

Shyamsunder, SRF, Research Scholar

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Education

- 2020 – **Ph.D., MNIT Jaipur**
Thesis title: *A Mathematical Study of Biological Phenomenon Using Fractional Calculus Operators.*
- 2016 – 2018 **M.Sc. Mathematics, University of Rajasthan, Jaipur**
- 2013 – 2016 **B.Sc. Mathematics, University of Rajasthan, Jaipur**
Physics, Mathematics, Chemistry.
- 2011 – 2013 **Senior Secondary, BSER Ajmer Science.**
Physics, Mathematics, Chemistry.
- 2010 – 2011 **Secondary, BSER Ajmer** All compulsory subject.
English, Hindi, Mathematics, Science, Social Sci. Third Language.

Research Interests

Fractional Calculus, Mathematical Modeling, Integral Transform, FDE, ODE, Special Functions, Epidemiology.

Skills

- Languages **Strong reading, writing and speaking competencies for English, Hindi.**
- Coding **Python, \LaTeX , ...**
- Software **Maple, Mathematica, Matlab, ...**
- Misc. **Academic research, teaching, consultation, \LaTeX typesetting.**

Miscellaneous Experience

Awards and Achievements

- GATE **2020, 2021, Mathematics.**
- NET JRF **2019, 2020, CSIR Mathematics.**

Certification

- 2016 **Certified NSS.** Awarded by S.K. Govt. College Sikar, Rajasthan.

Research Publications

Journal Articles

- 1 S. Bhattar, K. Jangid, **Shyamsunder**, D. Baleanu, S. D. Purohit, and D. L. Suthar, "A new investigation on fractionalized modeling of human liver," *Scientific Reports (accepted)*, 2024.
- 2 A. Venkatesh, M. Manivel, B. Baranidharan, and **Shyamsunder**, "Numerical study of a new time-fractional mpox model using caputo fractional derivatives," *Physica Scripta*, vol. 99, p. 025 226, 2024.

- 3 S. Bhattar, K. Jangid, **Shyamsunder**, D. Baleanu, D. L. Suthar, and S. D. Purohit, "Analysis of the family of integral equation involving incomplete types of I and \bar{I} -functions," *Applied Mathematics in Science and Engineering*, vol. 31, no. 1, p. 2 165 280, 2023.
- 4 S. Bhattar, K. Jangid, **Shyamsunder**, S. D. Purohit, D. Baleanu, and D. L. Suthar, "A generalized study of the distribution of buffer over calcium on a fractional dimension," *Applied Mathematics in Science and Engineering*, vol. 31, no. 1, p. 2 217 323, 2023.
- 5 S. Bhattar, Nishant, **Shyamsunder**, and S. D. Purohit, "Srivastava-Luo-Raina M-transform involving the incomplete I -functions," *Computational Methods for Differential Equations*, vol. 12, no. 1, pp. 159–172, 2023.
- 6 S. Bhattar, Nishant, **Shyamsunder**, S. D. Purohit, and D. L. Suthar, "A study of incomplete I -functions relating to certain fractional integral operators," *Applied Mathematics in Science and Engineering*, vol. 31, no. 1, p. 2 252 996, 2023.
- 7 S. Bhattar, **Shyamsunder**, K. Jangid, S. D. Purohit, and H. M. Baskonus, "Fractional differential equations related to an integral operator involving the incomplete I -function as a kernel," *Mathematical Methods in the Applied Sciences*, pp. 1–15, 2023.
- 8 M. Meena, M. Purohit, **Shyamsunder**, S. D. Purohit, and K. S. Nisar, "A novel investigation of the hepatitis b virus using a fractional operator with a non-local kernel," *Partial Differential Equations in Applied Mathematics*, vol. 8, p. 100 577, 2023.
- 9 **Shyamsunder** and E. Someone, "A new fractional mathematical model to study the impact of vaccination on covid-19 outbreaks," *Decision Analytics Journal*, vol. 6, p. 100 156, 2023.
- 10 **Shyamsunder** and E. Someone, "A study of the hepatitis B virus infection using hilfer fractional," *Proceedings of the Institute of Mathematics and Mechanics*, vol. 48, pp. 100–117, 2022.
- 11 **Shyamsunder** and E. Someone, "Fractionalized mathematical models for drug diffusion," *Chaos Solitons Fractals*, vol. 165, p. 112 810, 2022.
- 12 **Shyamsunder** and E. Someone, "Numerical modeling on age-based study of coronavirus transmission," *Applied Mathematics in Science and Engineering*, pp. 609–634, 2022.

