Personal details

Personal details

First / given name	Wara
Second given name	
Third given name	
Surname/family name	Sadiq
Date of birth	01 January 1999
Preferred first/given name	Wara
Previous surname	
Country of birth	Pakistan
Legal nationality	Pakistani
Dual nationality	
Country of residence	Pakistan
Have you previously studied with us at the University of Bristol?	No

Contact details

Home address

Please provide your permanent residential address. If you have another address and would prefer for us to contact you at that address instead you have the opportunity to add a correspondence address in the next section.

Country	Pakistan
Postcode	11100
Address Line 1	Master Muhammad Sadiq Muhallah
Address Line 2	
City	Kotli Azad Kashmir
County	Pakistan
Telephone	+923431251174

If you would like us to send any postal correspondence to an address which is not your home address please enter an alternative address here. If you want us to send correspondence to your home address then please select No.

Do you want to add a correspondence address?	No
Country	Pakistan
Postcode	11100
Address Line 1	Master Muhammad Sadiq Muhallah
Address Line 2	
City	Kotli Azad Kashmir
County	Pakistan
Telephone	+923431251174

Agent

Agent details

Agency Name	
Email address	

Other information

Additional Documents

Please upload required documents as outlined in your admissions statement

Mode of study

How would like to study this programme?	Full Time

Qualifications

Qualifications

Institution	Qualification	Type	Subject	Actual/predicted	Grade	Start date	End date
Comsats University Islamabad	Master of Philosophy (PG)	Academic Qualification	Mathematics	Actual	3.60	02/Feb/2021	15/Mar/2023

If these qualifications have altered since your last application please note the changes in the free text box here.

English Language

Is English your first language? No
What is your first language? Urdu
Did you study at school/university where you were taught in English? Yes
For how many years? 10
Have you sat a relevant English language test? Yes

TOEFL (internet-based)

Registration number
Date of TOEFL test
TOEFL reading score
TOEFL listening score
TOEFL speaking score
TOEFL writing score
TOEFL total score

IELTS (International English Language Testing System)

Test report form (TRF) number 028336
UKVI number (if applicable)
Date of IELTS test 25 November 2023
IELTS listening score 7.5
IELTS reading score 5.0
IELTS writing score 6.0
IELTS speaking score 6.5
IELTS total score 6.5

Pearson Test of English

Score report code
Date of Pearson test
Pearson listening score
Pearson reading score
Pearson speaking score
Pearson writing score
Pearson overall score

Other English Language test

Name of course	
Registration number	
Date of test	
Listening score	
Writing score	
Reading score	
Total score	

Experience

Current Employer

Employer name and address	Paragone Institute of Modern sciences
Job title and main duties	Mathematics Teacher
Full time/Part time	Full time
Date of Appointment	02 February 2023
End date (if applicable)	

Previous employment 1

Employer name and address	
Job title and main duties	
Full time/Part time	
Date of Appointment	
End date (if applicable)	

Previous employment 2

Employer name and address	
Job title and main duties	
Full time/Part time	
Date of Appointment	
End date (if applicable)	

Previous employment 3

Employer name and address	
Job title and main duties	
Full time/Part time	
Date of Appointment	
End date (if applicable)	

Other Experience

Do you have any other relevant work experience to support your application?	Yes
Please provide details	During my Bachelor's, I worked on HIGGS SYSTEM. During this time I worked on a project named EXTENDED RATIONAL Sinh-Cosh AND Sin-Cos METHODS TO DERIVE SOLUTIONS TO THE COUPLED HIGGS SYSTEM. This was a joint project based on four students and I worked as a team lead of my group at Mirpur University of Science and Technology (MUST)

Personal statement

Personal details

Do you have a personal statement to upload?	Yes
Please type your personal statement in the box	

Research proposal

Research proposal

Proposed supervisor 1	Dr Sadiq Zia
Proposed supervisor 1	Dr Rav Nawaz
Proposed project title (max 150 chars)	ar Fractional Diffusion Equations with NonLocal Boundary Conditi

Passport and visa

Visa required

Do you require a visa to study in the UK?	Yes

Please fill out your passport details below. If you are unable to provide these at the current time you will have another opportunity to upload your passport after you submit the form. If you do not provide us with this information we will be unable to issue you with your confirmation of acceptance number and you will be unable to obtain a visa.

Passport details

Passport number	CB5468013

Further details

Have you previously studied in the UK?	No
What was the highest level of study in the UK?	
Please confirm the total length of your UK study in years	

Referees

Referee 1

Do you have a reference to upload?	Yes
Type of reference	
Referee title	
Forename	
Surname	
Position	
Institution/Company	
Email address	
Country	

Referee 2

Do you have a second reference to upload?	Yes
Type of reference	
Referee title	
Forename	
Surname	
Position	
Institution/Company	
Email address	
Country	

Funding

Funding 1

What is your likely source of funding?	University of Bristol scholarship
Please give the name of your scholarship or Studentship	
Please specify	
Percentage from this source	100
Is this funding already secured?	No

Funding 2

What is your likely source of funding?	
Please give the name of your scholarship or Studentship	
Please specify	
Percentage from this source	
Is this funding already secured?	

Funding 3

What is your likely source of funding?	
Please give the name of your scholarship or Studentship	
Please specify	
Percentage from this source	
Is this funding already secured?	

