DR. MOHD. SHADAB
N-66, Hussaini Imam Bara
Sailing Club Road, Batla House,
Jamia Nagar, New Delhi-110025, India.
Contact No.: +91-9540208755, 7065557865
E-mail: shadabmohd786@gmail.com

DR. MOHD. SHADAB

OBJECTIVE

I am deeply passionate about teaching and research in mathematics. With six years of experience in academia, my focus has been on fostering a dynamic learning environment where students can engage critically with key concepts. I am committed to advancing knowledge and mentoring the next generation of scholars to navigate complex challenges in special functions and orthogonal polynomials. My approach integrates cutting-edge research with innovative teaching methodologies to inspire curiosity, intellectual growth, and relations between applied sciences.

ACADEMIC QUALIFICATION

- **High School** from U.P. Board in 2004.
- **Intermediate** from U.P. Board in 2006.
- **B.Sc.** from Rohilkhand University in 2009**.**
- **M.Sc. from Jamia Millia Islamia (A Central University), New Delhi in 2011.**
- **Ph.D. in Mathematics from Jamia Millia Islamia (A Central University) in May-2018.**

TITLE OF THESIS

- **Ph. D. Thesis Title:** Identifying the relevance of hypergeometric approach to certain outstanding problems.

AWARDS/FELLOWSHIPS

- **Faculty Appreciation Award for Research(2nd position in the University)** on 26-January-2021 by Glocal University, India.

- **InSc Young Achiever Award** by Institute of Scholars. (Institute of Scholars (InSc) is an emerging technical professional organization), 01-July-2020, India.

- Award for **Best paper presentation** by *Society of Special Functions and Their Application* at *International Conference on Special Function and their application 21-23, October 2019,* Bikaner, India.

- Awarded UGC fellowships for Ph.D. in central universities during 29-september-2014 to 29-september-2017.

RESEARCH INTERESTS

- Special functions and orthogonal polynomials
- Integral transform and operational calculus
- Fractional calculus

TEACHING EXPERIENCES (Total Experience= 5+ years)

- **From 07 Oct 2022 to present as Assistant Professor (Contractual) at Jamia Millia Islamia (A Central University), India.**

- **From 10 Nov 2021 to 06 Oct 2022 as Assistant Professor at Lingaya's Vidyapeeth, Faridabad (Haryana), India.**

- **From 21 Jan 2019 to 09 Nov 2021 as Assistant Professor at Glocal University, Saharanpur (UP), India.**

Currently Teaching:

Numerical Analysis and Computer Programming in C/C++ (B.Tech.)	2023-24
Advanced Applied Mathematics (M.Tech.-Mechanical Engg)	2023-24
Mathematics-I , II & III (Differential Calculus, Integral Calculus, Complex Analysis and Matrices)	2023-24
Numerical Analysis and Computer Programming in C/C++ (B.Tech.)	2022-23
Random Variables and Stochastic Process (M.Tech.-Electronics & Comm. Engg)	2022-23
Mathematics-I & II (Differential Calculus, Integral Calculus, Complex Analysis and Matrices)	2022-23

Courses Taught:

Mathematics-II (Differential Calculus and Integral Calculus)	Even Semester	2019-20
Mathematics-III (Differential Equations)	Odd Semester	2020-21
Mathematics-I (Complex Analysis, Vector Calculus)	Odd Semester	2020-21
Mathematics-II (Differential Calculus and Integral Calculus)	Even Semester	2020-21
Mathematics-I (Complex Analysis, Vector Calculus)	Odd Semester	2021-22
Complex Analysis and Multivariate Analysis	Odd Semester	2021-22

Ph.D. Students:

Name	**Course**	**Status**	**Admitted/Completed**
Md. Heshamuddin	Ph.D.	Awarded	April-2023
Raziya Sabri	Ph.D.	Awarded	December-2023
Mohd. Nadeem	Ph.D.	Ongoing	October-2019
Neha Vasishtha	Ph.D.	Ongoing	November-2022

M.Phil. Students:

Shahnawaz	M.Phil.	Completed	December-2019
Manish Chauhan	M.Phil.	Completed	December-2020
Shahadat Ali	M.Phil.	Completed	March-2021

Administrative Responsibilities

- Acting Head of the Department of Natural and Applied Sciences from November-2019 to Present.
- Member of the University Research Committee
- Member of the University NAAC Committee
- Member of the Internal Quality Assurance Committee (IQAC)

RESEARCH ACTIVITIES

Research papers:

1. A. Goswami, M.F. Khan and **M. Shadab,** Study of Extended Hermite-Appell Polynomial via Fractional Operators, **Applied Mathematics and Information Sciences**, 17 (1) (2023). (http://dx.doi.org/10.18576/amis/170105).

