Dr. Abdul Malik Sultan

Department of Mathematics, University Of Okara, Okara-56300 Pakistan (Work)
Phone: (+92) 3007970732 **Email:** ams@uo.edu.pk
Google Scholar: https://scholar.google.com/citations?user=dZmtdqMAAAAJ&hl=en&oi=a0
LinkedIn: https://www.linkedin.com/in/abdul-malik-sultan-40b245320

About Me

Research Interest: General Relativity, Cosmology, Modified Theories of Gravity.

Work Experience

03/10/2014 – Current **Lecturer in Mathematics**, *University of Okara, Okara-Pakistan*
- Teaching various courses at Masters and Bachelor level.
- Supervising the Research Students at Masters level.

11/04/2011 – 30/09/2014 **Lecturer in Mathematics**, *University of South Asia Lahore-Pakistan*
- Teaching Courses of Engineering Mathematics to Civil Engineering classes.

Education

06/02/2019 – 10/08/2023 **PhD in Mathematics**, *COMSATS University Islamabad, Pakistan (Lahore Campus)*, Lahore-Pakistan
Thesis title: Dynamical Properties of Some Cosmological Systems

03/09/2010 – 15/05/2013 **M.Phil in Applied Mathematics**, *University of Engineering and Technology*, Lahore-Pakistan
Thesis: A Fourth Ordered Compact Method for Non-Linear Sine Gordon Equation

02/09/2006 – 31/08/2008 **Master of Science in Applied Mathematics**, *University of Engineering and Technology*, Lahore-Pakistan

03/09/2003 – 31/07/2006 **Bachelor of Science**, *Bahauddin Zakariya University*, Multan-Pakistan

Trainings

06/01/2025 – 11/02/2025 **One Month**, *National Academy of Higher Education (NAHE), Higher Education Commission (HEC) Islamabad-Pakistan*
Vanue: University of Okara

28/04/2025 – 02/05/2025 **One Week**, *Capacity Building Program for University Management, Higher Education Commission (HEC) Islamabad-Pakistan*
Vanue: University of Okara

Research Related Skills

- **Documentation Tools:** Latex, Overleaf, MS Office
- **Mathematics Software:** Mathematica, Python

Publications

2025

- **Abdul Malik Sultan**, Alishba Mushtaq, Dean Chou, Hamood ur Rehman, Hameed Ashraf, Aziz Ullah Awan.: Observational analysis of gravitational baryogenesis constraints in Einstein-Æther gravity. *Journal of High Energy Astrophysics.* **45**, 135. **(IF: 10.5, Q1)**. Link
- **Abdul Malik Sultan**, Maryam Fatima, Jackson Levi Said, Aliya Batool.: Constraining Big Bang Nucleosynthesis in $f(T, B)$ Gravity Through Observational Analysis. *Physics of the Dark Universe.* **49**, 102023. **(IF: 6.4, Q1)**. Link
- **Abdul Malik Sultan**, Alishba Mushtaq, Abdul Jawad, Sanjar Shaymatov, Muhammad Shoaib Saleem.: Gravitational baryogenesis analysis of observationally favored $f(T, \phi)$ models. *Physics of the Dark Universe.* **48**, 101936. **(IF: 6.4, Q1)**. Link
- Aneesa Majeed, Shamaila Rani, Nadeem Azhar, Mohammad Mahtab Alam, Sanjar Shaymatov, **Abdul Malik Sultan**.: $f(T, B, T_G, B_G)$ gravity tested through gravitational baryogenesis. *Physics of the Dark Universe.* **48**, 101957. **(IF: 6.4, Q1)**. Link
- **Abdul Malik Sultan**, Manahil Ali, Shamaila Rani, Nadeem Azhar, N. Myrzakulov, Sanjar Shaymatov.: Constraining Big Bang Nucleosynthesis in $f(T, B, T_G, B_G)$ gravity. *Nuclear Physics B.* **1018**, 117023. **(IF: 2.8, Q2)**. Link
- **Abdul Malik Sultan**, Aliya Batool, Ghulam Abbas, Abdul Jawad, Sanjar Shaymatov.: Padé approximated traversable wormholes in $f(R, T)$ gravity. *Nuclear Physics B.* **1013**, 116838. **(IF: 2.8, Q2)**. Link
- Elenora Di Valentino, Jackson Levi Said, Adam G. Riess, et al.: The CosmoVerse White Paper: Addressing observational tensions in fundamental physics. *Physics of the Dark Universe.* **49**, 101965. **(IF: 6.4, Q1)**. Link

