

Dr. Muhammad Zaeem-ul-Haq Bhatti

HEC Approved PhD Supervisor

Curriculum Vitae

Personal Details

Address Department of Mathematics, University of the Punjab, Quaid-e-Azam
Campus, Lahore-54590, Pakistan.
☎ +92-42-99231241 Ext: 127/ +92-331-4998304 ✉ mzaem.math@pu.edu.pk
CNIC 35202-4825966-9 Nationality: Pakistani.
Date of Birth 02 November 1989
Weblinks <http://pu.edu.pk/faculty/description/1640/Dr-Muhammad-Zaeem-ul-Haq-Bhatti.html>
<http://www.pu.edu.pk/ggc/>

Education

Sept. 2012– Oct. 2015 **Ph.D. (Doctor of Philosophy) in Mathematics,**
University of the Punjab, Lahore, Pakistan.
Department of Mathematics.
- Supervisor: Prof. Dr. Muhammad Sharif.
- Specialization: General Relativity & Cosmology.
- Thesis: Stability Analysis of Self-Gravitating Collapsing Systems.
- <http://pr.hec.gov.pk/jspui/handle/123456789/9204>

Sept. 2010-July 2012 **M.Phil. (Master of Philosophy) in Mathematics,**
University of the Punjab, Lahore Pakistan.
Department of Mathematics.
- Supervisor: Prof. Dr. Muhammad Sharif.
- Major: Applied Mathematics.
- Thesis: Structure Scalars in Charged Cylindrical and Plane Symmetries.

Sept. 2008-July 2010 **M.Sc. (Master of Science) in Mathematics,**
University of the Punjab, Pakistan.
Department of Mathematics.
- Major: Applied Mathematics
Government Islamia College, Railway Road, Lahore, Pakistan.

Practical Exposure

Associate Professor in the Department of Mathematics, University of the Punjab, Lahore, Pakistan from [May 2022 to Present](#).

Assistant Professor in the Department of Mathematics, University of the Punjab, Lahore, Pakistan from [October 2015 to May 2022](#).

Lecturer in the Department of Mathematics, University of the Punjab, Lahore, Pakistan from [May 2014 to October 2015](#).

Research Experience in the Department of Mathematics, University of the Punjab, Lahore, Pakistan from [July 2012 to May 2014](#) vide Ref. No. DG/QA/HEC/2008/64 dated: April 24, 2008.

Administrative Experience

Member of the Departmental Admission Committee, Department of Mathematics, University of the Punjab, Lahore (2014 - 2019, 2021, 2023, 2024).

Co-Coordinator of Departmental Seminar Series, Department of Mathematics, University of the Punjab, Lahore (2014 - 2016).

In charge, Accounts and Stock Taking of the Departmental Computer Center, Department of Mathematics, University of the Punjab, Lahore (2014).

Secretary of the International Conference on Relativistic Astrophysics at University of the Punjab during February 10-14, 2015.

In charge, General Accounts and Stock Taking of the Department of Mathematics, University of the Punjab, Lahore (2015).

Managerial Secretary of Punjab University Journal of Mathematics (**PUJM**), Department of Mathematics, University of the Punjab, Lahore, since November 04, 2015 to May 15, 2019 then May 21, 2019 to September 30, 2020 then June 01, 2023 to present.

Acting Coordinator of Departmental M.Phil. /Ph.D. Program, Department of Mathematics, University of the Punjab, Lahore-Pakistan from June 20, 2016 to August 12, 2016.

Coordinator Departmental Time Table, Department of Mathematics, University of the Punjab, Lahore, Pakistan (2016-2017).

Coordinator of M.Sc. Program, Department of Mathematics, University of the Punjab, Lahore, Pakistan from September 01, 2016 to May 15, 2019.

Organizer of the One Day Conference on Gravitation and Cosmology at University of the Punjab on November 26, 2016.

Joint Secretary of the 1st PU International Conference on Gravitation and Cosmology held at University of the Punjab, Lahore during January 27-31, 2019.

Secretary of the 4th PU International Conference on Gravitation and Cosmology held at University of the Punjab, Lahore during November 22-25, 2021.

Member, Board of Studies, Department of Mathematics and Statistics, The University of Lahore, Pakistan since 2022.

Member, Board of Studies, Department of Mathematics, University of the Punjab, Lahore, Pakistan since 2022-2024.

Member, Departmental Curriculum Committee and **Departmental Curriculum Review Committee**, Department of Mathematics, University of the Punjab, Lahore, Pakistan since 2023.

Member, Departmental Doctoral Program Committee (DDPC), Department of

Mathematics, University of the Punjab, Lahore, Pakistan since June 2023.

Member, Departmental Financial Advisory Committee, Department of Mathematics, University of the Punjab, Lahore, Pakistan since July 2023.

Member, Departmental Research Evaluation Committee (DREC), Department of Mathematics, University of the Punjab, Lahore, Pakistan since July 2023.

Coordinator of BS(ADP) Program, Department of Mathematics, University of the Punjab, Lahore, Pakistan from September 06, 2023 to August 01, 2024.

Managing Editor of Punjab University Journal of Mathematics (**PUJM**), Department of Mathematics, University of the Punjab, Lahore, since July, 2023 to present.

Member, Departmental Selection Committee (DSC) Department of Mathematics, University of the Punjab, Lahore, since October 2023.

Member, Departmental Examination Committee (DEC) Department of Mathematics, University of the Punjab, Lahore, since November 2023.

Coordinator (Acting) of BS Program, Department of Mathematics, University of the Punjab, Lahore, Pakistan from June 04, 2024 to June 28, 2024.

Member, Departmental Extracurricular Activities Committee (DEAC) Department of Mathematics, University of the Punjab, Lahore, since July 2024.

Students' Advisor, Department of Mathematics, University of the Punjab, Lahore, Pakistan from August 02, 2024 till present.

Serving on the Editorial Board

- International Journal of Mathematics and Systems Science (<https://systems.enpress-publisher.com/index.php/IJMSS/about/editorialBoard>)
- Expert Opinion on Astronomy and Astrophysics (<http://ojs.whoice.com/index.php/eoaa/about/editorialTeam>)

Editor of Special Issues

- "Relativistic Cosmology, Numerical Analysis, General Relativity and Modified Gravity Theories" in Galaxies (https://www.mdpi.com/journal/galaxies/special_issues/Gravity).
- "Self-Gravitating Systems and Fuzzification of Geometric Structures" in Galaxies (https://www.mdpi.com/journal/galaxies/special_issues/self_gravitating_geometric_structures).
- "Proceedings of the 4th PU International Conference on Gravitation and Cosmology" in International Journal of Modern Physics D (https://www.worldscientific.com/worldscinet/ijmpd?_cf_chl_captcha_tk=_pm_d_WbZs4fwXxbaEVPgqFfh5BkEf9D5SLrtQV3gFnMeaXj8-1635396389-0-gqNtZGzNAvuicnBszQpl).