2. N. Ahmad, R. Sabri, M.F. Khan, **M. Shadab**and A. Gupta**,** Relevance of factorization method to differential and integral equations associated with hybrid class of polynomials, **Fractal and Fractional**, 6(1) (2022). (**https://doi.org/10.3390/fractalfract6010005**).

3. R. Sabri,**M. Shadab,** T. Kim, J.L. Lopez-Bonillaand B.M. Kim. Gupta**,** Certain integral and differential involving hybrid polynomials via factorization method, **Proceeding of Jangjeon Mathematical Society**, 25(1) (2022). (https://dx.doi.org/10.17777/pjms2022.25.1.13)

4. N. Rao, Md Heshamuddin and **M. Shadab,** Approximation properties of Bivariate Szasz Durrmeyer operators via Dunkl analogue, **Filomat**, 35(13), (2021). (https://doi.org/10.2298/FIL2113515R)

5. N. Rao, Mn. Zaman, Md Heshamuddinand **M. Shadab,** Approximation properties by modified BaskakovDurrmeyer operators bases on shape parameter-α, **Iranian Journal of Science and Technology, Transactions A: Science**, (2021). (https://doi.org/10.1007/s40995-021-01125-0).

6. S. Jabee, **M. Shadab** and R.B. Paris, Certain results on Euler-type integrals and their applications, **The Ramanujan Journal, 54**(2021), 245-260**. (**https://doi.org/10.1007/s11139-019-00238-w**)**

7. F. Marcellan, S. Jabee and **M. Sahdab**, Analytic properties of Touchard based hybrid polynomials via operational techniques, **Bulletin of the Malaysian Mathematical Sciences Society, Springer, 44,** (2021), 223-242**. (**https://doi.org/10.1007/s40840-020-00945-4)

8. J. Choi, S. Sabee and **M. Shadab**, Some identities associated with 2-variable truncated exponential based Sheffer polynomial sequences**, Communications of the Korean Mathematical Society,** 35(2) (2020), 533-546.

9. F. Marcellan, **M. Sahdab** and S. Jabee, Some new identities involving Sheffer-Appell polynomial sequences via matrix approach, **Mediterranean Journal of Mathematics, 116(2) (2019), p. 16.** (https://doi.org/10.1007/s00009-019-1398-7)

10. N.U. Khan , M. Ghayasuddin and **M. Shadab**, Some Generating Relations of Extended Mittag-Leffler Function, **Kyungpook Mathematical Journal, 59 (2019), 325-333.**

11. **M. Shadab,** M. Faisal Khan and J. Luis Lopez-Bonilla; A New Riemann-Liouville Type Fractional Derivative Operator and Its Applications, **Advances in Difference equations (Springer)**, 167(1) (2018), 1-16. (https://doi.org/10.1186/s13662-018-1616-9)

12. N.U. Khan,M. Ghayasuddin and **M. Shadab**; A new class of Euler type integral operators involving multi-index Mittag-Leffler function, **Honam Mathematical Journal**, 40 (2018), 691-700.

13. Shawkat A. Dar and **M. Shadab**; Extension of extended Whittaker function and its properties, **Communications of the Korean Mathematical Society,** 33(2) (2018), 619-630.

14. M.I. Qureshi and **M. Shadab,** Unification and Generalization of Two Product Theorems of Srinivasa Ramanujan Associated with Quadruple Hypergeometric Functions, **Applied Mathematics and InformationSciences**, 11(4) (2017), 1225-1234.

15. **M. Shadab** and Junesang Choi, Extensions of Appell and Lauricella hypergeometric functions, **Far East Journal of Mathematical Sciences**, 102(6) (2017), 1301-1317.

