



Muhammad Rehman

Nationality: Pakistani **Date of birth:** 03/01/1984

Phone number: (+92) 3087039295 **Email address:** m.rehman@comsats.edu.pk

Home: House# 11, Street#11, Sector N, Bahria Enclave, Islamabad, 44000
Islamabad (Pakistan)

ABOUT ME

Assistant Professor in Physics, holding a Ph.D. from the University of Cantabria, with 7 years of dedicated teaching and research experience, specializing in the field of Particle Physics Phenomenology. A published researcher in physics beyond the Standard Model, particularly in the field of supersymmetry, with a strong commitment to academic excellence. Dedicated to innovative teaching methods that inspire students' curiosity and critical thinking.

WORK EXPERIENCE

Assistant Professor

COMSATS University Islamabad [01/02/2018 – Current]

City: Islamabad

Country: Pakistan

- Course Taught:

1. Graduate Courses: Quantum Field Theory, Particle Physics, Supersymmetry, Group Theory etc.
2. Undergraduate Courses: Quantum Mechanics, Statistical Physics, Relativity, Classical Mechanics etc.

Assistant Professor

Riphah International University Islamabad (Lahore Campus) [19/09/2016 – 31/01/2018]

City: Lahore

Country: Pakistan

- Course Taught:

1. Graduate Courses: Particle Physics, Advance Quantum Mechanics, Mathematical Methods.
2. Undergraduate Courses: Quantum Mechanics, Relativity, Classical Mechanics etc.

Research Fellow

Multi-messenger Approach for Dark Matter Detection Project [01/06/2011 – 30/06/2015]

City: Madrid

Country: Spain

EDUCATION AND TRAINING

PhD in Physics

Universidad de Cantabria [01/06/2011 – 08/02/2016]

City: Santander

Country: Spain

Thesis: Flavor Mixing Phenomenology in Supersymmetric Models

Under the supervision of Sven Heinemeyer and Mario E. Gomez

Master of Science in Physics

COMSATS Institute of Information Technology, Islamabad [07/09/2008 – 20/10/2010]

City: Islamabad

Country: Pakistan

Thesis: Rare Decays, A window for new physics

Bachelor of Science in Physics

Government College University Faisalabad [01/09/2003 – 10/10/2007]

City: Faisalabad

Country: Pakistan

LANGUAGE SKILLS

Mother tongue(s): **Urdu**

Other language(s):

English

LISTENING C1 READING C1 WRITING C1

SPOKEN PRODUCTION C1 SPOKEN INTERACTION C1

Spanish

LISTENING A1 READING A1 WRITING A2

SPOKEN PRODUCTION A1 SPOKEN INTERACTION A1

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

DIGITAL SKILLS

Proficient in FeynArts, FormCalc, FeynHiggs, SARAH, SPheno, and MicrOMEGAs.

PUBLICATIONS

Non-Holomorphic Soft-Term Contributions to the Higgs-Boson Masses in the Feynman Diagrammatic Approach

[2023]

M. Rehman and S. Heinemeyer, Phys. Rev. D 107, 095033 (2023), arXiv: 2212.13757 [hep-ph]

Excited lepton triplet contributions to the electroweak observables at one loop level

[2021]

M. Rehman, M. E. Gomez and O. Panella, Eur. Phys. J. C 81 (2021) 5, 392 arXiv: 2010.01808 [hep-ph]

Lepton flavor violating Higgs Boson Decays in Supersymmetric High Scale Seesaw Models

[2017]

M. E. Gomez, S. Heinemeyer and M. Rehman, Journal of Particle Physics 1, 30 (2017)

Flavor Mixing Effects Induced by RGE Running in the CMSSM

[2016]

M. E. Gomez, S. Heinemeyer and M. Rehman, Frascati Physics Series 61 (2016) 145

Quark Flavor Violating Higgs Boson Decay $h \rightarrow b\bar{s}$ in the MSSM

[2016]

M. E. Gomez, S. Heinemeyer and M. Rehman Phys. Rev. D 93, 095021 (2016)

Effects of Sfermion Mixing Induced by RGE Running in Minimal Flavor Violating CMSSM

[2015]

M. E. Gomez, S. Heinemeyer and M. Rehman Eur. Phys. J. C 75 (2015) 9, 434

Electroweak Precision Observables and Higgs Masses in Lepton Flavor Violating MSSM

[2014]

M. E. Gomez, T. Hahn, S. Heinemeyer and M. Rehman, Phys. Rev. D 90, 074016 (2014)

TALKS

Supersymmetry: A unified solution to particle physics problems

[28/11/2023]

Workshop on General Relativity, Cosmology, Astrophysics and Particle Physics organized by Institute of Space Technology Islamabad, Pakistan

Effects of Composite Quarks & Leptons to the Electroweak Precision Data

[18/05/2022]

International Conference on Physics, Air University Islamabad, Pakistan

Excited Lepton Triplet Contributions to Electroweak Observables

[28/01/2020]

Compose-IT: Unitarity for composite model and beyond in the HL-LHC era, University delgi studi di Perugia, Italy

Lepton Flavor Violating Higgs Decays in Supersymmetric Seesaw Models

[29/01/2018]

15th National Symposium on Frontiers in Physics, Govt. College University Lahore

Effects of Sfermion Flavor Mixing in Constrained Minimal Supersymmetric Standard Model

[15/03/2017]

International Scientific School (ISS 2017), National Center for Physics, Islamabad, Pakistan

Quark flavor violating Higgs decay $h \rightarrow b\bar{s}$ at the ILC

[31/05/2016]

ECFA: Linear collider workshop 2016, Santander, Spain

Flavor violating Higgs decays in Supersymmetric Models

[25/05/2016]

