



# Salman Amin MALIK

## Personal Information

Nationality	Pakistani
CNIC Number	35202-6719738-5
Gender	Male
Marital Status	Married
Contact Number Pakistan	+923201414403
Permanent Address	House No. E-480, Hawagran Street Shah Alam, Lahore, Pakistan

## Citations

AMS **American Mathematical Society MathSciNet Mathematical Reviews**, Author ID 818130, Total citations 284, Data obtained in January 2024.

Google Scholar **Total citations 848**, *h-index 13*, *i10-index 16*, Data obtained in Feb 2024.

## Professional address

Pakistan **Department of Mathematics, COMSATS University Islamabad (formerly known as COMSATS Institute of Information Technology)**, Park Road, Chak Shahzad, Islamabad, Pakistan.

## Research Grants

10 Months Duration **Title: Direct and Inverse Problems for Time Fractional Diffusion Equations (Principal Investigator)**, Research Grant No. PD-IPFP/HRD/HEC/2013/1935, Funded by Higher Education Commission of Pakistan, successfully completed.

12 Months Duration **Title: Inverse Problems For Fractional Differential Equations (Co-Principal Investigator)**, Research Grant No. 16-61/CRGP/CIIT/IBD/14/608, Funded by COMSATS IIT, Pakistan, Completed.

18 Months Duration **Title: Image Restoration Using Nonlocal Partial Differential Equations (Principal Investigator)**, Amount applied for 13200 \$, Approved by COMSTECH-TWAS, Not executed.

National:  
Academia  
Industry  
Collaboration **Title: Mathematical Modeling and Simulation for Diesel Engine Processes (Focal person of COMSATS IIT group)**, I am interested in modeling and simulation of combustion processes in diesel engine, 2.519 Million.

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## Research Projects

International:  
COMSATS'  
ITRG  
**Title: Mathematical Modeling and Simulation of Air and Water Pollution: Effects and Remedies (Member of the group),** *The lead center for this research group is National Mathematical Centre, Abuja, Nigeria, The members of this research group consist of different researcher from the member countries of COMSATS.*

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## Professional Experience

03 Dec 2018–to  
date  
**Associate Professor Mathematics,** *COMSATS University Islamabad (formerly known as COMSATS Institute of Information Technology), Islamabad, Pakistan.*

November  
2012–Dec 2018  
**Assistant Professor Mathematics,** *COMSATS Institute of Information Technology, Islamabad, Pakistan.*

March  
2006–October  
2008  
**Lecturer Mathematics,** *COMSATS Institute of Information Technology, Islamabad, Pakistan.*

Sept. 2009–  
Sept. 2012  
**Invited Researcher,** *Lab. Mathématiques Image et Applications (MIA), La Rochelle, France.*

June 2002–  
March 2006  
**Tutor/e-Lecturer Mathematics,** *Virtual University of Pakistan, Lahore (Pakistan).*  
Worked as instructor of Mathematics from June 2002– March 2006.

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## e-Learning (Distance Education) Experience

e-Learning  
(Distance  
Education)  
**I have recorded three video lectures for the following courses Linear Algebra, Operations Research and Calculus of Variations,** *for Virtual Campus COMSATS Institute of Information Technology, Islamabad, Pakistan.*

e-Learning  
(Distance  
Education)  
**For the Real Analysis I and Real Analysis II, I have recorded video lectures,** *for Virtual University of Pakistan, Pakistan.*

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## Thesis

### PhD Thesis (2012)

Title *Contributions to fractional differential equations and treatment of images*  
PhD Advisor Prof. Dr. Mokhtar Kirane

### Master Thesis (2009)

Title Fractional differential equations and their application to image processing  
Advisor Prof. Dr. Mokhtar Kirane

### M-Phil Thesis (2006)

Title Spline method for the solutions of fifth order boundary value problems  
Advisor Prof. Dr. Shahid S. Siddiqui

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## Education

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• *B salman\_amin@comsats.edu.pk; salman.amin.malik@gmail.com*

- 2009–2012 **PhD**, *University of La Rochelle*, La Rochelle, France.  
Research work started in September 2009 at Lab. Mathematics Image and Applications (MIA).
- 2008–2009 **Master 2 mention Sciences pour l'Ingénieur Spécialité Ingénierie Mathématique et Image**, *University of La Rochelle*, 17000, La Rochelle (France), *Marks obtained 15.15 (15.15/20), Research work Marks (17/20)*.
- 2002–2004 **M-Phil (Mathematics)**, *University of the Punjab*, Lahore, Pakistan.  
Marks obtained (1073/1600)
- 1999–2001 **Master of Science (Mathematics)**, *University of the Punjab*, Lahore, Pakistan.  
Marks obtained (864/1200)
- 1997–1999 **Bachelor of Science (Mathematics, Physics)**, *Govt. Islamia College, Civil lines*, Lahore, Pakistan.  
Marks obtained (511/800)
- 1995–1997 **Faculty of Science (Pre- Engineering)**, *Govt. Islamia College, Civil lines*, Lahore, Pakistan.  
Marks obtained (665/1100)
- 1993–1995 **Matriculation**, *Govt. Saint Francis High School*, Lahore, Pakistan.  
Marks obtained (671/850)