16. **M. Shadab**, Saima Jabee and Junesang Choi**,** An extended beta function and its applications, **Far East Journal of Mathematical Sciences**, 103(1) (2018), 235-251.

17. M.I. Qureshi, S. Jabee, and **M. Shadab**; Evaluation of Some Integrals Involving Classical Polynomials of Hermite and Legendre Using Laplace Transform and Hypergeometric Approach, **DivulgacionesMathemáticas,** 18(1) (2017), 1-9**.**

18. Waseem A. Khan, M. Ghayasuddinand **M. Shadab**, Multiple-poly-Bernoulli polynomials of the second kind associated with Hermite polynomials,**Fasciculi Mathematici**, 58 (2017) , 97-112.

19. M.I. Qureshi, **M. Shadab** and M.S. Baboo, Evaluation of Some Novel Integrals Involving Legendre Function of Second Kind Using Hypergeometric Approach, **Palestine Journal of Mathematics**, 6(1)(2017) , 68-75.

20. M.I. Qureshi, Saima Jabee and **M. Shadab,** Truncated Gauss hypergeometric series and its application in digamma function, (Communicated, ARXIVED).

21. M. Ghayasuddin, **M. Shadab** and N.U. Khan; A new extension of Voigt function and its properties, **Fasciculi Mathematici,** (Accepted).

22. M.I. Qureshi and **M. Shadab**; Some summation theorems associated with Clausen's hypergeometric functions with unit argument, Applications and Applied Mathematics, 15(1) (2020), 469-478.

23. M.I. Qureshi and **M. Shadab**; Analytic Computations of Some Digamma Functions Using Gauss Formula, Journal of Applied Mathematics, Statistics and Informatics, 16(1) (2020), 5-12.

24. M.I. Qureshi, Saima Jabee and **M. Shadab,** General series identities, some additive theorems on hypergeometric functions and their applications, (Accepted in Journal of Interdisciplinary Mathematics).

25. H.M. Srivastava, Saima Jabee and **M. Shadab,** Differential equations and recurrence relations of the Sheffer-Appell polynomial sequence: A matrix approach, (Communicated, ARXIVED).

26. M. M. Makkyand M. Shadab, New mixed recurrence relations for two-variable orthogonal polynomials via differential operators (Accepted in Kragujevac journal of Mathematics).

27. S.H.J. Petroudi, M. Pirouz, S. Jabee and **M. Shadab,** A new symmetric matrix approach to Fibonacci numbers and their properties, (Accepted in Palestine Journal of Mathematics).

28. N. Rao, Md Heshamuddin and **M. Shadab,** Hybrid operators of summation-Integral type using shape parameter-α, (Communicated).

29. Md Heshamuddin, N. Rao, and **M. Shadab,** Bivariate extension of λ-hybrid type operators, (Communicated).

Research Project Ongoing/Completed:

Project Name : Analytical properties of Orthogonal Polynomials, Special Functions and Their q-Variants via Modern Approaches

Status : Completed December 2022

Position : Co-PI

Cost to Co-PI : 12000 SR

Total Cost : 42400 SR

Agency/University : Saudi Electronic University, Riyadh, Saudi Arabia.

Work in Progress:

1. On differential and integral equations associated with hybrid class of polynomials via factorization method (Raziya, Serkan Araci and Pradeep Malik)

2. Determinantal treatment of Boas-Buck polynomials and its applications (Raziya and Francisco Marcellan)

Book Chapter:

- New identities involving products of hypergeometric functions via fractional calculus technique. (With Pradeep Malik).

International Collaborations:

- Prof. Francisco Marcellan, Departamento de Matematicas, Universidad Carlos III de Madrid, Spain. (Email: pacomarc@ing.uc3m.es)

- Prof. Richard Bruce Paris, ivision of Computing and Mathematics, Abertay University, Dundee DD1 1HG, UK. (Email: r.paris@abertay.ac.uk)

- Prof. Junesang Choi, Department of Mathematics, Dongguk University, Gyeongju 38066, Republic of Korea. (Email: junesang@mail.dongguk.ac.kr)

- Prof. Hari Mohan Srivastava, Department of Mathematics and Statistics. University of Victoria, Victoria, British Columbia V8W 3R4, Canada. (Email: harimsri@math.uvic.ca)

Oral Presentation in International/National Conferences :

- Results analogous to Kummer's summation theorem with application in Laplace transform technique, International Conference on Recent Advances in mathematical Biology, analysis and applications, Aligarh Muslim University, Aligarh, India, 4-6-June, 2015.