Planck 2016, Valencia, Spain

Quark Flavor Mixing in SUSY Models

[28/11/2015]

13th Multidark Consolider Workshop, Madrid, Spain

Flavor Mixing Phenomenology in Supersymmetric Models

[26/11/2015]

LHCPheno 2015, Valencia, Spain

Effects of Sfermion Mixing in Supersymmetric Models

[20/10/2014]

VI CPAN Days, Seville, Spain

Electroweak Precision Observables and Higgs Masses in Lepton Flavor Violating MSSM

[07/11/2013]

9th Multidark Consolider Workshop, Alcala de Henares, Spain

CONFERENCES AND SEMINARS

IBS-MultiDark Joint Workshop on Dark Matter and 13th MultiDark Consolider Workshop

[Madrid, Spain, 23/11/2015 – 28/11/2015]

Physics Landscape after the Higgs Discovery at the LHC

[Bad Honnef, Germany, 04/11/2014 – 07/11/2014]

Linear Collider School 2014

[Fraunchiemsee Germany, 11/08/2014 – 15/08/2014]

Taller de Altas Energias

[Spanish Graduate School on High Energy Physics, Bilbao Spain, 11/07/2011 – 22/07/2011]

CERN Summer School for Non-member states

[European Organization for Nuclear Research (CERN) Geneva Switzerland, 06/07/2010 – 27/08/2010]

First School on LHC Physics

[National Center for Physics Islamabad Pakistan, 12/10/2009 – 30/10/2009]

Higgs days at Santander

[Santander, Spain]

I participated in all workshops conducted from 2011 to 2015

Multidark Consolider Workshops

[Spain]

I participated in all workshops conducted from 2011 to 2015

STUDENT SUPERVISION

Sajid Israr (PhD Student)

[Current]

Phenomenological Aspects of Non-Holomorphic Soft SUSY-Breaking Terms in Supersymmetric Models

Haji Muhammad (MS Student)

[19/01/2024]

Study of the Anomalous Magnetic Moment of the Muon in the Composite Fermion Models

Kaleemullah (MS Students)

[19/01/2024]

Study of Oblique Corrections to the S,T,U Parameters in Composite Fermion Models

Muhammad Adeel (MS Student)

[19/01/2024]

Status of the Electroweak Precision Observables in 331 Model

Rabish (MS Student)

[19/01/2024]

Non-Holomorphic Contributions to the Two Body Gluino Decays at One-Loop Level

Yasir Arafat (MS Student)

[2023]

Higgs Sector of the Flavor Symmetry-Based MSSM: A Phenomenological Study

Maryam Siddiqua

[2023]

Study of the Correlation between $h \rightarrow \gamma \gamma$ and $h \rightarrow gg$ Decays in Non-Holomorphic Supersymmetric Standard Model

Muhammad Awais (MS Student)

[2023]

Calculation of Dark Matter Relic Density in the Non-Holomorphic Supersymmetric Standard Model

Aftab Ahmad (MS Student)

[2023]

Status of the electroweak precision observables in the gauge mediated supersymmetry breaking MSSM

Syed Soban Tahir (MS Student)

[2023]

Effects of gauge mediated supersymmetry breaking mechanism to the Higgs boson masses in the MSSM

Ali Raza (MS Student)

[2022]

Neutrino Mass Generation Mechanisms: A Comparative Study

Zain Ali (MS Student)

[2020]

Lepton flavor violation in the B-L Supersymmetric Model

Hafsa Javid (MS Student)

[2020]

Effect of the Quark Flavor Violation on $h \rightarrow \gamma\gamma/gg$ Decays in the Minimal Supersymmetric Standard Model

Akbar Ali (MS Student)

[2020]

Heavy Scalar Tau Decays in MSSM without Flavor Mixing

Sehar Ajmal (MS Student)

[2020]

Study of Two Body Gluino Decays at One-Loop Level in MSSM

Sheheryar (MS Student)

[2020]

Charged Lepton Flavor Violating Decays in Inverse Seesaw Models

Sadaf Naureen (MS Student)

[2019]

Rare Decays in R-Parity Violating Minimal Supersymmetric Standard Model

Junaid Ur Rehman (MS Student)

[2019]

Unveil the effect of 4th generation neutrino

Mishel Zafar (MS Student)

[2019]

Constraints on the MSSM-11 parameter space from Electroweak precision observables

Rabia Shah (MS Student)

[2019]

Higgs boson mass predictions in MSSM with 11 parameters

Yaqoob Shah (MS Student)

[2018]

Review of Lepton Flavor Violating Higgs Decays in Model Independent Approach

Muhammad Ramzan

[2018]

Study of Electroweak Precision Observables in MSSM at One-Loop Level

Farhan Ahmad (MS Student)

[2018]

Study of Excited Fermion Effects to Electroweak Precision Observables

Imran (MS Student)

[2018]

Study of Charged Lepton Flavor Violating Decays in CMSSM Extended by Type I Seesaw Mechanism

Imtiaz Ali (MS Student)

[2018]

Radiative Corrections to the Higgs Boson Mass Spectrum in the Minimal Supersymmetric Standard model

Narjis Bano (MS Student)

[2018]

Study of Lepton Violation Within Supersymmetric Seesaw Model

RECOMMENDATIONS

PhD Supervisor

Name: Sven Heinemeyer

Phone number: (+34) 942201536

Email: heinemey@mail.cern.ch

Instituto de Física Teórica, (UAM/CSIC), Universidad Autónoma de Madrid, Cantoblanco, 28049 Madrid, Spain

PhD Co-Supervisor

Name: Mario E. Gomez

Phone number: (+34) 959219782

Email: mario.gomez@dfa.uhu.es

Departamento de Física Aplicada, Universidad de Huelva, 21071 Huelva, Spain.