Awards, Scholarships, and Honors

- 2011-2012 **DPC Merit Scholarship in MPhil** by Department of Mathematics, University of the Punjab, Pakistan.
- 2012-2014 **Indigenous PhD Fellowship**, Higher Education Commission, Pakistan.
Research Productivity Award by Pakistan Council for Science and Technology, Pakistan
in Category D for 2013-14;
in Category A for 2014-15;
in Category C for 2015-16;
in Category D for 2016-17.
Research Incentive Awards by University of the Punjab, Pakistan in 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021.
Performance Evaluation Award by University of the Punjab, Pakistan in 2015, 2016, 2017, 2018, 2019, 2020.
Life Member of Pakistan Physical Society since November 29, 2016.
26th Most Productive Scientist of Pakistan in Mathematical Sciences, Directory of Productive Scientist of Pakistan, Pakistan Council for Science and Technology, Islamabad–Pakistan (<https://www.pcst.org.pk/docs/PSP2017.pdf>).
- 2017 **13th Most Productive Young Scientist of Pakistan** in Mathematical Sciences, Directory of Productive Scientist of Pakistan, Pakistan Council for Science and Technology, Islamabad–Pakistan (<https://www.pcst.org.pk/docs/PSP2017.pdf>).
- 2017 **Enlisted among the Top 2% Scientists from all over the World** by Stanford University and Elsevier BV
(https://elsevier.digitalcommonsdata.com/datasets/btchxktzyw/3?fbclid=IwAR2pxZOMQLPN913AgyB_khebGuIBlrPty4ooFZE6HjAV2poMbP_hvCtCnM),
2021, (https://elsevier.digitalcommonsdata.com/datasets/btchxktzyw/4?fbclid=IwAR0u4xhKMuKGI_si_prZLxOIOaMPzV-LNCmolIDYua90eybIVlyE6SI70vyc)
2022, (<https://elsevier.digitalcommonsdata.com/datasets/btchxktzyw/6>)
2023, (<https://elsevier.digitalcommonsdata.com/datasets/btchxktzyw/7>)
2024

Research Projects

- Completed a research project of amount PKR 1.25 Lacs as Principal Investigator from University of the Punjab entitled **“Effects of Reflection Symmetry on the Stability of Adiabatic Axial Collapse”** during the fiscal year 2014-2015.
- Completed a research project of amount PKR 1.5 Lacs as Principal Investigator from University of the Punjab entitled **“Existence of Compact Celestial Bodies”** during the fiscal year 2015-2016.

- Completed a research project of amount PKR 1.5 Lacs as Principal Investigator from University of the Punjab entitled **“Effects of Dark Energy and Dark Matter on Some Cosmic Puzzles”** during the fiscal year 2017-2018.
- Completed a research project of amount PKR 9.71807 Lacs as Principal Investigator under the National Research Program for Universities by Higher Education Commission, Pakistan entitled **“Evolution of the Universe under the Influence of Higher Order Gravitational Theories”** of two years in 2021.
- Completed a research project of amount PKR 15.12307 Lacs as Co-Principal Investigator under National Research Program for Universities by Higher Education Commission, Pakistan entitled **“Existence of Celestial Structures in Galaxies”** for two years in 2021.
- Completed a research project of amount PKR 2.0 Lacs as Principal Investigator from University of the Punjab entitled **“Dynamical Variables and Self-Gravitating Systems”** during the fiscal year 2021-2022.
- Completed a research project of amount PKR 2.5 Lacs as Principal Investigator from University of the Punjab entitled **“Construction of Wormholes and their Stability Analysis”** during the fiscal year 2022-2023.

Academic and Research Interests

Geometry,
 General Theory of Relativity,
 Electromagnetic Theory,
 Modified Gravitational Theories,
 Mathematical Physics,
 Astrophysics and Cosmology.

Computer and Software Skills

Math Packages	Mathematica, Maple.
OS	Windows.
Typography	MS Word, MS Power Point, Latex.

Workshops, Conferences and Seminars Attended at National/International Level

2010–Present **Weekly Departmental Seminar Series** in Department of Mathematics, PU, Pakistan

Oct., 2010 **Lecture Series on Black Holes**, PU, Pakistan.

Nov., 2010 **Lecture Series on Cosmology**, PU, Pakistan.

- Nov., 2011 **NUST Conference on Mathematical Sciences**, NUST, Pakistan.
- Dec., 2011 **One Day Conference on Gravitation**, PU, Pakistan.
- Feb., 2013 **IV Italian- Pakistani Workshop on Relativistic Astrophysics**, NUST, Pakistan.
- Mar., 2013 **6th World Conference on 21st Century Mathematics**, ASSMS, Pakistan.
- Nov., 2013 **Lecture Series on Cosmology**, PU, Pakistan.
- Jan., 2014 **Symmetries, Differential Equations and Applications II**, NUST, Pakistan.
- Sep., 2014 **1st National Conference on Mathematical Sciences**, UOM, Pakistan.
- Feb., 2015 **International Conference on Relativistic Astrophysics**, PU, Pakistan.
- Mar., 2015 **1st National Conference on Pure and Applied Mathematics**, UMT, Pakistan.
- Nov., 2015 **14th Regional Conference on Mathematical Physics**, QAU, Pakistan.
- Dec., 2015 **International Conference on Recent Advances in Applied Mathematics**, COMSATS Lahore, Pakistan.
- Mar., 2016 **1st UMT International Conference on Pure and Applied Sciences**, UMT, Lahore, Pakistan.
- July, 2016 **21st International Conference on General Relativity and Gravitation**, Columbia University, New York, USA.
- Nov., 2016 **One Day Conference on Gravitation and Cosmology**, PU, Pakistan.
- April, 2017 **One Day Workshop for the Editors of Sciences Journals** by Quality Assurance Division, HEC at Margala Hotel, Islamabad.
- June, 2017 **The Southern Cross Conference: Surveying the Cosmos, The Science From Massively Multiplexed Surveys** by Australian Astronomical Observatory and CSIRO Astronomy and Space Science at Sydney, Australia.
- Jan., 2018 **One Day Workshop for the Editors of Journals of Multi-Disciplinary and Natural Sciences** by Quality Assurance Division, HEC at HEC, Islamabad.
- Mar., 2018 **Information, Black Holes and Quantum Theory: Theoretical Physics at the Crossroads** at the Abdus Salam School of Mathematical Sciences, GCU, Lahore.
- Mar., 2018 **4th International UMT Conference on Pure and Applied Mathematics (4th UICPAM)** at Faletti's Hotel by Center for Mathematics and its Applications, UMT, Lahore.
- May, 2018 **XIIth Spontaneous Workshop on Cosmology « Hot Topics in Modern Cosmology »** at Institut d'Etude Scientifique de Cargèse (IESC), Cargèse, France.
- Mar., 2019 **5th UMT International Conference on Pure and Applied Mathematics** at Center for Mathematics and its Applications, UMT, Lahore, Pakistan.
- Nov., 2019 **One Day International Seminar on Recent Trends in Pure and Applied Mathematics** at Government College University Faisalabad, Faisalabad, Pakistan.
- Feb., 2020 **6th UMT International Conference on Pure and Applied Mathematics** at Center for Mathematics and its Applications, UMT, Lahore, Pakistan.