Other funding

I would like to be considered for other funding opportunities	Yes

Submission

Documents

Document type	File name
Personal statement	P Statemnet.pdf
Degree certificate	MS degree.pdf
Transcript	MS Transcript (1).pdf
Research proposal	Research Proposal.pdf
Passports and visas	Passport_compressed.pdf
Language qualification	IELTS Result.pdf
References	Recommendation Letter_Ms. Wara Sadiq (2).pdf
Curriculum vitae	CV - Wara Sadiq (1).pdf
Admissions documents (Miscellaneous)	CV - Wara Sadiq (1).pdf
References	Reference Letter SZ.pdf

By ticking the checkbox below and submitting your completed online application form, you acknowledge the University of Bristol will use the information provided from time to time, along with any further information about you the University may hold, for the purposes set out in the University's full Data Protection Statement. Applicants applying to the collaborative programmes of doctoral training should also read the Data Protection Statement for collaborative programmes of doctoral training.

The information that you provided on your application form will be used for the following purposes:

- To enable your application for entry to be considered and allow our Admissions Advisors, where applicable, to assist you through the application process;
- To enable the University to compile statistics, or to assist other organisations to do so. No statistical information will be published that would identify you personally;
- To enable the University to initiate your student record should you be offered a place at the University.

All applicants should note that the University reserves the right to make without notice changes in regulations, courses, fees etc at any time before or after a candidate's admission. Admission to the University is subject to the requirement that the candidate will comply with the University's registration procedure and will duly observe the Charter, Statutes, Ordinances and Regulations from time to time in force.

By ticking the checkbox below and submitting your completed online application form, you are confirming that the information given in this form is true, complete and accurate and that no information requested or other material information has been omitted. You are also confirming that you have read the Data Protection Statement and you confirm the statement below.

I can confirm that the information I have provided is true, complete and accurate. I accept that the information given in my application will be stored and processed by the University of Bristol, in accordance with the *UK General Data Protection Regulation and Data Protection Act 2018*, in order to:

- Consider my application and operate an effective and impartial admissions process;
- Monitor the University’s applicant and student profile;
- Comply with all laws and regulations;
- Ensure the wellbeing and security of all students and staff;
- If my application is successful to form the basis of the statement made within my application.

If the University of Bristol discovers that I have made a false statement or omitted signification information from my application, for example examination results, I understand that it may have to withdraw or amend its offer or terminate my registration, according to circumstances.

europass

Wara Sadiq

Home : Master Muhammad Sadiq Mohallah Fazal Abad Near DC House New Courts Kotli Azad Kashmir, 11100, KOTLI AZAD KASHMIR, Pakistan

Email: warasadiq@gmail.com **Phone:** (+92) 3431251174

Gender: Female **Date of birth:** 01/01/1999 **Nationality:** Pakistani

ABOUT ME

Committed to exploring new lines of knowledge and learning the field of performance in **mathematics**. Looking for a platform where I can prove and further polish my abilities, skills, and knowledge with maximum chances of grooming and learning

EDUCATION AND TRAINING

[15/02/2021 – 30/01/2023]

Master of Science in Mathematics

COMSATS University Islamabad

City: Islamabad

Country: Pakistan

Final grade: 3.60/4.00 CGPA

- Advanced Partial Differential Equation
- Numerical Solutions of PDEs I
- Direct and Inverse Problems in Wave Propagation
- Fixed Point Theory and Application
- Elastodynamics
- Probability Models and Applications

[08/2015 – 12/2019]

Bachelors of Science in Mathematics

Mirpur University of Science and Technology

City: Mirpur Azad Kashmir

Country: Pakistan

Final grade: 2.89/4.00 CGPA

PUBLICATIONS

Submitted

Paper 1

Wara Sadiq, S.Aziz, "On some Backward Problems for Two Dimensional Space-Time Fractional Diffusion Equation."

(Under Review)

Paper 2

Wara Sadiq, S.Aziz, Analysis of Backward Source Problems for Some Fractional Order Differential Equations."

(Under Review)

LANGUAGE SKILLS

Mother tongue(s): Urdu

Other language(s):

English

LISTENING C1 **READING** C1 **WRITING** C1

SPOKEN PRODUCTION B2 **SPOKEN INTERACTION** C1

Levels: A1 and A2: Basic user; B1 and B2: Independent user; C1 and C2: Proficient user

PROJECTS

EXTENDED RATIONAL Sinh-Cosh AND Sin-Cos METHODS TO DERIVE SOLUTIONS TO THE COUPLED HIGGS SYSTEM

During my Bachelor's, I worked on HIGGS SYSTEM. During this time I worked on a project named "EXTENDED RATIONAL Sinh-Cosh AND Sin-Cos METHODS TO DERIVE SOLUTIONS TO THE COUPLED HIGGS SYSTEM". This was a joint project based on four students and I worked as a team lead of my group at Mirpur University of Science and Technology (MUST).

RESEARCH EXPERIENCE

Master's in mathematics dissertation

Title: On some Backward Problems for Two Dimensional Space-Time Fractional Diffusion Equation

Supervisor: Dr.Saqib Zia(Associate Professor)

Focus: In my MS research, I considered the study of both time-dependent and space-dependent inverse source problems. More precisely, my focus was on the study of inverse source problems for fractional diffusion equations involving Hilfer bi-ordinal fractional derivative. It is more worthy that Hilfer bi-ordinal fractional derivative interpolates Riemann Liouville, Caputo, and Hilfer fractional derivatives. The corresponding spectral problem is non-self-adjoint in nature so, the eigenfunctions of the spectral problem are not complete hence, the eigenfunctions of the spectral problem and its adjoint problem are used to construct the bi-orthogonal set of functions. Such FDEs are often employed to explain empirically recorded oddities in the physical system. Our inquiry will include the existence and uniqueness results of the solution of inverse problems under specific regularity constraints on the input data.