2024

- Aliya Batool, **Abdul Malik Sultan**, Gonzalo J. Olmo, Diego Rubiera Garcia.: Stellar Structure in $f(R, T)$ gravity: Some Exact Solutions. *Physical Review D.* **84**, 868. **(IF: 5.3, Q1)**. Link
- Muhammad Usman, Abdul Jawad, **Abdul Malik Sultan**.: Compatibility of Gravitational Baryogenesis in $f(Q, C)$ gravity. *European Physical Journal C.* **84**, 868. **(IF: 4.8, Q2)** Link
- Shamaila Rani, Fareeha Rasool, Abdul Jawad, **Abdul Malik Sultan**.: Observational analysis on warm tachyon scalar field inflation Via Woods-Sexon, valley hybrid, exponential, quartic, quasi exponential potentials. *Chinese Journal of Physics.* **90**, 788. **(IF: 4.6, Q1)** Link

2023

- Abdul Jawad, **Abdul Malik Sultan**, Shamaila Rani.: Viability of Baryon to Entropy Ratio in Modified Hořava-Lifshitz Gravity. *Symmetry.* **15**, 824. **(IF: 2.2, Q2)**. Link
- Shamaila Rani, Abdul Jawad, **Abdul Malik Sultan**, Aneesa Majeed.: Swampland Criteria of Inflationary Scalar Field Models with Well-Known Potentials. *International Journal of Modern Physics D.* **32**, 2350004. **(IF: 2.1, Q3)**. Link

2022

- Abdul Jawad, **Abdul Malik Sultan**.: Analyzing stability of Five-dimensional Einstein Chern-Simons gravity through dynamical systems. *Physics of the Dark Universe*. **38**, 101127. **(IF: 6.4, Q1)**. Link
- **Abdul Malik Sultan**, Abdul jawad.: Compatibility of Big Bang Nucleosynthesis in some Modified gravities. *European Physical Journal C*. **82**, 905. **(IF: 4.8, Q2)**. Link
- Abdul Jawad, Shamaila Rani, **Abdul Malik Sultan**, Kashaf Embreen.: k-essence Inflation Evading Swampland Conjectures and Inflationary Parameters. *Universe*. **8**, 532. **(IF: 2.6, Q2)**. Link
- Abdul Jawad, **Abdul Malik Sultan**, Nadeem Azhar.: Dynamics of Constant Sound Speed Inspires Warm Inflation. *Modern Physics Letters A*. **37**, 2250166. **(IF: 1.6, Q2)**. Link
- Shamaila Rani, Abdul Jawad, **Abdul Malik Sultan**, Mehwish Shad.: Cosmographic and thermodynamic analysis of Kaniadakis holographic dark energy. *International Journal of Modern Physics D*. **31**, 2250078. **(IF: 2.1, Q3)**. Link
- Abdul Jawad, **Abdul Malik Sultan**.: Analysis of baryon to entropy ratio in Ricci inverse gravity. *Europhysics Letters*. **138**, 29001. **(IF: 1.8, Q2)**. Link
- **Abdul Malik Sultan**, Abdul Jawad.: Cosmic and thermodynamics study of non-canonical scalar field in parametrized modified gravity. *Physica Scripta*. **97**, 065004. **(IF: 2.6, Q2)**. Link
- Abdul Jawad, **Abdul Malik Sultan**, Nadeem Azhar.: Canonical scalar field inflation in $f(T)$ gravity with well-known potentials. *Astrophysics and Space Science*. **367**, 48. **(IF: 1.5, Q3)**. Link
- **Abdul Malik Sultan**, Abdul Jawad.: Dynamic study of Weyl tensor corrected $f(R)$ gravity. *International Journal of Geometric Methods in Modern Physics*. **19**, 2250034 **(IF: 2.1, Q1)**. Link