Conference Proceedings

- 1 S. Bhattar, S. D. Purohit, and **Shyamsunder***, "Several computational based expansion for incomplete \aleph -function using leibniz rule," in *International Conference of Mathematical Modelling, Applied Analysis and Computation (Accepted)*, Springer, 2024.
- 2 S. Bhattar, Nishant, and **Shyamsunder***, "Mathematical model on the effects of environmental pollution on biological populations," in *International Conference of Mathematical Modelling, Applied Analysis and Computation*, Springer, 2022, pp. 488–496.

International Visit

1. Participate and presented a contributed talk titled "A Novel Investigation of the Hepatitis B Virus using a Fractional Operator with a Non-Local Kernel" at the first "Sharjah International Conference on Mathematical Sciences" from 06-08 November 2023 at the University of Sharjah, UAE.
2. Participate and presented a contributed talk titled "Implementing Matrix M-L Function to Apply the Blood Ethanol Model in the System of Fractional Differential Equations" in the conference "Workshop on Differential Equations and Their Applications" from 02-08 July 2023 at Mathematical Research and Conference Centre in Bedlewo, Poland.

Talk

1. Presented a contributed talk titled "A Review on Mathematical Models of Drug Diffusion in the Human Body" in the First Joint IIIMT - Algebra Forum Conference during 16-17 December 2023, organized by the Department of Mathematics and Natural Sciences, Mataram University, Indonesia.
2. Presented a short talk titled "Mathematical Modeling & Fractional Calculus" in the Inaugural meeting of Asian-Oceanian Women in Mathematics during 24-28 April 2023, organized by ICTS-CAM, India.
3. Presented a talk titled "A Review of the Fractional Order Viscoelastic Models" in the 1st International Conference in Mathematical Sciences and Fractional Calculus (ICMSFC Feb 2021) during 16-18 February 2021, organized by The Fractional Calculus and Applications Group, Alexandria University, Egypt.

Conference Participation

1. Participated and presented a paper titled as, "Solutions of Fractional Kinetic Equation Involving \aleph -Function" in International Conference on, **ICCMSE-2023** during 15-17 Dec 2023 held at PDEU, Gandhinagar, Gujarat.
2. Presented a paper titled as, "Numerical Study of a New Time-Fractional Monkeypox Model using Caputo Fractional Derivatives" in International Conference on, **ISCDFAMS-2023** during 14-17 November 2023 organized by Ankara University, **Turkey**.
3. Participated and presented a paper titled as, "A Study of Incomplete I -Functions Relating to Certain Fractional Integral Operators" in International Conference on, **ICMMAAC-2023** during 03-05 August 2023 held at JECRC, Jaipur, Rajasthan.
4. Presented a paper titled as, "A Fractionalized Mathematical Modeling of Pneumonia Disease" in International Conference on, **MSOEM-2023** during 17-18 June 2023 organized by Canadian University Dubai, **UAE**.
5. Presented a paper titled as, "Determination of the supply of glucose in the blood by the incomplete I -function" in "Five Days National Symposium on Implementation and Application of Mathematics in Real Life" during 08-12 May 2023 organized by School of Advanced Sciences of VIT Vellore.
6. Presented a paper titled as, "Analysis of the Family of Integral Equations Involving Incomplete I -Function" in International Conference on, **MSAST-2022** during 21-23 December 2022 organized by IMBIC, India.
7. Presented a paper titled "Fractionalized Mathematical Modeling of Human Liver" in International Conference on **PMTIA-2022** during 28-29 October 2022 organized by the Department of Mathematics, SRMIST, Ramapuram, Chennai.
8. Presented a paper entitled "A new study of the Buffer over Cytosolic Calcium Concentration Distribution" in International Conference on, **ICRTAM-2022** organized by the Department of Science and Humanities (Mathematics), Sri Ramakrishna Institute of Technology, Pachapalayam, Coimbatore held on 7th October 2022.

9. Participated and presented a paper titled as, "Numerical modelling of coronavirus transmission depending on age" in International Conference on, **ICMMAAC-2022** during 04-06 August 2022 held at JECRC, Jaipur, Rajasthan.
10. Presented a paper titled as, "Application of Hilfer fractional derivative to study the Hepatitis B virus infection" in International Conference on, **ICCMSO-2022** during 02-03 April, 2022 organized by The NorthCap University, Gurugram, Haryana.