STUDIES APPLIED FOR

Ph.D. Mathematics

RESEARCH INTERESTS

Following are my research intrests

- Fractional Calculus
- Scientific computing
- Mathematical economics
- Operational research and management sciences
- Dynamical System
- Areas of Nonlinear Analysis
- Differential Equations (ordinary and partially derived)

DIGITAL SKILLS

Microsoft Word | Google Docs | Microsoft Office | Organizational and planning skills | Written and Verbal skills | Team-work oriented | Power Point | Social Media | Zoom

SKILLS

Technical Skills

- Microsoft Word
- Microsoft Excel
- Microsoft PowerPoint
- LAteX (Expert)

- Python (Intermediate)
- Matlab (intermediate)

Personal skills

- Time management
- Stage-comparing skills
- Leading Skills
- Organizational and planning skills
- Decision-making
- Mental arithmetic
- Constructing logical arguments
- Abstract thinking
- A good listener and communicator
- Critical thinking and problem-solving.

WORK EXPERIENCE

[01/02/2023 – Current]

Mathematics teacher at secondary level

Paragon Institute of Modern Sciences

City: Kotli Azad Kashmir

Country: Pakistan

Email address: Pimscollege123@gmail.com

- Establish Discipline
- Manage staff
- Teach students at the Secondary Level (23 hours/week)
- Organizer of any function and party
- Prepare lesson plans and materials
- Monitor the students' progress

RECOMMENDATIONS

Associate professor

Name: Dr. Rab Nawaz
Phone number: (+92) 5190495534
Email: rabnawaz@comsats.edu.pk

Dr. Rab Nawz was my Professor in two subjects during MS Mathematics at Comsats University Islamabad.

Associate Professor

Name: Dr. Saqib Zia
Phone number: (+92) 03335582459
Email: saqib_zia@comsats.edu.pk

Dr. Saqib Zia was my supervisor in MS research at COMSATS University Islamabad. I have know him for three years.

Assistant Professor

Name: Dr. Sara Aziz
Phone number: (+92) 3325645071
Email: Sara.aziz@nu.edu.pk

Dr. Sara Aziz was my Co-supervisor in MS research and she is working in the Department of Sciences and Humanities, at the National University of Computer Emerging Sciences, Islamabad.

Serial No: 101184

Registration No: CIIT/SP21-RMT-050/ISB

COMSATS University Islamabad

WARA SADIQ d/o MUHAMMAD SADIQ

Of

Islamabad Campus

has been conferred upon the degree of

Master of Science in Mathematics

Given on this Fifteenth day of March two thousand and Twenty Three at Islamabad

Date of Issuance: 15th March 2023

Controller of Examinations

Rector

Registrar

PERSONAL STATEMENT

I have not been a dreamer but a pursuer of dreams. I have consciously dreamt all my life. I set my targets; I aim high, and work hard to make it to my goals. When I miss, I have the courage and the objectivity to carry out an introspective analysis of the missing links in the hard-work. When I achieve my targets, I do not let complacency overtake me. I do not sit back to tell myself that I have done it. I embark upon the realization of yet another work.

Mathematics has always been my passion. I had always been fascinated by Archimedes's words when he had said that "Give me a place to stand on and I'll move the word." I knew that numbers if put in the right order can also move the world. Mathematics is one such art which gives one the facility to achieve harmony and balance. Numbers and figures have always attracted my interest for their concreteness and exactness. I always found mathematics close to my heart for the refined poetic rhythm in their additions, subtractions, divisions and multiplications. I have always wondered that our surroundings are prone to problems But Mathematics also gives solutions to problems and answers to questions. I was deeply impressed by Francis Bacon, when he said: "Bowling is good for the stone and reins; shooting for the lungs and breast; gentle walking for the stomach; riding for the head; and the like. So if a man's wit be wandering, let him study the mathematics; for in demonstrations, if his wit be called away never so little, he must begin again." That was why he had said that "Histories make men wise; poets witty; the mathematics subtle; natural philosophy deep; moral grave; logic and rhetoric able to contend."

Lately, I have been intrigued by the employment of fractional calculus techniques and tools in physics, chemistry, engineering, computer science, finance and other sciences. Having studied and examined the diverse applications of fractional calculus and fractional differential equations input in natural sciences and engineering domain, I feel strongly motivated to further analyze the phenomena through minute focus and contribute a synchronizing model for an increased efficiency and efficacy of the IT for enhanced performance and output. My interest, background, and motivation will, I am sure, enable me to come up with relevant, useful, and viable solutions to different modular bugs in the area. I am especially inclined to study these compatible processes from user-customized perspectives.

My stay at the academia, during the past years, has given me the much desired exposure to the needs and perspectives of users, especially of the age-group, which is computer prone. My multi-dimensional involvement in academic and research have given me a clue towards appreciation and understanding of multi-perspective consideration of Mathematics facilities and possibilities. My stay at the academia has also been instrumental in heightening my propensity for the importance of research profile. I have developed not only an awareness of research culture but

also have recognized well the importance of creating knowledge, rather than only disseminating it among the youth, pursuing it at the university level.