- Oct., 2020 **1st International Conference on Recent Advances in Mathematics (CORAM-2020)** by Department of Mathematics, Division of Science and Technology, University of Education, Lahore, Pakistan.
- Mar., 2021 **International Webinar on “Recent Developments in Modified Gravity and Cosmology (RDCM-2021)** by the Department of Mathematics, Birla Institute of Technology and Science, Pilani, Hyderabad, India.
- May, 2021 **International Workshop on Relativistic Astrophysics and Gravitation (IWRAG-2021)** by the Ulugh Beg Astronomical institute of the Uzbekistan Academy of Science, Uzbekistan.
- Nov., 2021 **4th PU International Conference on Gravitation and Cosmology** by The Group of Gravitation and Cosmology, University of the Punjab, Lahore, Pakistan.
- Dec., 2021 **6th One Day Symposium on Applied Mathematics and its Applications** at University of Management and Technology, Sialkot Campus, Sialkot, Pakistan.
- Nov., 2022 **International Webinar on “Recent Research in Gravity”** Department of Physics, Zhejiang Normal University, Jinhua, China.
- Dec., 2022 **Two Days International Webinar on Recent Trends in Applied Mathematics** by Lahore College for Women University, Lahore, Pakistan.
- Jun., 2023 **3rd Garrison International Conference on Pure and Applied Mathematics (GICPAM-2023)** by Department of Mathematics, Lahore Garrison University, Lahore, Pakistan.
- Aug., 2023 **Seminar on Intellectual Property & Patent Essentials: Basic and Legal Aspects** by Office of Research Innovation and Commercialization of University of the Punjab, Lahore, Pakistan.
- Jan., 2024 **International Conference on Gravitation and Cosmology (ICGC24)** by the Department of Mathematics and Statistics, University of Lahore, Lahore, Pakistan.

Trainings

1. **Diploma in Fundamental of Information Technology** by Computer Centre, Govt. Islamia College Civil Lines, Lahore; June 01, 2008 to August 31, 2008.
2. **Faculty Orientation Program** by Institute of Administrative Sciences, University of the Punjab, Lahore; August 19–22, 2014.
3. **Business Edge Course Titled Communicating Effectively** by International

Finance Cooperation, World Bank Group, Lahore; August 20–21, 2014.

4. **ProQuest Ebook Central Advanced Training** by ProQuest Education on September 16, 2020.
5. **ProQuest Ebook Central Advanced Training** by ProQuest Education on September 23, 2020.
6. **How to Manage Your References Using RefWorks** by ProQuest Education on October 26, 2020.
7. **5 Tips for Getting Published: Maximize Your Chances to Get Your paper Accepted in Academic Journals!** by ProQuest Education on October 27, 2020.
8. **Resource Person to conduct a training of Mathematics Olympiad** at Department of Mathematics, University of Okara, Okara on August 23, 2022.
9. **Quality Assurance Awareness Session & Post-graduate Program Review in FY 2023-24** at Quality Enhancement Cell, University of the Punjab, Lahore

Courses Taught at University of the Punjab

Geometry; MCO-501
General Relativity-I; MA-601
General Relativity-II; MA-602
Electrodynamics-I; MA-606
Analytical Dynamics; MATH-410
Calculus (II); MATH-202
Electromagnetic Theory-I; MATH-411
Electromagnetic Theory-II; MATH-426
Elementary Mathematics & Stats; GC105
Mathematics-I
Mechanics; MATH-310
Reading & Research-MA1; MRR-671
Real Analysis-I; MATH-301
Relativity and Cosmology; Phys 4704
Special Theory of Relativity; MATH-425
Vector and Tensor Analysis; MATH-304
Vectors & Mechanics-I; MATH-102

Talks Delivered at National/International Level

- **Structure Scalars in Charged Cylindrical and Plane Symmetries** at Department of Mathematics, University of the Punjab, Lahore-Pakistan.
- **Charged Static Axial Symmetric Solutions and Scalar Structures** at Department of Mathematics, University of the Punjab, Lahore-Pakistan; December 04, 2014.
- **Stability of the Expansion-free Charged Cylinder** in an International Conference named "Symmetries, Differential Equations and Applications II" at School of Natural Sciences, NUST, Islamabad-Pakistan during January 27-30, 2014.
- At Department of Mathematics, University of the Punjab, Lahore-Pakistan; November 12, 2014.
- **Structure Scalars in Charged Cylindrically Symmetric Relativistic Fluids** in a National Conference named "1st National Conference on Mathematical Sciences" at University of Malakand, Khyber Pakhtunkhwa-Pakistan during September 02-04, 2014.
- **Some Inhomogeneity Factors in Self-gravitating Systems** in an International Conference named "International Conference on Relativistic Astrophysics" at University of the Punjab, Lahore-Pakistan during February 10-14, 2015.
- **Gravitational Collapse and Structure Formation in General Relativity** at Department of Mathematics, University of the Punjab, Lahore-Pakistan; February 25, 2015.
- **Some Physical Factors on Expansion-free Collapse** at "1st National Conference on Pure and Applied Mathematics" at University of Management and Technology, Lahore, Pakistan during March 07-08, 2015.
- **Role of Some Physical Factors on the Stability of Collapsing System** in an International Conference named "14th Regional Conference on Mathematical Physics" at Quaid-i-Azam University Islamabad, Pakistan during November 09-14-2015.
- **Irregularity Factors for Collapsing Systems** in an International Conference named "International Conference on Recent Advances in Applied Mathematics" at COMSATS Institute of Information Technology, Lahore, Pakistan during December 17-18, 2015.
- **Energy Density Inhomogeneity in Self-Gravitating Stars** in an International Conference named "1st UMT International Conference on Pure and Applied Sciences" at Center for Mathematics and its Applications, UMT, Lahore, Pakistan during March 05-07, 2016.
- **Energy Density Irregularities in Self-gravitating Systems (POSTER)** in an International Conference named "21st International Conference on General Relativity and Gravitation" at Columbia University in New York City, USA during July 10-15, 2016.
- **COSMOLOGY: Inflation to Dark Energy (Invited Talk)** in Department of Mathematics,

University of Management and Technology, Sialkot Campus on April 09, 2017.