## Some Administrative Responsibilities

- Spring 2021-to date In charge BS Mathematics at Department of Mathematics COMSATS University Islamabad
- Fall 2022- to date Member Board of Studies (Department of Mathematics)
- 2021-2022 Member Board of Faculty of Engineering
- 2021-2022 Member Board of Faculty of Business Administration
- 2019-2020 In charge undergraduate programs
- 2019-2020 Member of Committee for Expansion of CUI Pay Scales
- 2020 Member of Committee to Devise Rules for Disbursement and Utilization of Employees Welfare Fund
- Fall 2020 -Fall 2022 Member Department Academic Review Committee (DARC)
- Fall 2019, Spring 2020 In charge Allied courses Department of Mathematics
- Spring 2020 Member of BS Mathematics Program Review Committee
- Spring 2020, Spring 2023 Class Counselor BS Mathematics VI
- Year 2017-2018 Sports Coordinator for the year 2017-18

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- Spring 2014-2017 Representative of Mathematics Department to Young Advisor Forum
- Fall 2012-Spring 2015 In charge Departmental Seminar Series
- 5-9 October 2015 Member Organizing Committee, IWR-COMSATS IIT Joint Workshop on Numerical Solutions of Partial Differential Equations (Dune/PDELab)
- Spring 2013, Fall 2014 Course Coordinator Linear Algebra, Calculus with Analytical Geometry

## Professional Education

- June 23-August 22, 2014 **Certificate**, *5th Pre-Service Training Course, COMSATS Institute of Information Technology, Faculty Development Academy, Islamabad, Pakistan.*
- February 26-March 02, 2007 **Certificate**, *Computer Aided geometric Design and its Applications, Abdus Salam School of Mathematical Sciences, Lahore, Pakistan.*
- November 2004 **Certificate**, *A First Course in ALGEBRAIC TOPOLOGY, GC University, Lahore, Pakistan.*

## Publications

(with Anwar Ahmad and M. Ali **Corresponding Author, Salman A. Malik** 2024), **Unraveling Forward and Backward Source Problems for a Nonlocal Integrodifferential Equation: A Journey through Operational Calculus for Dzherbashian-Nersesian Operator**, *Mathematical Methods in the Applied Sciences*, Volume 47, Issue 9, 2024, 7669-7683. <https://onlinelibrary.wiley.com/doi/full/10.1002/mma.9996> **Q1 Mathematics, Q1 Analysis, HJRS W category Mathematics, Impact Factor: 3.007**

(with Asim Ilyas and Zainab Iqbal, 2024), **On Some Direct and Inverse Problems for an Integro-Differential Equation**, *Z. Angew. Math. Phys.* 75, 39 (2024). <https://doi.org/10.1007/s00033-024-02186-y> **Q1 Mathematics, HJRS W category, Impact Factor:2**

(with Sehrish Javed **Corresponding Author, Salman A. Malik**, 2024), **On the solution of multi-term time fractional diffusion-wave equation involving ultra-hyperbolic operator**, 2024, *Phys. Scr.* 98 (12) 035004. <https://iopscience.iop.org/article/10.1088/1402-4896/ad2250> **Q1 Mathematics, Impact Factor:2.9**

(with Asim Ilyas and Rooh A. Khalid, 2024), **Identifying temperature distribution and source term for generalized diffusion equation with arbitrary memory kernel**, *Mathematical Methods in the Applied Sciences*, Volume 47, Issue 7, 2024, 5894-5915., DOI:10.1002/mma.9896 [https://onlinelibrary.wiley.com/doi/full/10.1002/1522-1417\(202407\)47:7<5894::AID-MMA9896>3.0.CO;2-3](https://onlinelibrary.wiley.com/doi/full/10.1002/1522-1417(202407)47:7<5894::AID-MMA9896>3.0.CO;2-3) **Q1 Mathematics, HJRS W category, Impact Factor:3.007**

(with Asim Ilyas and Summaya Saif **Corresponding Author, Salman A. Malik**, 2023), **On the solvability of direct and inverse problems for a generalized diffusion equation**, 2023, *Phys. Scr.* 98 (12) 125221. <https://iopscience.iop.org/article/10.1088/1402-4896/ad03c5/meta> **Q1 Mathematics, Impact Factor:2.9**

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(with Sehrish Javed Corresponding Author, Salman A. Malik, 2023), **Operational calculus for Hilfer-Prabhakar operator: applications to inverse problems**, 2023, Phys. Scr. 98 105220. <https://iopscience.iop.org/article/10.1088/1402-4896/acf170/meta> **Q1 Mathematics, Impact Factor:2.9**

(with Sehrish Javed and Mokhtar Kirane 2023), **Non-existence of global solution for a nonlinear integro-differential inequality**, Mathematical Methods in the Applied Sciences, Volume 46, Issue 14, 2023, 15259-15269. DOI: 10.1002/mma.9376 **Q1 Mathematics, HJRS W category Mathematics, Impact Factor:3.007**

(with Summaya Saif Corresponding Author, Salman A. Malik 2023), **An inverse problem for a two-dimensional diffusion equation with arbitrary memory kernel**, Mathematical Methods in the Applied Sciences, Volume 46, Issue 9, 2023, 11007-11020 <https://onlinelibrary.wiley.com/doi/10.1002/mma.9164> **Q1 Mathematics, HJRS W category Mathematics, Impact Factor:3.007**