I am sure if given an opportunity either in a motivated and focused research group or any field of mathematics, I shall be able to produce work of reasonably substantial and palpable value. My desire and urge to excel and to do something of some value, will go a long way in the realization of my dreams.

Submitted Articles:

Wara Sadiq, S.Aziz, Analysis of Backward Source Problems for Some Fractional Order Differential Equations, Journal of Mathematical Analysis and Applications.

Wara Sadiq, S.Aziz, On some Backward Problems for Two Dimensional Space-Time Fractional Diffusion Equation, Journal of Inverse Problems.

Wara Sadiq

Analyzing Non-Linear Fractional Diffusion Equations with Non-Local Boundary Conditions

Fractional Calculus (FC), the study of derivatives and integrals of arbitrary order, has a history as long as integral calculus. FC encompasses not only the real fractional-order derivatives and integrals, which are employed to explain memory-based phenomena. Fractional operators coexisted with classical operators since their inception. Recently, FC gained significant attention across various scientific domains, including statistics, biosciences, viscoelasticity, dynamics, signal processing, mathematical biology, optimization, control systems, and quantum mechanics.
However, the field of fractional-order integration and differentiation, which are rapidly advancing, are akin to shadows of the past. They find applications in real-world problems such as modeling population growth, gross domestic production, human tissue behaviour under mechanical strain, measles transmission, COVID-19, and many others. Their primary advantage lies in the flexibility they offer in handling initial conditions.
Numerous researchers have attempted to defined fractional derivatives with most expressing fractional derivatives in integral forms, including Riemann-Liouville, Katugampola, Caputo, Caputo-Fabrizio, Atangana-Gomez, Hadamard, Atangana-Baleanu, Atangana-Koca, Katugampola-Atangana beta derivative, Atangana bi-order, and more.

Physical Interpretation:

If there is a well-established phenomenological, though not rigorously defined, relationship validated by experimental or numerical evidence, this interpretation of the physical world can be considered provisional. Fractional derivatives are more challenging to grasp from a physical standpoint than from a mathematical one. A physical interpretation must not only be well-described but also consistent with theory and experimentation. Various physical interpretations of fractional calculus exist, including anomalous diffusion, thermodynamics, continuous-time random walk (applied to phenomena like organic photoconductors, dielectric relaxation, turbulent plasmas, semiconductors, electron transport in non-crystalline electrodes, or transient photocurrents in amorphous solids), and the classification of long-time limits.

Aims:

In this project, I will investigate the inverse problem for the nonlinear fractional diffusion equation using the Dzherbashian-Nersesian operator, which combines three fractional operators (Riemann-liouville fractional derivative, Caputo fractional derivative, and Hilfer fractional derivative). There is limited literature on this operator on this operator in the field of fractional calculus, and I aim to expand its applicability to higher dimensions by employing various numerical schemes (a hybrid of block-pulse functions and Bernoulli polynomials, the least-squares method, Chebyshev-Gauss, Laguerre wavelet method, the Chebshevv wavelet method, and the modified wave-based algorithm).

Methods:

This project will encompass both applied and pure mathematics, including spectral theory and functional analysis, involving techniques such as Laplace transform, Banach Fixed Point theorem, Schauder's fixed point theorem, Weierstrass M-test, and Cauchy-Bunyakovsky-Schwarz inequality, as well as the Cauchy Integral theorem.

Refference:

Aleroev, T. S., and Kh T. Aleroeva. "On a class of fractional non-selfadjoint operators associated with differential equations." Russian Mathematics 58.10 (2014): 1-9.

Al - Jamal, Mohammad F. "A backward problem for the time - fractional diffusion equation." Mathematical Methods in the Applied Sciences 40.7 (2017): 2466-2474.

Janno, Jaan, and Nataliia Kinash. "Reconstruction of an order of derivative and a source term in a fractional diffusion equation from final measurements." Inverse Problems 34.2 (2018): 025007.

Feng, Pengbin, and Erkinjon T. Karimov. "Inverse source problems for time-fractional mixed parabolic-hyperbolic-type equations." Journal of Inverse and Ill-posed Problems 23.4 (2015): 339-353.

COMSATS University Islamabad

0095454

TRANSCRIPT

Date: 15-Mar-2023

Certified that WARA SADIQ d/o MUHAMMAD SADIQ Registration No. CIIT/SP21-RMT-050/ISB Department of Mathematics has completed and passed all the requisite courses / examinations for the degree of Master of Science in Mathematics , on 24th January 2023 , taught as a Regular Mode of study from Islamabad Campus.

Date of Birth : 01-Jan-1999

The details of the courses passed are as follows:

Course Code	Semester / Course Title	Cr.	LG	CP	Course Code	Semester / Course Title	Cr.	LG	CP
	Spring 2021					**Spring 2022**			
MTH609	Advanced Partial Differential Equations	3	A	11.70	MTH800	Thesis		IP	
MTH612	Numerical Solutions of PDEs I	3	A+	12.00					
MTH665	Heat Transfer	3	A	11.70		**Fall 2022**			
MTH666	Elastodynamics	3	B	10.35					
	Fall 2021				MTH800	Thesis	6+	Approved	
MTH604	Fixed Point Theory and Applications	3	B	9.90					
MTH624	Probability Models and Application	3	A	10.50					
MTH658	Direct and Inverse Problems in Wave Propagation	3	A	10.50					
MTH661	Viscous Fluids I	3	B	9.75					