- **The Study of Inhomogeneous Universe Via Dynamical Variables** in an International Conference named “Surveying the Cosmos, The Southern Cross Conference” at Crystal Ballroom, Luna Park in Sydney, Australia during June 05-09, 2017.
- **Evolution of Celestial Objects in Modified Gravity** in an International Conference named “2nd International UMT Conference on Pure and Applied Sciences” at Center for Mathematics and its Applications, UMT, Lahore, Pakistan during October 05-07, 2017.
- **A Study Based on Dynamical Variables and Self-Gravitating Objects** in an International Conference named “6th International Conference on Education- Science Beyond Classroom” at University of Education, Lahore, Pakistan during March 15-17, 2018.
- **Structure Scalars and their Physical Implication on the Evolution of Celestial stars** in an International Conference named “4th International UMT Conference on Pure and Applied Mathematics (4th UICPAM)” at Faletti’s Hotel by Center for Mathematics and its Applications, UMT, Lahore during March 31-April 02, 2018.
- **Inhomogeneity Factors for a Regular Stellar Structures in Modified Gravity** in an International Workshop named “XIIth Spontaneous Workshop on Cosmology « Hot Topics in Modern Cosmology »” at Institut d’Etude Scientifique de Cargèse (IESC) Corsica, Ménasina, 20130 Cargèse, France during May 14-19, 2018.
- **Compact Objects and their Formation** in an International Conference named “5th UMT International Conference on Pure and Applied Mathematics” at Center for Mathematics and its Applications, UMT, Lahore, Pakistan during March 29-31, 2019.
- **Vectors, Tensors and Differential Geometry (*Invited Talk*)** at Department of Mathematics, Forman Christian College (A Chartered University), Lahore, Pakistan on December 16, 2019.
- **Instability Constraints: Stability of Celestial Objects (*Invited Talk*)** in an International Conference named “6th UMT International Conference on Pure and Applied Mathematics” at Center for Mathematics and its Applications, UMT, Lahore, Pakistan during February 21-23, 2020.
- **Stable/Unstable Phases of Collapsing Models (*Invited Talk*)** in an International Webinar named “International Webinar on Applied Mathematics and Modelling” by Virtual University of Pakistan on September. 24, 2020.
- **Dynamical Instability Analysis of Self-Gravitating Objects** in an International Webinar named “1st International Conference on Recent Advances in Mathematics (CORAM-2020)” by Department of Mathematics, Division of Science and Technology, University of Education, Lahore, Pakistan during October 15-16, 2020.
- **Influence of Modification of Gravity on the Dynamical Analysis of Self-Gravitating Objects** in an International Webinar on “Recent Developments in Modified Gravity and Cosmology (RDCM-2021)” by the Department of Mathematics, Birla Institute of Technology and Science, Pilani, Hyderabad, India during March 09-11, 2021.

- **Dynamical Analysis of Self-gravitating Objects in Modified Gravity** in an International Workshop on “International Workshop on Relativistic Astrophysics and Gravitation (IWRAG-2021)” by the Ulugh Beg Astronomical institute of the Uzbekistan Academy of Science, Uzbekistan during May 12-14, 2021.
- **Dynamical Analysis: A Brief Overview (Invited Talk)** in a One Day Symposium namely “6th One Day Symposium on Applied Mathematics and its Applications” at University of Management and Technology, Sialkot Campus, Sialkot, Pakistan on December 19, 2021.
- **Gravitation: An Enigmatic Tale (Invited Talk)** at Department of Mathematics, University of Education, Bank Road Campus, Lahore, Pakistan on February 28, 2022.
- **Structure Scalars and their Evolution (Keynote Speaker)** at “Two Days International Webinar on Recent Trends in Applied Mathematics” by Lahore College for Women University, Lahore, Pakistan during December 08-09, 2022.
- **Complexity Factor in DHOST Theory (Invited Talk)** at Faculty of Symbiotic Systems Science, Fukushima University, Japan during May 08-12, 2023.
- **Cosmic Evolution Via LTB Model (Invited Talk)** at Department of Mathematics, University of Management and Technology, Lahore, Pakistan on June 17, 2023.
- **LTB Universe (Keynote Speaker)** in 3rd Garrison International Conference on Pure and Applied Mathematics (GICPAM-2023) at Lahore Garrison University, Lahore, Pakistan during June 21-22, 2023.
- **Indexing in Web of Science, Procedure, Issues & Strategies (Resource Person)** in a Workshop by the Office of Research Innovation and Commercialization of University of the Punjab, Lahore, Pakistan on August 16, 2023.
- **Diversity of Mathematics (Invited Talk)** by Al Biruni Society of Mathematics, The University of Lahore, Lahore, Pakistan on October 24, 2023.
- **Isotropic and Expanding Universe (Invited Speaker)** in 2nd International Conference on Recent Advances in Mathematics (CORAM-2023) at the University of Education, Lahore, Pakistan during December 04-05, 2023.
- **Modified Gravity and Structure Scalars (Invited Speaker)** in 6th International Conference on Pure and Applied Mathematics (6th ICPAM) at the University of Sargodha, Sargodha, Pakistan during December 06-07, 2023.

Research Evaluation

- 1 Name: Neha Ashraf, Title of Thesis: “*Some Contributions of Classical Mechanics in Thermodynamics*” (BS), Affiliation: GC University, Lahore, Pakistan, 2016.
- 2 Name: Iqra Ijaz, Title of Thesis: “*Gravitational Collapse of Stellar Objects*” (BS), Affiliation: GC University, Lahore, Pakistan, 2016.
- 3 Name: Muhammad Waqas Ibrahim, Title of Thesis: “*Quintessence Compact Stars Satisfying Karmarker Condition*” (MPhil), Affiliation: IUB, Bahawalpur, Pakistan, 2018.
- 4 Name: Haleema Sadia, Title of Thesis: “*The Mathematical Modelling of Radiating Stars*”