(with Asim Ilyas and Summaya Saif Corresponding Author, Salman A. Malik 2023), **Recovering Source Term and Temperature Distribution for Nonlocal Heat Equation**, Applied Mathematics and Computation Volume 439, 2023, 127610. <https://doi.org/10.1016/j.amc.2022.127610> **Q1 Mathematics, HJRS W category Mathematics, Impact Factor:4.397**

(with Asim Ilyas Corresponding Author, Salman A. Malik 2022), **An Inverse Source Problem for Anomalous Diffusion Equation with Generalized Fractional Derivative in Time**, Acta Appl Math 181, 15 (2022). <https://doi.org/10.1007/s10440-022-00532-8> **Q2 Mathematics, HJRS X category Mathematics, Impact Factor:1.563**

(with Asim Ilyas and Kamran Suhaib Corresponding Author, Salman A. Malik (2023)), **On the inverse problems for a family of integro-differential equations**, Mathematical Modelling and Analysis, 28(2) 255-270 <https://doi.org/10.3846/mma.2023.16139> **Q3 Mathematics, HJRS X category Mathematics, Impact Factor:1.474**

(with M. Ali and Sara Aziz Corresponding Author, Salman A. Malik 2022), **Inverse problem for a multi-parameters space-time fractional diffusion equation with nonlocal boundary conditions: operational calculus approach**, Pseudo-Differ. Oper. Appl. 13, 3 (2022). <https://doi.org/10.1007/s11868-021-00434-7> **Q2 Mathematics, HJRS X category Mathematics, Impact Factor: 1.260**

(with Kamran Suhaib and Asim Ilyas Corresponding Author, Salman A. Malik 2022), **Existence and uniqueness results for a multi-parameters non-local diffusion equation**, Reports on Mathematical Physics. Volume 90, Issue 2, October 2022, Pages 203-219. [https://doi.org/10.1016/S0034-4877\(22\)00066-0](https://doi.org/10.1016/S0034-4877(22)00066-0) **Q3 Mathematics, HJRS X category Mathematics, Impact Factor:0.808**

(with Sehrish Javed Corresponding Author, Salman A. Malik 2022), **Some inverse problems for fractional integro-differential equation involving two arbitrary kernels**, Z. Angew. Math. Phys. 73, 140 (2022). <https://doi.org/10.1007/s00033-022-01770-4> **Q1 Mathematics, HJRS W category Mathematics, Impact Factor:1.92**

(with Asim Ilyas and Summaya Saif Corresponding Author, Salman A. Malik 2021), **Inverse problems for a multi-term time fractional evolution equation with an involution**, Inverse Problems in Science and Engineering, 29:13, 3377-3405, DOI: 10.1080/17415977.2021.2000606 **Q2 Mathematics, HJRS W category engineering, HJRS X category Mathematics, Impact Factor:1.440**

(with Anwar Ahmad and M. Ali Corresponding Author, Salman A. Malik 2021), **Inverse problems for diffusion equation with fractional Dzherbashian-Nersesian operator**, Fractional Calculus and Applied Analysis, vol. 24, no. 6, 2021, pp. 1899-1918. <https://doi.org/10.1515/fca-2021-0082> **Q1 Mathematics, Q1 Analysis, HJRS W category Mathematics, Impact Factor: 3.170**

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(with Asim Ilyas and Arifa Samreen **Corresponding Author, Salman A. Malik** 2021), **Simultaneous determination of a source term and diffusion concentration for a multi-term space-time fractional diffusion equation**, *Mathematical Modelling and Analysis* 26 (3) 2021, pp. 411-431.

<https://doi.org/10.3846/mma.2021.11911> **Q2 Mathematics, Q2 Analysis, Q3 Modelling and Simulation, HJRS X category Mathematics**

(with Arifa Samreen, **Corresponding Author, Salman A. Malik** 2021), **An inverse problem for a multi-term fractional differential equation with two parameters fractional derivatives in time and Bessel operator**, *Mathematical Methods in the Applied Sciences*, 44 (11), 9541-9556 (2021), DOI: 10.1002/mma.7378. (Publisher **John Wiley and Sons, Ltd. Impact Factor: 1.017, Q1 Engineering and Q2 Mathematics, HJRS W category Mathematics**)

(with M. Ali and Sara Aziz, 2021), **On the Recovery of a Time Dependent Diffusion Coefficient for Space-Fractional Diffusion Equation**, *Anal.Math.Phys.* 11, 103 (2021). <https://doi.org/10.1007/s13324-021-00537-w> (Publisher **Springer Impact Factor: 2.056, Q2 Analysis, Mathematical Physics, HJRS X category Mathematics**)

(with Asim Ilyas **Corresponding Author, Salman A. Malik** and Arifa Samreen, 2021), **Simultaneous determination of a source term and diffusion concentration for a multi-term space-time fractional diffusion equation**, *Mathematical Modelling and Analysis*, 26(3), 411-431 (2021), DOI: <https://doi.org/10.3846/mma.2021.11911> **Impact Factor 1.038 Q2 Mathematics, Q2 Analysis, Q3 Modelling and Simulation, HJRS X category Mathematics**