Thesis Title: **Analysis of Backward Source Problems for Some Fractional Order Differential Equations**

Total Credit Hours Registered:	**30**
*Discounted Credit Hours:	**0**
Net Credit Hours Passed:	**30**
Total CP:	**86.4**
CGPA+:	**3.6**

+Credit Hours allocated to Thesis are not counted for calculation of CGPA

Controller of Examinations

Errors/Omissions Excepted

(Please Turn Over)

IELTS™

Test Report Form

ACADEMIC

NOTE *Admission to undergraduate and post graduate courses should be based on the ACADEMIC Reading and Writing Modules. GENERAL TRAINING Reading and Writing Modules are **not** designed to test the full range of language skills required for academic purposes. It is recommended that the candidate's language ability as indicated in this Test Report Form be re-assessed **after two years** from the date of the test.*

Centre Number	PK015	Date	25/NOV/2023	Candidate Number	028336

Candidate Details

Family Name	SADIQ
First Name	WARA
Candidate ID	CB5468013
Date of Birth	01/01/1999
Sex (M/F)	F
Scheme Code	Private Candidate
Country or Region of Origin	
Country of Nationality	PAKISTAN
First Language	URDU

Test Results

Listening	Reading	Writing	Speaking	Overall Band Score	CEFR Level
7.5	5.0	6.0	6.5	6.5	B2

Administrator Comments

Centre stamp

British Council
Islamabad Pk015
www.britishcouncil.pk

Validation stamp

IELTS

Administrator's Signature

Date 07/12/2023

Test Report Form Number 23PK028336SADW015A

BRITISH COUNCIL idp Cambridge Assessment English

The validity of this IELTS Test Report Form can be verified online by recognising organisations at http://ielts.ucles.org.uk

europass

Wara Sadiq

Home : Master Muhammad Sadiq Mohallah Fazal Abad Near DC House New Courts Kotli Azad Kashmir, 11100, KOTLI AZAD KASHMIR, Pakistan

Email: warasadiq@gmail.com **Phone:** (+92) 3431251174

Gender: Female **Date of birth:** 01/01/1999 **Nationality:** Pakistani

ABOUT ME

Committed to exploring new lines of knowledge and learning the field of performance in **mathematics**. Looking for a platform where I can prove and further polish my abilities, skills, and knowledge with maximum chances of grooming and learning

EDUCATION AND TRAINING

[15/02/2021 – 30/01/2023]

Master of Science in Mathematics

COMSATS University Islamabad

City: Islamabad

Country: Pakistan

Final grade: 3.60/4.00 CGPA

- Advanced Partial Differential Equation
- Numerical Solutions of PDEs I
- Direct and Inverse Problems in Wave Propagation
- Fixed Point Theory and Application
- Elastodynamics
- Probability Models and Applications

[08/2015 – 12/2019]

Bachelors of Science in Mathematics

Mirpur University of Science and Technology

City: Mirpur Azad Kashmir

Country: Pakistan

Final grade: 2.89/4.00 CGPA

PUBLICATIONS

Submitted

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Wara Sadiq, S.Aziz, "On some Backward Problems for Two Dimensional Space-Time Fractional Diffusion Equation."

(Under Review)

Paper 2

Wara Sadiq, S.Aziz, Analysis of Backward Source Problems for Some Fractional Order Differential Equations."

(Under Review)

LANGUAGE SKILLS

Mother tongue(s): Urdu

Other language(s):

English

LISTENING C1 **READING** C1 **WRITING** C1

SPOKEN PRODUCTION B2 **SPOKEN INTERACTION** C1

Levels: A1 and A2: Basic user; B1 and B2: Independent user; C1 and C2: Proficient user

PROJECTS

EXTENDED RATIONAL Sinh-Cosh AND Sin-Cos METHODS TO DERIVE SOLUTIONS TO THE COUPLED HIGGS SYSTEM

During my Bachelor's, I worked on HIGGS SYSTEM. During this time I worked on a project named "EXTENDED RATIONAL Sinh-Cosh AND Sin-Cos METHODS TO DERIVE SOLUTIONS TO THE COUPLED HIGGS SYSTEM". This was a joint project based on four students and I worked as a team lead of my group at Mirpur University of Science and Technology (MUST).

RESEARCH EXPERIENCE

Master's in mathematics dissertation

Title: On some Backward Problems for Two Dimensional Space-Time Fractional Diffusion Equation

Supervisor: Dr.Saqib Zia(Associate Professor)

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STUDIES APPLIED FOR

Ph.D. Mathematics

RESEARCH INTERESTS

Following are my research intrests

- Fractional Calculus
- Scientific computing
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- Operational research and management sciences
- Dynamical System
- Areas of Nonlinear Analysis
- Differential Equations (ordinary and partially derived)

DIGITAL SKILLS

Microsoft Word | Google Docs | Microsoft Office | Organizational and planning skills | Written and Verbal skills | Team-work oriented | Power Point | Social Media | Zoom

SKILLS

Technical Skills

- Microsoft Word
- Microsoft Excel
- Microsoft PowerPoint
- LAteX (Expert)

- Python (Intermediate)
- Matlab (intermediate)

Personal skills

- Time management
- Stage-comparing skills
- Leading Skills
- Organizational and planning skills
- Decision-making
- Mental arithmetic
- Constructing logical arguments
- Abstract thinking
- A good listener and communicator
- Critical thinking and problem-solving.