- and their Analytical Analysis*" (MS), Affiliation: UMT, Sialkot, Pakistan, 2018.
5. Name: Ayisha Naseem, Title of Thesis: *"Modelling of Some Astrophysical Compact Objects"* (MPhil), Affiliation: UoE, Lahore, Pakistan, 2018.
 6. Name: Syed Ahmad Hassaan Wasti, Title of Thesis: *"Einstein Fields Equations and Its Physical Aspects"* (MS), Affiliation: UMT, Sialkot, Pakistan, 2018.
 7. Name: Tahir Mehmood, Title of Thesis: *"Mathematical Modeling of Rotating Self-Gravitating Fluids"* (MS), Affiliation: UMT, Sialkot, Pakistan, 2018.
 8. Name: Tahmina Khalid, Title of Thesis: *"Dynamical Instability of Cylindrical Collapse"* (MS), Affiliation: UMT, Sialkot, Pakistan, 2020.
 9. Name: Faizan Anjum, Title of Thesis: *"Mathematical Models of Non-Rotating Stars"* (MS), Affiliation: UMT, Sialkot, Pakistan, 2020.
 10. Name: Muhammad Amjad, Title of Thesis: *"Cylindrically Symmetric Relativistic Fluids through Perturbation Scheme"* (MS), Affiliation: UMT, Sialkot, Pakistan, 2020.
 11. Name: Fiaz Hussain, Title of Thesis: *"Conformal Symmetries of Some Spacetimes in $f(R)$ Theories of Gravity"* (PhD), Affiliation: Affiliation: IUB, Bahawalpur, Pakistan, 2020.
 12. Name: Muhammad Siddique, Title of Thesis: *"Wormhole Solutions in $f(R)$ Theory of Gravity"* (MPhil), Affiliation: Affiliation: IUB, Bahawalpur, Pakistan, 2020.
 13. Name: Muhammad Tayyab, Title of Thesis: *"Joule Thomson Expansion of Non-Linear Massive Gravity Black Hole"* (MPhil), Affiliation: Affiliation: IUB, Bahawalpur, Pakistan, 2020.
 14. Name: Arooj Bashir, Title of Thesis: *"Model of Stellar Interior in $f(R, T)$ Theory of Gravity"* (MPhil), Affiliation: Affiliation: IUB, Bahawalpur, Pakistan, 2020.
 15. Name: Syeda Zumaira Batool Mehwish, Title of Thesis: *"Study of Axial Gravitational Waves in the Background of $f(R)$ Theory"* (MS), Affiliation: VU, Lahore, Pakistan, 2020.
 16. Name: Shafiq Ahmed, Title of Thesis: *"Some Solutions of First Order Differential Equations Using Combine Runge Kutta Merson's and Lagrange Interpolation Method"* (MPhil). Affiliation: UOL, Lahore, Pakistan, 2020.
 17. Name: Tayyaba Safdar, Title of Thesis: *"Mathematical Modeling of Mechanical Properties of CPV (Cotton, Polyester, Viscose) Blend Rotor Spun Yarn and Woven Fabric"* (MSc). Affiliation: NTU, Faisalabad, Pakistan, 2021.
 18. Name: Abaid Ullah, Title of Thesis: *"Modeling of the Physical Properties of Slub Yarn using Numerical Techniques"* (MSc). Affiliation: NTU, Faisalabad, Pakistan, 2021.
 19. Name: Noreen Khalid, Title of Thesis: *"Analysis of Cross-Stitch by Graph Theory"* (MS). Affiliation: NTU, Faisalabad, Pakistan, 2021.
 20. Name: Ayesha Mushtaq, Title of Thesis: *"Analysis of Fabric Defects using Image Analysis Technique"* (MS). Affiliation: NTU, Faisalabad, Pakistan, 2021.
 21. Name: Muhammad Usman, Title of Thesis: *"Multiplicative topological index analysis of C4C8 carbon Nanostructure (Nanosheet, Nanotube and Nanotaurus)"* (MS). Affiliation: NTU, Faisalabad, Pakistan, 2021.

22. Name: Sidra Rashid, Title of Thesis: "Computational structure Analysis for Physicochemical Properties of C4C8 and C5C7 Carbon Nano Sheet" (MS). Affiliation: NTU, Faisalabad, Pakistan, 2021.
23. Name: Amina Liaqat, Title of Thesis: "A Study of Some Common Fixed-Point Theorems in Complex Valued b-Metric Spaces with Applications" (MS). Affiliation: UOL, Lahore, Pakistan, 2021.
24. Name: Irsa Gulzar, Title of Thesis: "A Review of Some Fixed-Point Theorems in Complex Valued Metric Spaces" (MS). Affiliation: UOL, Lahore, Pakistan, 2021.
25. Name: Marriam Shahzadi, Title of Thesis: "Some Results on Fixed Point Theorems in Complex Valued b-Metric Spaces" (MS). Affiliation: UOL, Lahore, Pakistan, 2021.
26. Name: Muhammad Ali Raza, Title of Thesis: "A Study of Fixed-Point Theorems in Complex Valued b-Metric Spaces" (MS). Affiliation: UOL, Lahore, Pakistan, 2021.
27. Name: Amir Shahzad, Title of Thesis: "Numerical Study of Fractional Ordinary Differential Equations" (MS). Affiliation: UOL, Lahore, Pakistan, 2021.
28. Name: Muhammad Adil Riaz, Title of Thesis: "Study of Local Fractional Metric Dimensions of Generalized Peterson Networks" (MS). Affiliation: UOL, Lahore, Pakistan, 2022.
29. Name: Ishtiaq Ahmad, Title of Thesis: "Sharp Bounds of Local Fractional Metric Dimensions of Connected Networks" (MS). Affiliation: UOL, Lahore, Pakistan, 2022.
30. Name: Abeera Sultana, Title of Thesis: "Anisotropic Compact Star in $f(R, \phi)$ Gravity using Tolman Kuvhowicz Spacetime" (MS). Affiliation: UMT, Sialkot, Pakistan, 2022.
31. Name: Komal Saleem, Title of Thesis: "Embedded Class-I Solution of Compact Star in $f(R, \phi)$ Gravity with Karmarkar Condition" (MS). Affiliation: UMT, Sialkot, Pakistan, 2022.
32. Name: Muhammad Aqib, Title of Thesis: "Deflection of Angle of Photon from Improved Schwarzschild Black Hole in Plasma Medium" (MS). Affiliation: UE, Lahore, Pakistan, 2022.
33. Name: Mazhar Hussain, Title of Thesis: "Study of Thermal Stability and Thermodynamic Geometries of EII-Known Black Holes through Entropy Corrections" (MS). Affiliation: COMSATS University Islamabad, Lahore Campus, Pakistan, 2022.
34. Name: Zain Ul Abideen, Title of Thesis: "Cosmological Implications of Reconstructed Modified Gravity Models according to Kaniadakis Holographic Dark Energy" (MS). Affiliation: COMSATS University Islamabad, Lahore Campus, Pakistan, 2022.
35. Name: Asma Nazir, Title of Thesis: "Proper Curvature Collineations of Some Spacetimes in $f(R)$ Theories of Gravity" (PhD). Affiliation: IUB, Bahawalpur, Pakistan, 2022.
36. Name: Kashif Rashid, Title of Thesis: "Analysis of Fractional Order COVID-19 Model and its Effects on Health" (MS). Affiliation: UOL, Lahore, Pakistan, 2023.
37. Name: Tabassum Raza, Title of Thesis: "Dynamic Analysis of Renewable Resources with Fractional Operator" (MS). Affiliation: UOL, Lahore, Pakistan, 2023.
38. Name: Shahzad Rasoul, Title of Thesis: "Proper Homothetic Vector Fields of Bianchi Type-I Perfect Fluid Spacetimes in $f(R, T)$ Theory of Gravity" (MS). Affiliation: IUB,

Bahawalpure, Pakistan, 2023.