(with M. Ali and Sara Aziz, **Corresponding Author, Salman A. Malik**, 2020), **Inverse problem for a multi-term fractional differential equation**, *Fract. Calc. Appl. Anal.*, 23 (3) 2020, pp. 799-821 DOI:10.1515/fca-2020-0040) (Publisher **WALTER DE GRUYTER Impact Factor: 2.834, Q1 Applied Mathematics and Q1 Analysis Journal, HJRS W category Mathematics**)

(with M. Ali and Sara Aziz, **Corresponding Author, Salman A. Malik** 2020), **Inverse source problems for a space-time fractional differential equation**, *Inverse Problems in Science and Engineering*, 28, (2020) 47-68, DOI:10.1080/17415977.2019.1597079 (**Taylor & Francis, Impact Factor: 1.464, Q1 Engineering, HJRS W category engineering, HJRS X category Mathematics**)

(with M. Ali and Sara Aziz, **Corresponding Author, Salman A. Malik** 2018), **Inverse source problem for a space-time fractional diffusion equation**, *Fract. Calc. Appl. Anal.*, 21 (3) 2018, pp. 844-863 DOI:10.1515/fca-2018-0045) (Publisher **WALTER DE GRUYTER Impact Factor: 2.834, Q1 Applied Mathematics and Q1 Analysis, HJRS W category Mathematics**)

(with M. Ali and Sara Aziz, **Corresponding Author, Salman A. Malik**), **Inverse problem for a space-time fractional diffusion equation: Application of fractional Sturm-Liouville operator**, *Mathematical Methods in the Applied Sciences*, 41, (2018) 2733-2747, DOI: 10.1002/mma.4776. (Publisher **John Wiley and Sons, Ltd. Impact Factor: 1.017, Q1 Engineering and Q2 Mathematics Journal**)

(with M. Ali, **Corresponding Author, Salman A. Malik**), **An inverse problem for a family of two parameters time fractional diffusion equations with nonlocal boundary conditions**, *Mathematical Methods in the Applied Sciences*, 40, (2017) 7737-7748, DOI: 10.1002/mma.4558. (Publisher **John Wiley and Sons, Ltd. Impact Factor: 1.017, Q1 Engineering and Q2 Mathematics Journal**)

(with S. Aziz, **Corresponding Author, Salman A. Malik**), **An inverse source problem for a two parameter anomalous diffusion equation with nonlocal boundary conditions**, *Computers and Mathematics with Applications*, 73, (2017) 2548-2560, DOI: <http://dx.doi.org/10.1016/j.camwa.2017.03.019> (Publisher **Elsevier, Impact Factor: 1.531, Q1 Mathematics Journal**)

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(with M. Ali, **Corresponding Author, Salman A. Malik**), **An inverse problem for a family of time fractional diffusion equations**, Inverse Problems in Science and Engineering, 25, (2017) 1299-1322, DOI:17415977.2016.1255738 (**Taylor & Francis, Impact Factor: 1.033, Q1 Engineering Journal**)

(with Sara Aziz, **Corresponding Author, Salman A. Malik**), **Identification of an unknown source term for a time fractional fourth order parabolic equation**, Electronic Journal of Differential Equations, Vol. 2016 (2016), No. 293, pp. 1-20. ISSN: 1072-6691 (**Impact Factor: 0.954, Q3 Mathematics Journal**)

(with T. S. Aleroev and M. Kirane, **Corresponding Author, Salman A. Malik**), **Determination of a source term for a time fractional diffusion equation with an integral type over-determining condition**, Electronic Journal of Differential Equations, Vol. 2013 (2013), No. 270, pp. 1-16. ISSN: 1072-6691 (**Impact Factor: 0.954, Q3 Mathematics Journal**)

(with M. Kirane and Mohammed A. Al-Gwaiz, **Corresponding Author, Salman A. Malik**), **An inverse source problem for a two dimensional time fractional diffusion equation with nonlocal boundary conditions**, Mathematical Methods in the Applied Sciences, 2013, 36, 1056-1069 DOI:10.1002/mma.2661. (Publisher **John Wiley and Sons, Ltd. Impact Factor: 1.017, Q1 Engineering and Q2 Mathematics Journal**)

(with E. Cuesta and M. Kirane), **Image structure preserving denoising using generalized fractional time integrals**, Signal Processing, 92 (2012) 553-563. (Publisher **Elsevier, Impact Factor: 3.110, Q1 Mathematics Journal**)

(with M. Kirane), **Determination of an unknown source term and the temperature distribution for the linear heat equation involving fractional derivative in time**, Appl. Math. Comput. 218 (2011) 163-170. (Publisher **Elsevier, Impact Factor: 1.738, Q1 Mathematics Journal**)

(with M. Kirane, **Corresponding Author, Salman A. Malik**), **The profile of blowing-up solutions to a nonlinear system of fractional differential equations**, Nonlinear Analysis: TMA 73 (2010) 3723-3736. (Publisher **Elsevier, Impact Factor: 1.192, Q1 Mathematics Journal**)

(with S. S. Siddiqi and G. Akram), **Nonpolynomial Sextic Spline Method for the Solution along with Convergence of Linear Special Case Fifth-Order Two-Point Boundary Value Problems**, Appl. Math. Comput. 190 (2007) 532-541. (Publisher **Elsevier, Impact Factor: 1.738, Q1 Mathematics Journal**)

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## Publications in peer reviewed international conferences

(with E. Cuesta and M. Kirane), **On the improvement of Volterra equation based filtering for image denoising**, In Proceedings of International Conference on image processing, computer vision, and pattern recognition 2011, Las Vegas, USA.