- Systematic evaluations of some novel integrals using hypergeometric approach, International Conference on Analysis and its applications, Aligarh Muslim University, Aligarh, India, 19-21-Dec., 2015.

- Unifications and Generalization of two product theorems of Srinivasa Ramanujan associated with Quadruple hypergeometric functions, National Workshop on Analysis, Differential equations and applications, Mohanlal Sukhadia University, Udaipur, India, 25-27-Feb., 2016.

- New generating relations for generalized Mittag-Lefflers, International Conference on special functions and their applications, Jamia Millia Islamia, New Delhi, India, 09-11-Sep., 2016.

- Extension of generalized Appell and Lauricella hypergeometric functions, National conference on recent trends of research in mathematics and applications in diverse fields, T. D. P. G. College, Jaunpur, India, 03-05-Nov., 2016.

- Some summation theorems for Clausen's hypergeometric function with unit argument, International Conference on special functions and their applications, Gov. Engg. College, Bikaner, India, 02-04-Nov., 2017.

- Application of digamma function in summation theorems associated with Clausen's hypergeometric function in summation theorems associated with Clausen's Hypergeometric function, Motilal Nehru College, University of Delhi, India, 19-20-Feb., 2018.

- General series identities, some additive theorems on Hypergeometric functions and their applications, International Conference on special functions and their applications, Gov. Engg. College, Bikaner, India, 21-23 Nov 2019.

Participated in International/National Conferences:

- International Conference on special functions and their applications, Jamia Millia Islamia, New Delhi, India, 16-18-Oct., 2014.

- Lecture Series on Algorithmic optimization, Scientific Computation and their applications in science and technology, Jamia Millia Islamia, New Delhi, India, 08-09-Feb, 2015.

- National workshop on Treasures of great Indian mathematician Srinivasa Ramanujan, T. D. P. G. College, Jaunpur, India, 03-07-Oct, 2016.

- Two Weeks Instructional school for teachers on Complex analysis and analytic number theory, S.R.T.M. University, Nanded, India, 29-Jan - 10-Feb, 2018.

- International Conference on Class Groups of Number Fields and Related Topics, Harish Chandra Research Institute, Allahabad, India, 08-11 Oct- 2018.

REFEREED FOR

- Peer Reviewer for Journal of Applied Mathematics, (Elsevier), ISSN 1090-2074. [SCI SCOPUS Indexed]
- Peer Reviewer for Italian Journal of Pure and Applied Mathematics (Udine University), ISSN 2234-3024. [SCOPUS, ESCI Indexed]
- Peer Reviewer for Communications of the Korean Mathematical Society (Korean Mathematical Society), ISSN 2239-0227. [SCOPUS, ESCI Indexed]
- Peer Reviewer for Applied Mathematics and Information Sciences (Natural Science Publisher), ISSN2325-0399. [SCOPUS, ESCI Indexed]
- Peer Reviewer for Advances and Applications in Mathematical Sciences (Mili Publishers), ISSN 0974-6803. [ESCI Indexed]
- Peer Reviewer for Universal Journal of Mathematics and Applications (Dergi Park Publishers), ISSN 2651-4001. [ESCI Indexed]
- Peer Reviewer for Journal of Mathematical Analysis, ISSN 2217-3412. [ESCI Indexed]

MEMBER OF SCIENTIFIC ORGANISATION

- Life time member of Society for Special functions and their applications.
- Life time member of Institute of Scholars. (Institute of Scholars (InSc) is an emerging technical professional organization).