39. Name: Frazia Khalid, Title of Thesis: "Killing Vector Fields in Plane Symmetric perfect fluid static Spacetimes in $f(R, T)$ Theory of Gravity" (MS). Affiliation: IUB, Bahawalpur, Pakistan, 2023.
40. Name: Ayesha Saleem, Title of Thesis: "Lie Algebra of Homothetic Vector Fields of Minkowski Spacetimes in Different Coordinate Systems" (MS). Affiliation: IUB, Bahawalpur, Pakistan, 2023.
41. Name: Dua Asghar Gilani, Title of Thesis: "Lie Algebra of Conformal Vector Fields of Minkowski Spacetime in Different Coordinate Systems" (MS). Affiliation: IUB, Bahawalpur, Pakistan, 2023.
42. Name: Aneesha Aamir, Title of Thesis: "Homothetic Vector Fields in Proper Non-Static Plane Symmetric Spacetimes in $f(R)$ Gravity" (MS). Affiliation: IUB, Bahawalpur, Pakistan, 2023.
43. Name: Sana Malik, Title of Thesis: "Thermodynamic Study of Higher Dimensional Black Holes through Exponential Entropy" (MS). Affiliation: CUI, Lahore, Pakistan, 2023.
44. Name: Aitazaz Ahsan, Title of Thesis: "Cosmographic Analysis of Holographic Non-Zero Torsion Framework" (MS). Affiliation: CUI, Lahore, Pakistan, 2023.
45. Name: Muhammad Umer, Title of Thesis: "Exploring Patterns and Relations in Knot Theory by Using Machine Learning" (MS). Affiliation: CUI, Lahore, Pakistan, 2023.
46. Name: Javed Mumtaz, Title of Thesis: "Effects of Plasma and Dark Matter Mediums on Gravitational Lensing for a Charged Casimir Wormhole" (MS). Affiliation: UE, Lahore, Pakistan, 2023.
47. Name: Javed Mumtaz, Title of Thesis: "Effects of Plasma and Dark Matter Mediums on Gravitational Lensing for a Charged Casimir Wormhole" (MS). Affiliation: UE, Lahore, Pakistan, 2023.
48. Name: Aqsa Noreen, Title of Thesis: "Analyzing String Cloud Solution for Warp Drive" (MS). Affiliation: UE, Lahore, Pakistan, 2023.
49. Name: Ghazala Kousar and Rabia Abbas, Title of Thesis: "Exact Inflationary Solutions in Non-metricity Theory" (BS). Affiliation: COMSATS University Islamabad, Lahore Campus, Pakistan, 2024.
50. Name: Shokaib Shahid, Title of Thesis: "Shadow of Charged Rotating Wormholes" (MS). Affiliation: COMSATS University Islamabad, Lahore Campus, Pakistan, 2024.
51. Name: Rukhsana Batool, Title of Thesis: "Inflationary Dynamics with $f(Q)$ Gravity using Non-Abelian Gauge Field" (MS). Affiliation: COMSATS University Islamabad, Lahore Campus, Pakistan, 2024.
52. Name: Mushtaq Ahmad, Title of Thesis: "Lie and Noether Symmetries of Some Spacetime in Modified Theories of Gravitation" (PhD). Affiliation: IUB, Bahawalpur, Pakistan, 2024.
53. Name: Mahnoor Tahir, Title of Thesis: "An Investigation of Holographic Dark Energy Models via Cosmographic Parameters in Anisotropic" (MS). Affiliation: University of

Education, Lahore, Pakistan, 2024.

Conference Proceedings

1. M. Sharif and **M.Z. Bhatti**: *Some Inhomogeneity Factors in Self-gravitating Systems*, *Proc. Int. Conf. Relativ. Astrophys.* (2015)48 (**Punjab University Press**).
2. **M.Z. Bhatti**: *Role of Some Physical Factors on the Stability of Collapsing Systems*, *Math. Phys.* (2018)96 (**Proceedings of the 14th Regional Conference; World Scientific**).

List of Journal Publications (Indexed by ISI-JCR)

1. **M.Z. Bhatti**, S. Rashid, B. Almutairi, M.A. Malik and Z. Amjad: *Identifying Potentially Stable Regions of Charged Structures Via Cracking*, *Indian Journal of Physics*, **Accepted for Publications (Springer)**.
2. **M. Z. Bhatti**, B. Almutairi, Z. Yousaf, S. Ijaz, and A. S. Khan: *Analytical Solutions of Planar Geometry with Zero Complexity in Extended Gravity*, *International Journal of Geometric Methods in Modern Physics*, **Accepted for Publications (World Scientific)**.
3. **M.Z. Bhatti**, B. Almutairi, Z. Yousaf, S. Hanif and A. S. Khan: *Dynamical Aspects of Torsion on Anisotropic Dissipative Matter*, *Modern Physics Letters A*, **Accepted for Publications (World Scientific)**.
4. T, Naz, A. Malik, **M.Z. Bhatti**, M. K. Asif and I. Fayyaz: *Traversable Wormhole Solutions Utilizing Karmarkar Condition in $f(R, G)$ Gravity*, *Communications in Theoretical Physics*, **Accepted for Publications (IOP, UK)**.
5. B. Almutairi, **M.Z. Bhatti**, M. Yousaf, Z. Yousaf and A.S. Khan: *Impact of Radial Perturbations on Expansion-free Anisotropic Fluid Spheres in D-dimensional Modified Gravity*, *International Journal of Theoretical Physics*, **63(2024)215 (Springer)**.
6. **M.Z. Bhatti**, Z. Yousaf and S. Ijaz: *Evolution of Charged Anisotropic Spheres in Gauss-Bonnet Gravity*, *European Physical Journal Plus*, **139(2024)772 (Springer)**.
7. Z. Yousaf, Maxim Yu. Khlopov, B. Almutairi, R. Nazer and **M. Z. Bhatti**: *Modeling of Charged Self-gravitating Compact Configurations using Conformal Killing Vector*, *Physics of the Dark Universe* **46(2024)101618 (Elsevier)**.
8. Z. Yousaf, **M.Z. Bhatti**, M. Sharif and Ume Farwa: *Aspects of Charged Decoupled Solutions in $R+\omega R^2$ Gravity*, *Modern Physics Letters A*, **Accepted for Publications (World Scientific)**.
9. Z. Yousaf, U. A. Khokhar, B. Almutairi, A. S. Khan, **M. Z. Bhatti**: *Relativistic Fluids*

Interacting through Gravitational Decoupling in $f(T, \mathcal{F})$ Theory,

International Journal of Modern Physics D, Accepted for Publications (World Scientific).