(with E. Cuesta, A. Duran and M. Kirane), **Image filtering with generalized fractional integral**, In Proceedings of the 12th International Conference on Computational and Mathematical Methods in Science and Engineering, CMMSE 2012 La Manga, Spain, July, 2012.

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## Editorial/Reviewer Responsibilities

Associate Editor for International Journal of Computer Mathematics, Taylor & Francis (**HJRS W category 2018 Impact Factor 1.196**)

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### Served as a referee for the following Journals:

American Mathematical Society (AMS Reviewer No. 152615)  
Fractional Calculus & Applied Analysis (FCAA), De Guyter  
Applied Mathematics-A Journal of Chinese Universities (AMJCUB), Springer.  
Advances in Computational Mathematics (ACOM), Springer.  
Computational and Applied Mathematics (COAM), Springer.  
Computers & Mathematics with Applications, Elsevier.  
Applied Numerical Mathematics, Elsevier.  
Engineering Analysis with Boundary Elements (EABE), Elsevier.  
Computational Methods in Applied Mathematics, Hindawi.  
Numerical Algorithms, Springer.  
Applied Mathematics and Computations (AMC), Elsevier.  
Journal of Applied Mathematics and Computing (JAMC), Springer.  
Applications and Applied Mathematics (AAM).  
The Journal of Supercomputing, Springer.  
Advances in Mathematical Physics, Hindawi.  
Journal of Nonlinear Functional Analysis, Mathematical Research Press.  
IEEE International Conference on Image Processing (year 2010, 2011, 2012).

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### External Examiner

- MS Mathematics Thesis Title: **Symplectic Effective Order Partitioned Runge-Kutta Methods**, Candidate: Azqa Arif, Supervisor: Dr. Yousaf Habib, School of Natural Sciences, National University of Sciences and Technology.
- MS Mathematics Thesis Title: **Effective order of Partitioned Runge-Kutta Methods**, Candidate: Saba Shafiq, Supervisor: Dr. Yousaf Habib, School of Natural Sciences, National University of Sciences and Technology.
- MS Mathematics Thesis Title: **Approximate Solution of System of Non-linear Partial Differential Equations**, Candidate: Sabeeqa Batool, Supervisor: Prof. Azad Akhtar Siddiqui, School of Natural Sciences, National University of Sciences and Technology.
- MS Mathematics Thesis Title: **Exact Solutions of Monge-Ampere and Zabolotskaya-Khokhlov Equations Using Optimal System**, Candidate: Mohsin Umair, Supervisor: Dr. Tooba Feroze, School of Natural Sciences, National University of Sciences and Technology.
- MS Mathematics Thesis Title: **Numerical Methods Preserving First Integrals of Hamiltonian Systems**, Candidate: Wajeeha Irshad, Supervisor: Dr. Yousaf Habib, School of Natural Sciences, National University of Sciences and Technology.
- MS Mathematics Thesis Title: **Lie Group Methods in Geometric Integration**, Candidate: Rabia Aziz, Supervisor: Dr. Yousaf Habib, School of Natural Sciences, National University of Sciences and Technology.

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### Invited Speaker

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- June 02, 2022, Pakistan Title: **Leibniz to L'Hopital: The Correspondence**, Symposium on Excursion in Modern Mathematics, Fazaia Bilquis College of Education for Women, PAF Nur Khan, Islamabad, Pakistan.
- 9-13 December 2018-Dhahran, Saudi Arabia Title: **Inverse Problems for Some Space-Time Fractional Differential Equations**, Workshop on Fractional Models in Science & Engineering (FMSE18) Theory and Computation, Department of Mathematics and Statistics, King Fahd University of Petroleum and Minerals, Dhahran, Kingdom of Saudi Arabia.
- 11 August 2017-Lahore Title: **Direct and Inverse Problems for Partial Differential Equations with Non-local Operators**, Department of Mathematics and Statistics, Virtual University of Pakistan (VU), Lahore, Pakistan.
- 22-24 May 2017-Lahore Title: **An Inverse Source Problem for a Two Parameter Time-Fractional Diffusion Equation**, CASM Conference on Applied Mathematics, Lahore University of Management Sciences (LUMS), Lahore, Pakistan.
- 28-29 Dec. 2015-Abuja Title: **Inverse Problems for Time Fractional Diffusion Equations: Applications to Water Pollution**, NMC-COMSATS-ISESCO International Conference on Mathematical Modeling, Abuja, Nigeria.
- 4-6 June 2015-Lahore Title: **Blow-up Phenomena For Some Nonlinear Differential Equations: When, Where, and How**, CASM Conference on Qualitative and Quantitative Techniques for Differential Equations and Applications, LUMS, Lahore, Pakistan.
- 12 June 2014-Lahore Title: **Direct and Inverse Problems for Time Fractional Diffusion Equations**, Department of Mathematics, COMSATS IIT, Lahore, Pakistan.
- 01 March 2013-Wah Title: **Why Study Equations with Fractional Derivatives?**, Seminar series on mathematics and its Applications, Department of Mathematics, COMSATS IIT, Wah, Pakistan.
- 12 Dec. 2012-Islamabad Title: **On the Properties of Blowing up Solutions of a Nonlinear System of Fractional Differential Equations**, Weekly Seminar Series of NUST- Centre for Advanced Mathematics and Physics, Islamabad, Pakistan.
- 18 Oct. 2012- Futuroscope Title: **On the Inverse Source Problem for Time Fractional Diffusion Equations**, Seminar LMA University of Poitiers, France.
- 17 Feb. 2011- Futuroscope Title: **On the Inverse Problem of Linear Heat Equation and Application to Image Restoration**, Seminar LMA University of Poitiers, France.
- 15 Nov. 2010 - Amiens Title: **The Profile of Blowing-up Solutions to a Nonlinear System of Fractional Differential Equations**, Seminar A3 University of Picardie Jules Verne, France.
- 9 Feb. 2010 - Lahore Title: **Introduction to Fractional Differential Equations and Application to Image Denoising**, Seminar CIIT Lahore, Pakistan.