WORK EXPERIENCE

[01/02/2023 – Current]

Mathematics teacher at secondary level

Paragon Institute of Modern Sciences

City: Kotli Azad Kashmir

Country: Pakistan

Email address: Pimscollege123@gmail.com

- Establish Discipline
- Manage staff
- Teach students at the Secondary Level (23 hours/week)
- Organizer of any function and party
- Prepare lesson plans and materials
- Monitor the students' progress

RECOMMENDATIONS

Associate professor

Name: Dr. Rab Nawaz
Phone number: (+92) 5190495534
Email: rabnawaz@comsats.edu.pk

Dr. Rab Nawz was my Professor in two subjects during MS Mathematics at Comsats University Islamabad.

Associate Professor

Name: Dr. Saqib Zia
Phone number: (+92) 03335582459
Email: saqib_zia@comsats.edu.pk

Dr. Saqib Zia was my supervisor in MS research at COMSATS University Islamabad. I have know him for three years.

Assistant Professor

Name: Dr. Sara Aziz
Phone number: (+92) 3325645071
Email: Sara.aziz@nu.edu.pk

Dr. Sara Aziz was my Co-supervisor in MS research and she is working in the Department of Sciences and Humanities, at the National University of Computer Emerging Sciences, Islamabad.

Serial No.: A08531

Regd No.: MUAT/FA15-BSM-031/AJK
Roll No.: FA15-BSM-031

MIRPUR UNIVERSITY OF SCIENCE & TECHNOLOGY (MUST), MIRPUR

In recognition of the fulfilment of prescribed requirement, the degree of

Bachelor of Science

in

Mathematics

is conferred upon

Wara Sadiq

son/daughter of **Muhammad Sadiq** who completed

the Degree on **December 23, 2019** during the session **2015-19** by securing **2850**

marks out of **4500** and was placed in **C+** Grade / CGPA **2.89**

Controller of Examinations

Chancellor

Vice Chancellor

Mirpur University of Science and Technology (MUST),Mirpur (AJK)

Detailed Marks Certificate

Issue Date: 01.01.2020

Certified that WARA SADIQ D/o MUHAMMAD SADIQ Registration No. MUST/FA15-BSM-031/AJK, (Session 2015-19) Department of Mathematics has passed all the requisite courses/ examinations for the degree of Bachelor of Science in Mathematics

The details of the courses passed as under:

Course Code	Semester / Course Title	Cr.	Marks	L.G.	GP
	Fall 2015				
COM-1103	Introduction to Computer	2+1	72	B	3.4
ENG-1102	English I	3+0	65	B-	3.0
ISL-1101	Islamic Studies	2+0	84	A-	4.0
MAT-1105 *	Calculus I	4+0	38	F	0.0
MAT-1106 *	Foundation of Mathematics	3+0	41	F	0.0
PHY-1104	Physics I	3+0	50	C-	2.0
	Spring 2016				
ENG-1202	English II	3+0	73	B	3.5
HUM-1201	Arabic	2+0	60	C+	2.6
HUM-1203	Pakistan Studies	2+0	50	C-	2.0
MAT-1205	Calculus II	4+0	57	C	2.4
MAT-1206 *	Linear Algebra I	3+0	36	F	0.0
PHY-1204 *	Physics II	3+0	38	F	0.0
	Summer 2016				
MAT-1105	Calculus I *(Repeated)*	4+0	69	B-	3.2
MAT-1206	Linear Algebra I *(Repeated)*	3+0	62	C+	2.8
	Fall 2016				
ENG-2302	English III	3+0	74	B	3.6
HUM-2308	HR Management	3+0	55	C	2.3
MAT-2303 *	Mathematical Statistics I	3+0	41	F	0.0
MAT-2304	Mechanics I	3+0	65	B-	3.0
MAT-2305	Calculus III	4+0	57	C	2.4
MAT-2306	Linear Algebra II	2+0	54	C-	2.2
	Spring 2017				
HUM-2408	Organizational Behavior	3+0	70	B	3.3
MAT-2402 *	Introduction to Differential Equations	2+0	40	F	0.0
MAT-2403 *	Mathematical Statistics II	3+0	38	F	0.0
MAT-2404	Mechanics II	3+0	56	C	2.4
MAT-2405 *	Metric Spaces	2+0	28	F	0.0
MAT-2406	Number Theory	2+0	50	C-	2.0
PHY-1204 *	Physics II *(Repeated)*	3+0	9	F	0.0
	Summer 2017				
MAT-2402	Introduction to Differential Equations *(Repeated)*	2+0	60	C+	2.6
MAT-2403 *	Mathematical Statistics II *(Repeated)*	3+0	40	F	0.0
PHY-1204	Physics II *(Repeated)*	3+0	69	B-	3.2
	Fall 2017				
MAT-2303	Mathematical Statistics I *(Repeated)*	3+0	53	C-	2.2
MAT-3501 *	Real Analysis I	3+0	40	F	0.0
MAT-3502	Ordinary Differential Equations	3+0	54	C-	2.2
MAT-3503	Differential Geometry I	3+0	73	B	3.5
MAT-3504	Analytical Mechanics	3+0	54	C-	2.2
MAT-3505 *	Topology	3+0	44	F	0.0
MAT-3506	Abstract Algebra	3+0	81	A-	4.0
	Spring 2018				
MAT-3601	Real Analysis II	3+0	60	C+	2.6
MAT-3602	Partial Differential Equations	3+0	81	A-	4.0
MAT-3603	Numerical Methods I	3+0	50	C-	2.0
MAT-3604	Complex Analysis	3+0	57	C	2.4
MAT-3605	Tensor Analysis	2+0	52	C-	2.1
MAT-3606	Scientific Programming	2+1	82	A-	4.0
	Summer 2018				
MAT-2405 *	Metric Spaces *(Repeated)*	2+0	6	F	0.0
MAT-3501	Real Analysis I *(Repeated)*	3+0	50	C-	2.0
	Fall 2018				
MAT-1106	Foundation of Mathematics *(Repeated)*	3+0	72	B	3.4
MAT-3505	Topology *(Repeated)*	3+0	76	B+	3.7
MAT-4702 *	Mathematical Physics	3+0	42	F	0.0
MAT-4703	Numerical Methods II	3+0	69	B-	3.2
MAT-4704	Functional Analysis	3+0	55	C	2.3
MAT-4705 *	Fluid Mechanics I	3+0	44	F	0.0
MAT-4715	Conference/Seminar/Reading I	0+0	0	S	0.0
MAT-4716 *	Project/Report	0+6	0	IP	0.0
	Spring 2019				
MAT-2405	Metric Spaces *(Repeated)*	2+0	50	C-	2.0
MAT-4716	Project/Report	0+6	85	A	4.0
MAT-4803	Integral Equations	3+0	65	B-	3.0
MAT-4804	Optimization Theory	3+0	77	B+	3.8
MAT-4807	Special Functions	3+0	73	B	3.5
MAT-4811	Dynamical Systems	3+0	50	C-	2.0
MAT-4815	Conference/Seminar/Reading II	0+0	0	S	0.0
MAT-4816	Comprehensive Oral Examination	0+0	0	S	0.0
	Summer 2019				
MAT-2403	Mathematical Statistics II *(Repeated)*	3+0	70	B	3.3
MAT-4702	Mathematical Physics *(Repeated)*	3+0	69	B-	3.2
MAT-4705	Fluid Mechanics I *(Repeated)*	3+0	50	C-	2.0