10. Z. Yousaf, K. Bamba B. Almutairi, S. Khan and **M. Z. Bhatti**: *Role of Complexity on the Minimal Deformation of Black Holes,* *Classical and Quantum Gravity*, **41**(2024)175001 (**IOP, UK**).
11. Z. Yousaf, B. Almutairi, **M.Z. Bhatti**, A. Farhat and A. S. Khan: *Shear-free Inhomogeneous Energy Density in 4D Einstein-Gauss-Bonnet Spherical Systems,* *Physica Scripta*, **99**(2024)085305 (**IOP, UK**).
12. Z. Yousaf, **M.Z. Bhatti**, and A. Farhat: *Causes of Energy Density Inhomogeneity in Energy Momentum Squared Gravity,* *Gravitation & Cosmology*, **30**(2024)353 (**Springer**).
13. A. Malik, A. Almas, T. Naz, R. Manzoor and **M.Z. Bhatti**: *Detailed Analysis of Relativistic Configuration of Bardeen Anisotropic Spheres in Modified $f(G)$ Gravity,* *Communications in Theoretical Physics*, **76**(2024)065005 (**IOP, UK**).
14. A. Malik, A. Shafaq, T. Naz, M. F. Shamir and **M.Z. Bhatti**: *Stability Analysis of Isotropic Compact Stars in $f(R, T)$ Gravity Utilizing Cracking Technique,* *Chinese Journal of Physics*, **90**(2024)1101 (**Elsevier**).
15. Z. Yousaf, A. Adeel, S. Khan and **M.Z. Bhatti**: *Generating Fuzzy Dark Matter Droplets,* *Chinese Journal of Physics*, **88**(2024)406 (**Springer**).
16. Abeer M. Albalahi, A. Ali, **M.Z. Bhatti** and S. Khan: *Electromagnetic Field on the Complexity of Minimally Deformed Compact Stars,* *European Physical Journal C*, **84**(2024)293 (**Springer**).
17. **M.Z. Bhatti**, N. B. Turki, S. Hanif and A. Malik: *Axially Symmetric Relativistic Structures and the Riemann Curvature Tensor,* *Indian Journal of Physics*, **Accepted for Publications (Springer)**.
18. **M.Z. Bhatti**, N. B. Turki, S. Hanif and A. Malik: *Energy Density Inhomogeneities with Self-gravitating Charged Fluid in Modified Teleparallel Gravity,* *International Journal of Geometric Methods in Modern Physics*, **21**(2024)2450171 (**World Scientific**).
19. Z. Yousaf, K. Bamba, **M.Z. Bhatti** and U. Farwa: *Quasi-static evolution of axially and reflection symmetric large-scale configuration,* *International Journal of Geometric Methods in Modern Physics*, **21**(2024)2430005 (**World Scientific**).
20. A. Rehman, **M.Z. Bhatti** and Z. Yousaf: *Dynamically Charged Spheres and their Stability in Einstein-Gauss-Bonnet Gravity,* *Fortschritte der Physik - Progress of Physics*, **72**(2024)2300247 (**Wiley-VCH Verlag**).
21. S. Hanif and **M.Z. Bhatti**: *Analysis of Complexity on the Anisotropic Charged Fluid in*

- Modified Teleparallel Gravity,*
Chinese Journal of Physics, **87**(2024)1 (**Elsevier**).
22. **M.Z. Bhatti**, M. Yousaf and Z. Yousaf: *Construction of thin-shell wormhole models in the geometric representation of $f(R, T)$ gravity,*
New Astronomy, **106**(2024)102132 (**Elsevier**).
23. **M.Z. Bhatti**, Z. Yousaf and M. Yousaf: *Black String Thin-Shell Wormhole Models Supported with Generalized Chaplygin Gas,*
General Relativity and Gravitation **56**(2024)3 (**Springer**).
24. Z. Yousaf, **M.Z. Bhatti**, T. Ganesan and H. Aman: *$f(G, T)$ and its Cosmological Implications,*
Canadian Journal of Physics, **102**(2024)221 (**NRC Research Press**).
25. **M.Z. Bhatti**, M. Ajmal, B. Almutairi and A. S. Khan: *Gravastars in $f(G, T^2)$ Gravity,*
Indian Journal of Physics, **98**(2024)1901 (**Springer**).
26. Z. Yousaf, **M.Z. Bhatti** and U. Farwa: *Quasi-Static Analysis of Axially Symmetric Radiating System in $f(R)$ Gravity,*
Indian Journal of Physics, **98**(2024)2591 (**Springer**).
27. K. Bamba, **M.Z. Bhatti**, Z. Yousaf and Z. Shoukat: *Gravitational decoupling of anisotropic stars in the Brans-Dicke theory,*
European Physical Journal C **83**(2023)1033 (**Springer**).
28. **M.Z. Bhatti**, Z. Yousaf and M. Yousaf: *Thin-Shell Wormholes and Modified Chaplygin Gas with Relativistic Corrections,*
Communications in Theoretical Physics, **75**(2023)125401 (**IOP, UK**).
29. Z. Yousaf, **M.Z. Bhatti** and H. Asad: *Analytical Models of Hyperbolical Gravitational Sources,*
International Journal of Modern Physics D, **32**(2023)2350089 (**World Scientific**).
30. M. Yousaf, **M.Z. Bhatti**, and Z. Yousaf: *Cylindrical Wormholes and Electromagnetic Field,*
Nuclear Physics B **995**(2023)116328 (**Elsevier**).
31. **M.Z. Bhatti**, Z. Yousaf and I. Sabir: *Expansion free Spherical Anisotropic Solutions,*
International Journal of Modern Physics D, **32**(2023)2350082 (**World Scientific**).
32. K. Bamba, Z. Yousaf, **M.Z. Bhatti**, R. Nazer and Y. Hashimoto: *Collapsing Dynamics of Relativistic Fluid in Modified Gravity Admitting a Conformal Killing Vector,*
European Physical Journal C, **83**(2023)739 (**Springer**).
33. **M.Z. Bhatti**, S. Ijaz, B. Almutairi and A.S. Khan: *Analytical Solutions of Spherical Structures with Relativistic Corrections,*
European Physical Journal C, **83**(2023)724 (**Springer**).
34. M. Ajmal and **M.Z. Bhatti**: *Structure Analysis of the Charged Compact Anisotropic Systems,*
International Journal of Geometric Methods in Modern Physics, **20**(2023)2450017 (**World**

Scientific).