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## Selected Workshops and Conferences as Speaker

- 12 Feb. 2016 - Islamabad Title: **Partial Differential Equations with Fractional Operators: Motivation, Problems and Perspectives**, Seminar Series at School of Natural Sciences NUST Islamabad.
- 11-12 May 2015 - Abbottabad Title: **Direct and Inverse Problems For Time Fractional Diffusion Equations: Applications to Anomalous Diffusion/Transport**, Symposium on Computational Complexities, Innovations and Solutions (CCIS), COMSATS IIT, Abbottabad, Pakistan.

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- 2nd December 2014 - Abuja Title: **An Invitation to Fractional Calculus**, Foundation Meeting of COMSATS' International Thematic Research Group (ITRG) on Mathematical Modelling, National Mathematical Centre, Abuja, Nigeria.
- 12-13 May 2014 - Abbottabad Title: **Digital Image Restoration Based on Nonlocal Partial Differential Equations**, 7th Symposium on Computational Complexities, Innovations and Solutions (CCIS), COMSATS IIT, Abbottabad, Pakistan.
- 30 August 2013 - Islamabad Title: **On Some Mathematical Issues Related to Inverse Source Problems of Non-self-Adjoint Operators**, Departmental Seminar Series, COMSATS IIT, Islamabad, Pakistan.
- 11 March 2013 - Islamabad Title: **Why Study Mathematics?**, Islamabad Model College F10/4, Islamabad, Pakistan.
- 06-09 March 2013 - Lahore Title: **On the Inverse Source Problem for a Time Fractional Diffusion Equation**, 6th World Conference on 21st Century Mathematics 2013, Abdus Salam School of Mathematical Sciences, GC University Lahore, Pakistan.
- 02-04 April 2012 - Paris Poster presentation Title: **On the Inverse Problem of Linear Heat Equation Involving Fractional Derivative in Time**, Inverse Problems, Control and Shape optimization (PICO), Ecole Polytechnique, Palaiseau, France.
- 14 July 2011-Istanbul Title: **Image Structure Preserving Denoising: A Framework within Fractional Calculus**, Koc University Graduate Summer School in Science and Engineering, Linear and Nonlinear Evolution Equations, Istanbul, Turkey.
- 15 Dec. 2010 - La Rochelle Title: **The Profile of Blowing-up Solutions to a Nonlinear System of Fractional Differential Equations**, Journée EDP University of La Rochelle, France.
- 12-14 Oct. 2010-Marans Title: **Qualitative Properties of Solutions to a Nonlinear System of Fractional Differential Equations and Fractional Derivative Based Approach for Image Denoising**, école doctrole S2i, Marans, France.
- 7 Oct. 2010 -La Rochelle Title: **Propriétés qualitatives des solutions à un système non linéaire de l'équation différentielle fractionnaire et le débruitage des images par l'équation de Volterra**, Seminar MIA University of La Rochelle, France.
- 18-20 Feb. 2010, Poitiers Title: **Image Denoising Using Fractional Time Derivatives**, International Conference on PDE (in honor of 60th birthday of M. Chipot) University of Poitiers, France.
- 8-9 May 2007 - Abbottabad Title: **Nonpolynomial Sextic Spline Method for the Solution of Linear Fifth-Order Two-Point Boundary Value Problems**, TechnoMoot 2007, Symposium on Computational Complexities Innovations and Solutions (CCIS) Abbottabad, Pakistan.

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## Selected Workshops and Conferences as Participant

- 20th July 2017, Islamabad One Day Workshop on COMBINATORIAL COMMUTATIVE ALGEBRA, COMSATS Institute of Information technology, Islamabad, Pakistan
- 1-2 December 2014, Abuja Solving Climate Change Problems and Protecting our Environment Through Modelling and Simulation, National Mathematical Center, Abuja, Nigeria.
- 3-4 Sep. 2012, La Rochelle Journées Mathématique Image et Applications (MIA), La Rochelle, France.
- GDR 27 Sep. 2010, Paris One day meeting GDR Modèles mathématiques pour l'imagerie, Paris, France.