Total Credit Hours Registered:	182
* Discounted Credit Hours:	49
Net Credit Hours:	133
Total Marks	2850/4500 (63.333%)
Total CP:	384.2
CGPA:	2.89
Aggregate Weighted %:	64.12
LG	C+
Degree Completion Date:	23.12.2019

Checked by: _____

EJAZ AHMED
Lecturer Commerce
Govt. Post Graduate College
Kotli AJ&K

Controller of Examinations

Errors/ Omissions Excepted

Serial No: 101184

Registration No: CIIT/SP21-RMT-050/ISB

COMSATS University Islamabad

WARA SADIQ d/o MUHAMMAD SADIQ

Of

Islamabad Campus

has been conferred upon the degree of

Master of Science in Mathematics

Given on this Fifteenth day of March two thousand and Twenty Three at Islamabad

Date of Issuance: 15th March 2023

Controller of Examinations

Rector

Registrar

COMSATS University Islamabad

0095454

TRANSCRIPT

Date: 15-Mar-2023

Certified that WARA SADIQ d/o MUHAMMAD SADIQ Registration No. CIIT/SP21-RMT-050/ISB Department of Mathematics has completed and passed all the requisite courses / examinations for the degree of Master of Science in Mathematics , on 24th January 2023 , taught as a Regular Mode of study from Islamabad Campus.

Date of Birth : 01-Jan-1999

The details of the courses passed are as follows:

Course Code	Semester / Course Title	Cr.	LG	CP	Course Code	Semester / Course Title	Cr.	LG	CP
	Spring 2021					**Spring 2022**			
MTH609	Advanced Partial Differential Equations	3	A	11.70	MTH800	Thesis		IP	
MTH612	Numerical Solutions of PDEs I	3	A+	12.00					
MTH665	Heat Transfer	3	A	11.70		**Fall 2022**			
MTH666	Elastodynamics	3	B	10.35					
	Fall 2021				MTH800	Thesis	6+	Approved	
MTH604	Fixed Point Theory and Applications	3	B	9.90					
MTH624	Probability Models and Application	3	A	10.50					
MTH658	Direct and Inverse Problems in Wave Propagation	3	A	10.50					
MTH661	Viscous Fluids I	3	B	9.75					

Thesis Title: **Analysis of Backward Source Problems for Some Fractional Order Differential Equations**

Total Credit Hours Registered:	**30**
*Discounted Credit Hours:	**0**
Net Credit Hours Passed:	**30**
Total CP:	**86.4**
CGPA+:	**3.6**

+Credit Hours allocated to Thesis are not counted for calculation of CGPA

Controller of Examinations

Errors/Omissions Excepted

(Please Turn Over)

Serial No.: A08531

Regd No.: MUAT/FA15-BSM-031/AJK

Roll No.: FA15-BSM-031

MIRPUR UNIVERSITY OF SCIENCE & TECHNOLOGY (MUST), MIRPUR

In recognition of the fulfilment of prescribed requirement, the degree of

Bachelor of Science

in

Mathematics

is conferred upon

Wara Sadiq

son/daughter of **Muhammad Sadiq** who completed

the Degree on **December 23, 2019** during the session **2015-19** by securing **2850**

marks out of **4500** and was placed in **C+** Grade / CGPA **2.89**

Controller of Examinations

Chancellor

Vice Chancellor

COMSATS University Islamabad, Pakistan

Dr. Rab Nawaz
Tenured Associate Professor
Department of Mathematics
COMSATS University Islamabad, Pakistan
(*Formerly known as COMSATS Institute of Information Technology)*