Conference/FDP/Workshop Participation

Conference

1. Attended an International Conference on "Mathematical Modeling in Public Health and Epidemiology," organized by the Department of Mathematics, Phuket Rajabhat University, **Thailand**, on 09 November 2023.
2. Attended an International Conference on "Mathematics and Applications," organized by MDPI Mathematics, during May 01-15, 2023.
3. Attended an International Conference on "Mathematical Analysis in Computational Biology and Data Science" organized by the Department of Mathematics, PSGR Krishnammal College for Women, Coimbatore, Tamil Nadu, during January 24-25, 2023.
4. Attended an International Conference on "Emerging trends in Pure and Applied Mathematics," organized by the Department of Mathematical Sciences, School of Sciences, Tezpur University, Assam, during March 12-13, 2022.
5. Attended an International Conference on "Special Functions & Applications," organized by the Department of Mathematical Science, Babu Banarasi Das University, Lucknow, during December 22-23, 2020.

1. Attended an International Workshop on "Nonlinear Analysis & its Applications," organized by Faculty Development Centre, Sridev Suman Uttarakhand University, Badshahithaul (Tehri Garhwal), India during December 14-16, 2023.
2. Attended an International Workshop on "Mathematical Modelling, Optimization, and their Applications to the Real Life Problems," organized by ICAMMDA, Federal University, Ekiti State, **Nigeria**, during November 27-29, 2023.
3. Attended a Meeting on "3rd Southeast Asian Women Mathematicians Meeting (SEAWM2) 2023" held on 26 July 2023.
4. Attended an International Workshop on "Computing Special Functions and Their Applications," organized by MathTech Thinking Foundation, MNITJ, SPUG, CUP, SVNIT, India, during May 24-30, 2023.
5. Attended a Lecture Series on "Nonlinear Dynamics and Applications" organized by the Department of Mathematics, IIT Indore, during February 13-16, 2023.
6. Attended an FDP on "Differential Equations & its Applications" organized by the Division of Mathematics, School of Advanced Sciences, VIT, Chennai, during February 03-05, 2023.
7. Attended an FDP "Emerging Research Orientation in Mathematics and its Applications" Organised by the Department of Mathematics, CMR Institute of Technology, Bengaluru during January 09-13, 2023.
8. Attended a Meeting on the "Indian Women and Mathematics Annual Conference (IWM-22)" held at IISER Pune, during December 27-29, 2022.

9. Attended a Workshop on "Nonlinear Phenomena in Mathematical Biology," organized by the Department of Applied Sciences, ABV- Indian Institute of Information Technology and Management, Gwalior during December 19-23, 2022.
10. Attended a Teachers Enrichment Workshop on "Complex Analysis and Geometry" held at MNIT, Jaipur during December 12-17, 2022.
11. Attended a Workshop on "Recent Trends in Modeling & its Applications," organized by the Department of Mathematics, Post Graduate College, Ghazipur, UP during September 04-08, 2022.
12. Attended a Workshop on "Advanced Numerical Techniques for Differential Equations," organized by the Department of Mathematics, MNIT Jaipur during June 06-10, 2022.
13. Attended an FDP "Computational Mathematics and Recent Advances in Management Principles," organized by the Department of Mathematics, SKIT, Jaipur during November 15-19, 2021.
14. Attended a Workshop on "New Advances in Mathematical and Computational Sciences," organized by the Department of Applied Mathematics, Yogi Vemana University, Kadapa, A.P. during September 13-18, 2021.
15. Attended an FDP on "Recent Trends in Application of Mathematics," organized by the Department of Mathematics, Chadalawada Ramanamma Engineering College, Tripuri during July 12-17, 2021.
16. Attended an STTP on "Innovative Tools for Mathematics," organized by the Department of Mathematics, Hindusthan College of Engineering and Technology, Coimbatore, during May 03-08.

Membership of Professional Bodies

- Indian Society of Industrial and Applied Mathematics (**ISIAM**/ S-158/2022)
- International Association of Engineers (**IAENG**/327379/2022)
- Society for Special Functions & their Applications (**SSFA**/1004)
- MathTech Thinking Foundation (**MTTF**17524524)
- Resource Modeling Association (**RMA**/2022)
- Institute of Mathematical Statistics (**IMS**/35734)
- International Society of Difference Equations (**ISDE**/2023)
- Institute for Educational Research and Publication (**IFERP**/PROF-70824168)

Reviewer

1. American Mathematical Society (170429)
2. Chaos, Solitons and Fractals
3. Heliyon
4. Mathematics and Computers in Simulation
5. Chinese Journal of Physics

References

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