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- 17-21 May 2010, Brussels Spring School on Nonlinear Partial Differential Equations, Brussels, Belgium.
- 4-6 March 2010, Poitiers Seminar S2i, Poitiers, France.
- 29 March - 01 April 2010, Orleans Mathematical methods for image processing, University of Orleans, France.
- 25 Nov. 2009, Paris Half day on treatment of images and industrial applications, University of Versaille St Quentin en Yvelines, France.
- 15-19 June, 2009, Figeac CNRS Summer school on image processing, France.

## My Research Students

### PhD (Mathematics) Students

**Muhammad Ali, PhD completed in Spring 2018, Thesis Title: On the Fractional Initial-Boundary Value Problems**, Working as Associate Professor, Department of Mathematics, FAST, Islamabad, Pakistan.

**Sara Aziz, PhD completed in Spring 2019, Thesis Title: Inverse Problems for Some Fractional Differential Equations**, Working as Assistant Professor, Department of Mathematics, FAST, Islamabad, Pakistan.

**Arifa Samreen, PhD completed in Spring 2022, Thesis Title: Mathematical Analysis of Some Inverse Problems for Differential Equations with Nonlocal Operators.**

PhD thesis submitted **Kamran Suhaib, Admission Fall 2017 Research work in progress Thesis Title: On Some Fractional Differential Equations with Non-Local Operators and Non-Classical.**

PhD in progress **Summya Saif, Admission Fall 2018 Research work in progress Thesis Title: Analytical Solutions of Some Inverse Problems for Fractional Differential Equations.**

PhD in progress **Anwar Hussain, Admission Fall 2018 Research work in progress.**

PhD thesis submitted **Sherish Javed, Admission Fall 2019 Research work in progress Thesis Title: On Some Inverse Problems for Generalized Diffusion Equation.**

PhD in progress **Asim Ilyas, Admission Spring 2022 Research work in progress.**

### MS (Mathematics) Students

MS Spring 2014 **Muhammad Tayyab, Thesis Title: On the Inverse Source Problem for Time Fractional Diffusion Equation in Two Dimension**, currently serving as Assistant Professor GIKI, Pakistan.

MS Spring 2015 **Haseeb ur Rehman, Thesis Title: Image Restoration Models Based on Nonlocal Partial Differential Equations.**

MS Spring 2015 **Shabbar Abbas, Thesis Title: On the Inverse Source Problem for Generalized Time Fractional Diffusion Equation.**

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MS Spring 2016 **Saddam Sultan Akbar**, Thesis Title: **Inverse problems for fourth order parabolic equation involving Hilfer fractional derivative**, currently serving as lecturer at university of Islamabad, Islamabad.

MS Fall 2017 **Asia Parveen**, Thesis Title: **On the Simulations of Two- and Three-Dimensional Wall Bounded Turbulent Flows**.

MS Fall 2017 **Arif Hussain**, Thesis Title: **Inverse Source Problems for Some Parabolic Equations Involving Fractional Derivative with Non Singular Kernel**.

MS Fall 2017 **Taimur Shahzad**, Thesis Title: **Identification of a Time Dependent Source Term for a Fractional Heat Equation: Application to Micro Wave Heating**.

MS Spring 2018 **Muhammad Ali Malik**, Thesis Title: **Inverse Problems for Parabolic-Hyperbolic Type Equation in Two Space Dimensions with Nonlocal Operators**.

MS Spring 2019 **Linta Bint E Mansoor**, Thesis Title: **Inverse Problems for Multi-Parameters Space-time Anomalous Diffusion Equation**.

MS Spring 2019 **Asim Ilyas**, Thesis Title: **Inverse Problems for a Space-Time Fractional Differential Equation with Multi-Term Hilfer Fractional Derivatives in Time**.

MS Fall 2019 **Irum Gul Bahar**, Thesis Title: **Inverse Problems for Nonlocal Partial Differential Equations with Dynamical Boundary Conditions**.

MS Fall 2019 **Shahid Saleem**, Thesis Title: **Reconstruction of Some Parameters for Time Fractional Diffusion Equation**.

MS Spring 2020 **Rooh Ul Ameen Khalid**, Thesis Title: **Generalized Diffusion Equation and Some Related Inverse Source Problems**.

MS Spring 2020 **Komal Khalid**, Thesis Title: **Some Inverse Problems for Erdélyi-Kober Diffusion Processes with Non-Local Boundary Conditions**.

MS Fall 2020 **Anwar Maqsood**, Thesis Title: **On the Solutions of Some Fractional Differential Equations by Generalized Laplace Transform**.

MS Fall 2020 **Tooba Batool**, Thesis Title: **Inverse Source Problems for Mixed Type Equations with Multi-term Non-local Operators**.

MS Fall 2020 **Ume Ayesha**, Thesis Title: **Peristaltic Flow of Hydromagnetic Nanofluid with Thermal Radiation**.

MS Spring 2021 **Raheel Shahzad**, Thesis Title: **Some Inverse Problems for Generalized Beam Vibration Equation with Arbitrary Memory Kernel**.

MS Spring 2021 **Usama Bin Tariq**, Thesis Title: **Recovering Initial Data and Source Terms for an Anomalous Diffusion Model**.

MS Fall 2021 **Ayesha Siddiq**, Thesis Title: **Direct and Inverse Problems for Fractional Differential Equations: Application of Generalized Laplace Transform**.