2021

- Abdul Jawad, **Abdul Malik Sultan**.: Cosmic consequences of Kaniadakis and Generalized Tsallis Holographic Dark Energy Models in Fractal Universe. *Advances in High Energy Physics*. **5519028**, 1 **(IF: 1.1, Q4)**. Link

Conferences and Seminars as a Speaker

01/02/2024 – 02/02/2024 **International Conference on Relativistic Astrophysics and Cosmology (ICRAC-2024)**, **Title of the Talk:** Stability Analysis of Interacting Cosmological Models in 5D Einstein Chern-Simons Gravity Using Power of Dynamical Systems
Vanue: COMSATS university Islamabad Lahore Campus, Lahore-Pakistan.

29/01/2024 – 31/01/2024 **International conference on Gravitation and Cosmology (ICGC-2024)**, **Title of the Talk:** Constraining Big Bang Nucleosynthesis in Modified Hořava-Lifshitz Gravity
Vanue: University of Lahore, Lahore-Pakistan.

21/06/2023 – 22/06/2023 **3rd Garrison international conference on pure and applied Mathematics**, **Title of the Talk:** Analyzing Stability of Five-dimensional Einstein Chern-Simons Gravity Through Dynamical Systems.
Vanue: Lahore Garrison University, Lahore-Pakistan.

Conferences and Seminars as a Participant

01/11/2022 – 11/11/2022 **CIMPA International School**, **Title:** Recent Advances in Combinatorics and its Application
Vanue: COMSATS University Islamabad (Lahore campus), Lahore-Pakistan.

04/07/2022 – 15/07/2022 **Summer School on Cosmology**, Online
Vanue: The Abdus Salam International Center for Theoretical Physics (ICTP), Trieste-Italy.

22/11/2021 – 25/11/2021 **4th PU international conference on Gravitation and Cosmology**
Vanue: Punjab University Lahore, Lahore-Pakistan.

20/02/2020 – 22/02/2020 **International conference on Recent Advances in Applied Mathematics (ICRAAM).**
Vanue: COMSATS University Islamabad (Lahore Campus), Lahore-Pakistan.

19/08/2019 – 21/08/2019 **International Conference on Applied Mathematics**
Vanue: Department of Mathematics Lahore University of Management Sciences (LUMS), Lahore-Pakistan.

Supervised MS Thesis

2024 **Analyzing Certain Features of Traversable Wormholes in $f(R,T)$ Gravity**
Student Name: Aliya Batool

2024 **Big Bang Nucleosynthesis Constraints on $f(T,B)$ Gravity**
Student Name: Maryam Fatima.

2024 **Compatibility of Gravitational Baryogenesis in Einstein-Æther Gravity**
Student Name: Alishba Mushtaq

2024 **Thermodynamical Analysis of Some Well-Known Black Holes in Modified Theories of Gravity**
Student Name: Iqra Muqqadas

2025 **Consequences of Bouncing Cosmologies in $f(T,T_G)$ Gravity**
Student Name: Shugufta Jahangir

In Progress **Implications of Modified Theories of Gravity on Big Bang Nucleosynthesis**
Student Name: Manahil Ali

In Progress **Geodesics, Lyapunov Exponents and Thermodynamical Aspects of Specific Black Holes**
Student Name: Hamail Tabasum Naseer

Language Skills

- Mother Language(s): Saraiki, Urdu
- English: Listening C1, Spoken production C1, Reading C1, Spoken interaction C1, Writing C1
- Levels: A1 and A2: Basic user; B1 and B2: Independent user; C1 and C2: Proficient user

Recommendations

Dr. Abdul Jawad
Associate Professor
Department of Mathematics, COMSATS University Islamabad, Lahore Campus
PhD Supervisor
Email: abduljawad@cuilahore.edu.pk

Dr. Jackson Levi Said
Associate Professor
Institute of Space Sciences and Astronomy, University of Malta.
Research Collaborator
Email: jackson.said@um.edu.mt

Dr. Shamaila Rani
Associate Professor
Department of Mathematics, COMSATS University Islamabad, Lahore Campus
Research Collaborator
Email: drshamailarani@cuilahore.edu.pk