COMPUTER SKILLS

- **Languages** **:** C, C++, Mathematica, MATLAB
- **Database** **:** My SQL
- **Operating System** **:** UNIX,Windows XP & WIN 7.
- **Office Work** **:** MS Word, Excel, Power Point
- **Others** **:** Data Structure.
- **Nine Week course on "Programming with MATLAB".**

STRENGTHS

- To Help the people
- Positive Attitude
- Hard Working
- Punctuality
- Responsibility
- Believe in Almighty

HOBBIES

- Playing Cricket
- Surfing
- Listening Music

PERSONAL PROFILE

- **Father's Name** : Late Munawwar Khan
- **Mother's Name** : Mrs. Bilkees Begum
- **Date of Birth** : 30th July 1990
- **Gender** : Male
- **Marital Status** : Single
- **Nationality** : Indian
- **Pass Port Number** : L5638096
- **Languages Known** : English, Hindi & Urdu
- **Web of Science ID** : AAK-7864-2020
- **ORCID** : 0000-0003-4222-6254
- **SCOPUS ID** : 57195936928
- **ResearchGate Profile** : https://www.researchgate.net/profile/Mohd_Shadab9
- **GoogleScholar Profile** : https://scholar.google.com/citations?user=rqV8lS8AAAAJ&hl=en
- **Scopus (Elsevier) Profile** : https://www.scopus.com/authid/detail.uri?authorId=57195936928

About Me:

I, Mohd. Shadab have completed M.Sc. (Mathematics) from Jamia Millia Islamia (A Central University), New Delhi, India with first division in 2011. I have successfully defended final Ph.D. viva in May, 2018 and my thesis title is "*Identifying the relevance of hypergeometric approach to certain outstanding problems*". I have got award for **Best paper presentation** by *Society of Special Functions and Their Application* at *International Conference on Special Function and their application 21-23, October 2019*, Bikaner, India. **I have received "InSc Young Achiever Award"** by Institute of Scholars for the research paper "Analytic properties of Touchard based hybrid polynomials via operational techniques" on 01-July-2020. I have also received **Faculty Appreciation Award for Research (2nd position in the University)** on 26-January-2021 by Glocal University, India.

In my research, I explore analytical properties of special functions and orthogonal polynomials, aiming to contribute new insights to the field of special functions. My work centers on new classes of hybrid orthogonal polynomials, addressing their analytical properties through different modern techniques and rigorous empirical analysis and theoretical frameworks.

Future Research Plan:

Special functions are the solutions of a wide class of the fundamental differential equations of mathematical physics, such as the classical orthogonal polynomials (the Laguerre, Hermite and Jacobi polynomials), the spherical, cylindrical and hypergeometric functions. Simultaneously, special functions introduced by generating function method, and the governing differential equation is then obtained as one of the important property associated with the particular function. Since theory of special functions is very much an application driven field of mathematics, the field has grown enormously, and reflects applications in many fields such as in the solutions of many theoretical and applied problems of physics, engineering, statistics, biology, economics and other diverse areas.

(i) To investigate the analytical properties of new hybrid families of special polynomials (functions) for example differential equations, series definition, and summations formulae compliance with examples.

(ii) To approach hybrid special polynomials associated with Berstien, Jacobi, Appell and Boas-Buck polynomials via matrix representation.

(iii) To derive the generating functions of hybrid special polynomials associated with Jacobi, Appell and Boas-Buck polynomials using Pascal matrix functional and Wronskian.

(iv) To discuss the properties of hybrid q-Berstein polynomials, q-Jacobi, q-Appell, and q-Boas-Buck polynomials via operational techniques and matrix approach.

The above proposal with organized and discussed problems will lead the search of some new problems as impact of the outcome.

REFERENCES

Prof. M. I. Qureshi
Department of Applied Sciences
And Humanities, Jamia Millia Islamia,
New Delhi-110025.
e-mail: miqureshi_delhi@yahoo.co.in

Prof. Kalyan Chakraborty
Department of Mathmetics
Harish Chandra Research Institute
Allahabad-211019, (U.P.)
e-mail: kalyan@hri.res.in

Prof. Quddus Khan
Department of Applied Mathematics & Humanities
Jamia Millia Islamia
New Delhi, India.
e-mail: qkhan@jmi.ac.kr

Prof. M.A. Pathan
Center for Mathematical and
Statistical Sciences, Peechi-Campus.
Peechi-Kerala, India
e-mail: mapathan@gmail.com