Phone: +92-51-90495534
Email: rabnawaz@comsats.edu.pk

To Whom It May Concern

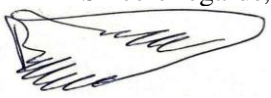
I am delighted to write this letter of recommendation on behalf of Ms. Wara Sadiq, who is seeking a PhD position at your esteemed university. I had the privilege of being acquainted with Ms. Wara during her time as an MS Mathematics student in our department. Our professional association spans the past three years, encompassing her enrollment in the mathematics department at COMSATS University Islamabad as a postgraduate scholar.

During her MS degree, she took my "Direct and Inverse Problems in Wave Propagation" and "Elastodynamics" courses and performed well, by showing the ability to grasp new skills. Throughout the courses, she was ranked as one of the top ten students. I identified her as a diligent, punctual, and responsible student who had excellent programming skills and a solid grasp of advanced mathematics. Moreover, I have seen Ms. Wara while performing various academic and extracurricular activities at the university level. I had witnessed a great commitment and maturity shown by her through these activities. She has long since become one of the most valuable and energetic students and a role model for her other fellow students, not only in studies but also in extracurricular activities. I had a chance to observe her MS thesis work where she presented her research work exceptionally well. She possesses an impressive array of mathematical techniques for handling challenging problems in the field of Applied and Computational Mathematics.

I have observed Ms. Wara as a diligent, adept, trustworthy, and collaborative student. Her sociable disposition and adaptability make her well-suited for various academic settings. I perceive her as a mature and dedicated researcher who could make a substantial contribution to the field of Mathematics. It is noteworthy that our university uses English as the medium for teaching and research, and Ms. Wara possesses commendable English writing and speaking skills. Hence, I enthusiastically endorse the selection of Ms. Wara Sadiq for a Ph.D. position and scholarship opportunity at your university.

Should you require any additional information, please do not hesitate to contact me.

Sincere regards,



Dr. Rab Nawaz

Dr. Saqib Zia
Associate Professor
Department of Mathematics
COMSATS University Islamabad
Park Road Chak Shahzad, Islamabad, Pakistan
Tel: +92 3335582459

Email: saqib_zia@comsats.edu.pk

January 06, 2024

Reference Letter of Ms. Wara Sadiq for PhD Programme

I feel pleasure in writing letter of recommendation in favor of Ms. Wara Sadiq.

She was a student of Master in Science (MS) in the Department of mathematics, COMSATS University Islamabad for the last two years. Ms. Wara has successfully completed her research work under my supervision. The title of her MS thesis was "Analysis of Backward Source Problems for Some Fractional Order Differential Equations." In addition to this, Ms. Wara has submitted two research articles in very well reputed journals. During her MS studies, I observed that she is very hard working, well-disciplined and punctual student. Whenever I assigned work to her she was prompt in doing that and showed great dedication towards her studies. She has the ability to work independently and also have the ability of self- management.

In our institution the medium of instruction is English therefore, I am very much confident that she will not face any difficulty in her studies and she will prove to be an asset in the field while achieving her highest degree.

Ms. Wara has a great personality, hard worker and honest. In summary, she is an outstanding young mathematician and researcher at a high level. I would strongly like to appreciate your favorable consideration to her application. I strongly recommend her application for PhD admission. Please feel free to contact me if you have further any questions.

Sincerely yours,

Dr. Saqib Zia

Dr. Saqib Zia
Associate Professor
Department of Mathematics
COMSATS University Islamabad
Park Road Chak Shahzad, Islamabad, Pakistan
Tel: +92 3335582459

Email: saqib_zia@comsats.edu.pk

July 06, 2023

Reference Letter of Ms. Wara Sadiq for PhD Programme

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Sincerely yours,

Dr. Saqib Zia

COMSATS University Islamabad, Pakistan

Dr. Rab Nawaz
Tenured Associate Professor
Department of Mathematics
COMSATS University Islamabad, Pakistan
(*Formerly known as COMSATS Institute of Information Technology)*

Phone: +92-51-90495534
Email: rabnawaz@comsats.edu.pk

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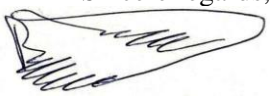

Dr. Rab Nawaz

Ministry of Interior,
Government of Pakistan
requires and requests
in the name of
The President
Islamic Republic of Pakistan
all those to whom it may concern
to allow the bearer
to pass freely without let or hindrance
and to afford the bearer such assistance
and protection as may be necessary
Director General
Immigration and Passports.
F9271307

ISLAMIC REPUBLIC OF
PAKISTAN

PASSPORT

Type: P
Country Code: PAK
Passport Number: CB5468013
Surname: SADIQ
Given Names: WARA
Nationality: PAKISTANI
Date of Birth: 01 JAN 1999
Citizen ID Number: 81202-8598801-8
Sex: F
Place of Birth: KOTLI AJK, PAK
Father Name: SADIQ, MUHAMMAD
Date of Issue: 12 FEB 2020
Issuing Authority: PAKISTAN
Date of Expiry: 10 FEB 2025
Tracking Number: 14101238642
Booklet Number: F9271307

P<PAKSADIQ<<WARA<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<
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