigenvectors of the Combinations of Invariant of Planar Honeycomb Graph
- ➢ Some Aspects of Young Tableaux
- ➢ Young Tableaux: Robinson-Schensted-Knuth (RSK) Correspondence
- ➢ Fermi Walk and Bose Walk Configurations on the Square Lattice and Young Tableaux
- ➢ Relationship between RSK Correspondence and Matrix Ball Constructions
- ➢ Energy and Spectral Properties of the He Matrix of Hexagonal Systems
- ➢ Energy and Laplacian Energy of the He Matrix of Hexagonal Systems

Membership of Learned Societies in Mathematics and other.

Australia	Member, Australian Mathematical Society.
Australia and New Zealand	Member, Australian and New Zealand Industrial and Applied Mathematics (ANZIAM).
Brunei (1992-1994).	Chairperson, Mathematical Society of Brunei Darussalam
Europe	Member European Mathematical Society
Europe	Member International Association of Mathematical Physics
Pakistan	Pioneer Member **National Mathematical Society of Pakistan (since 2013).**
Pakistan	Vice President Punjab Mathematical Society (Since 2013-15)
Pakistan	President Punjab Mathematical Society (2015-)
SEAMS	Member, Southeast Asia Mathematical Society.
UK	Member, London Mathematical Society(1993).
USA	Active Member, New York Academy of Sciences.
USA	Member IEEE (Lahore Chapter 2003- 2008)

Others membership Non-academic

- ➢ **Sports Secretary**, Khairpur Mir's Gymkhana, Pakistan (1987-1991)
- ➢ **Cited** in Who is Who (Macquarie Series), USA (1994,1995, 1998)
- ➢ **Secretary**, Rotary Club, Khairpur Mirs Sindh (1986-1991)
- ➢ **Member** Rotary Club of Lahore Cosmopolitan since 2003-08
- ➢ **Chairman** Overseas Scholarship Committee, Rotary Club of Lahore Cosmopolitan (one year).
- ➢ **President**, Rotary Club of Lahore Continental, Lahore(2008-2009).
- ➢ **Member, Rotary Club of Haleem, Lahore(2018-2020)**