MS Fall 2021 **Tassaduq Hussain Shah**, Thesis Title: **Inverse Problems for Anomalous Integro-Differential Equation of Rigid Heat Conductor**.

MS Fall 2021 **Jawad Wazir**, Thesis Title: **One Some Inverse Problems for an Integro-Differential Equation with Arbitrary Memory kernel .**

MS Spring 2022 **Ali Raza**, Thesis Title: **One Some Direct and Inverse Problems for a Mixed Type Equation in 2D Space.**

MS Fall 2022 **Jawad Ali Zafar**, Thesis Title: **On Some Inverse Problems for Burger's Equation with Dzherbashian-Nersesian Operator.**

MS Fall 2022 **Afshan Umer**, Thesis Title: **Determining Space Dependent Source Term for a Degenerate Mixed Type Equation.**

MS Fall 2022 **Bushra Ilyas**, Thesis Title: **Mathematical Analysis of Direct Problems for a Nonlocal Degenerating Parabolic-Hyperbolic Equation Using arbitrary Generalized Kernels.**

MS Fall 2022 **Bushra Ishtiaq Abasi**, Thesis Title: **Inverse Problems for Degenerate Parabolic-Hyperbolic Equation with Non-Local Boundary Conditions.**

MS Spring 2023 **Muhibullah Hamza**, Thesis Title: **Application of General Fractional Calculus to Probability Theory and Inverse Problems.**

MS Spring 2023 **Zainab Iqbal**, Thesis Title: **Direct and Some Inverse Problems for a Generalized Legendre Equation with Two Arbitrary Memory Kernels.**

MS Fall 2023 **Madhia Nasar**, Thesis Title: **On Some properties of n-Fold Generalized Fractional Order Operators: Applications to Inverse Problems.**

### BS (Mathematics) Students

BS Spring 2014 **Saddam Sultan Akbar**, Project Title: **On the Blow-up Phenomena for Some Nonlinear Fractional Differential Equations.**

BS Fall 2016 **Muhammad Naseer**, Project Title: **On the Fundamentals of Diesel Engine Combustion Process.**

Fall 2017 **Zahid Maqsood**, Project Title: **What is the Solution of Navier-Stokes Equation?**

Spring 2018 **Rooh ul Amin Khalid**, Exact Solutions of Some Nonlinear Partial Differential Equations by Invariant Subspace Method.

Spring 2018 **Komal Khalid**, Existence and Uniqueness Results for Some Nonlinear Partial Differential Equations.

Spring 2018 **Anwar Maqsood**, On the Solutions of Some Fractional Differential Equations.

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### My Past or Current Collaborators

**Ghazala AKRAM**, Department of Mathematics, University of the Punjab Lahore, Pakistan.

**Mohammed A. Al-Gwaiz**, Department of Mathematics, King Saud University, Riyadh, Saudi Arabia.

**Eduardo CUESTA**, Department of Applied Mathematics, E.T.S. of Telecommunication Engineers, University of Valladolid, Spain.

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**Angel DURAN**, Department of Applied Mathematics, E.T.S. of Telecommunication Engineers, University of Valladolid, Spain.

Prof. **Mokhtar KIRANE**, Lab. MIA, University of La Rochelle, France. (My PhD advisor)

Prof. **Shahid S. SIDDIQUI**, Department of Mathematics, University of central Punjab Lahore, Pakistan. (My MPhil Advisor)

The names of the collaborators are written in alphabetically order with respect to family name.

## Distance Learning / e-Learning

Calculus of Variations For Virtual Campus of COMSATS Institute of Information Technology, a **3 credit hour course of Calculus of Variations for undergraduate/MSc students has been recorded.**

Linear Algebra For Virtual Campus of COMSATS Institute of Information Technology, a **3 credit hour course of Linear Algebra for undergraduate students has been recorded.**

Operations Research For Virtual Campus of COMSATS Institute of Information Technology, a **3 credit hour course of Operations Research for MS students has been recorded.**

## Honors

Research Project Won a Research Project of worth 0.471 Million from **The Higher Education Commission of PAKISTAN** (H.E.C.) in 2013.

Foreign Scholarship Has been granted overseas scholarship from **The Higher Education Commission of PAKISTAN** (H.E.C.) for MS leading to Ph.D studies in France

Foreign Scholarship Has been granted under faculty development program of **COMSATS Institute of Information Technology, Islamabad** for MS leading to Ph.D studies in USA (Not availed)

## Computer Skills

- |   |                 |
|---|-----------------|
| 1 MS Office, MS Word, MS Excel, MS Powerpoint                           | 3 Winedt(Latex) |
| 2 Open office.org writer, Open office.org Calcul , Open office.org Math | 4 Matlab        |

## Languages

- |            |                |  |
|------------|----------------|--|
| Language 1 | <b>English</b> | <i>Can read, write, understand and speak at average level. It is the official language in Pakistan, used as a second language in Pakistan.</i> |
| Language 2 | <b>French</b>  | <i>Can read, write, understand and speak at Elementary level.</i>  |
| Language 3 | <b>Urdu</b>    | <i>Can read, write, understand and speak at very good level. It is a National language of Pakistan and used all over the Pakistan.</i>         |
| Language 4 | <b>Punjabi</b> | <i>Mother tongue</i>   |

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