35. **M.Z. Bhatti**, Z. Yousaf and M. Nazeer: *Thin-Shell Wormholes with Electromagnetic Effects in $f(R, T)$ Gravity*, *International Journal of Geometric Methods in Modern Physics*, **20**(2023)2450001 (**World Scientific**).
36. M. Ajmal and **M.Z. Bhatti**: *Stellar anisotropic cluster in $f(R, G)$ gravity*, *Canadian Journal of Physics*, **101**(2023)728 (**NRC Research Press**).
37. **M.Z. Bhatti**, Z. Yousaf and M. Yousaf: *Dynamical analysis of charged spherical star in $R - \beta R_c \tanh\left(\frac{R}{R_c}\right) + \lambda RT$ gravity*, *Gravitation & Cosmology*, **29**(2023)486 (**Springer**).
38. Z. Yousaf, **M.Z. Bhatti**, H. Aman and A. Malik: *Bouncing Cosmology with 4D-EGB Gravity*, *International Journal of Theoretical Physics*, **62**(2023)155 (**Springer**).
39. **M.Z. Bhatti**, Z. Yousaf and M. Yousaf: *Stability Analysis of Axial Geometry with Anisotropic Background in $f(R, T)$ Gravity*, *Modern Physics Letters A*, **38**(2023)2350067 (**World Scientific**).
40. F. Maqsood, Z. Yousaf, **M.Z. Bhatti** and S. Rehman: *Analysis of Isotropic Pressure Condition in Chameleonic Brans-Dicke Gravity*, *International Journal of Modern Physics D*, **32**(2023)2350055 (**World Scientific**).
41. Z. Yousaf, **M.Z. Bhatti** and U. Farwa: *Role of Strong Matter-Field Coupling on Axial Complex Systems*, *Fortschritte der Physik - Progress of Physics* **71**(2023)2300013 (**Wiley-VCH Verlag**).
42. Z. Yousaf, **M. Z. Bhatti**, S. Khan, A. Malik, Haifa I. Alrebdi, Abdel-Haleem Abdel-Aty: *Stability of Anisotropy Pressure in Self-gravitational Systems in $f(G)$ Gravity*, *Axioms*, **12**(2023)257 (**MDPI**).
43. Z. Yousaf, **M.Z. Bhatti** and U. Farwa: *Complexity Factor of Static Axial Complex Structures in $f(R, T)$ Gravity*, *Symmetry*, **15**(2023)531 (**MDPI**).
44. **M.Z. Bhatti**, Z. Yousaf and Z. Tariq: *Dynamics of Charged Hyperbolically Symmetric Matter in Modified Gravity*, *Classical and Quantum Gravity*, **40**(2023)065011 (**IOP, UK**).
45. Z. Yousaf, **M.Z. Bhatti**, H. Aman and P.K. Sahoo: *Non-Singular Bouncing Model in Energy Momentum Squared Gravity*, *Physica Scripta*, **98**(2023)035002 (**IOP, UK**).
46. Z. Yousaf, **M.Z. Bhatti**, S. Rehman, K. Bamba: *Dynamics of Self-gravitating Systems in Non-Linearly Magnetized Chameleonic Brans-Dicke Gravity*, *General Relativity and Gravitation*, **55**(2023)31 (**Springer**).
47. Z. Yousaf, **M.Z. Bhatti** and M.M.M. Nasir: *Complexity of Charged Anisotropic Spherically Symmetric Fluids in $f(G)$ Gravity*,

- Communications in Theoretical Physics*, **75**(2023)035401 (**IOP, UK**).
48. **M.Z. Bhatti**, M. Yousaf and Z. Yousaf: *Novel Junction Conditions in $f(G,T)$ Modified Gravity*,
General Relativity and Gravitation, **55**(2023)16 (**Springer**).
 49. **M.Z. Bhatti**, Z. Yousaf and M. Nazir: *Static Cylindrically Symmetric Wormhole Models in $f(R,T)$ Gravity*,
New Astronomy, **98**(2023)101897 (**Elsevier**).
 50. Z. Yousaf, A. M. Galal, **M.Z. Bhatti** and A. Farhat: *Sources of Irregular Energy Density in Energy Momentum Squared Gravity with Charge*,
New Astronomy, **98**(2023)101930 (**Elsevier**).
 51. **M.Z. Bhatti**, Z. Yousaf and M. Salman: *Quasi-Homologous Evolution of Celestial Objects in $f(T)$ Gravity*,
Chinese Journal of Physics, **81**(2023)270 (**Elsevier**).
 52. **M.Z. Bhatti**, Z. Yousaf and Z. Tariq: *Dynamics of Axial Geometry in Palatini $f(R)$ Gravity*,
International Journal of Geometric Methods in Modern Physics, **20**(2023)2350001 (**World Scientific**).
 53. U. Sheikh, Y. Aziz, **M.Z. Bhatti** and R. Pincak: *On Evolution of Compact Stars from String Fluid in Rastall Gravity*,
International Journal of Geometric Methods in Modern Physics, **20**(2023)2350058 (**World Scientific**).
 54. M.M.M. Nasir, Z. Yousaf and **M.Z. Bhatti**: *Influence of EMSG on Complex Systems: Spherically Symmetric, Static case*,
International Journal of Modern Physics D, **32**(2023)2350009 (**World Scientific**).
 55. Z. Yousaf, **M.Z. Bhatti** and S. Rehman: *Self-gravitating Spherically Symmetric Systems with Q_h Condition in Chameleonic Brans-Dicke Gravity*,
Zeitschrift für Naturforschung A, **78**(2023)161 (**De Gruyter**).
 56. **M.Z. Bhatti**, Z. Yousaf and A. Rehman: *Cylindrical Gravastars Coupled with an Isotropic Matter in Modified Gravity*,
Indian Journal of Physics, **97**(2023)2227 (**Springer**).
 57. Z. Yousaf, **M.Z. Bhatti** and A. Farhat: *Causes of Energy Density Inhomogenisation with $f(G)$ Formalism*,
Pramana – Journal of Physics **97**(2023)27 (**Springer**).
 58. Z. Yousaf, **M.Z. Bhatti** and A. Farhat: *Existence of Energy Density Homogeneity for Radiating Spheres in $f(G,T)$ Gravity*,
Canadian Journal of Physics **101**(2023)76 (**NRC Research Press**).
 59. **M.Z. Bhatti**, Z. Yousaf and A. Rehman: *Horizon Thermodynamics in $f(R,G)$ Gravity*,
Fortschritte der Physik - Progress of Physics **71**(2023)2200113 (**Wiley-VCH Verlag**).
 60. Z. Yousaf, **M.Z. Bhatti** and S. Khan: *Analysis of Hyperbolically Symmetric Fluid*

- Configurations in Modified Gauss-Bonnet Gravity,*
European Physical Journal C, **82**(2022)1077 (**Springer**).
61. **M.Z. Bhatti**, Z. Yousaf and M. Yousaf: *Study of Nonstatic Anisotropic Axial Structures through Perturbation,*
International Journal of Modern Physics D, **31**(2022)2250116 (**World Scientific**).
62. Z. Yousaf, **M.Z. Bhatti** and M. Rasheed: *Spherically Symmetric Wormholes in Minimal Coupled $f(R,T)$ Gravity,*
Physica Scripta, **97**(2022)125306 (**IOP, UK**).
63. U. Farwa, Z. Yousaf and **M.Z. Bhatti**: *A Measure of Complexity for Axial Self-gravitating Static Fluids,*
Physics Scripta, **97**(2022)105307 (**IOP, UK**).
64. **M.Z. Bhatti**, Z. Yousaf and S. Hanif: *A Novel Definition of Complexity in Torsion Based Theory,*
European Physical Journal C, **82**(2022)714 (**Springer**).
65. **M.Z. Bhatti**, Z. Yousaf and A. Rehman: *Gravastars with Cylindrical Spacetime in $f(G,T)$ Gravity,*
Pramana- J. Phys., **96**(2022)224 (**Springer**).
66. Z. Yousaf, **M.Z. Bhatti** and S. Khan: *Stability Analysis of Isotropic Spheres in Einstein Gauss-Bonnet Gravity,*
Annalen der Physik, **534**(2022)2200252 (**Wiley**).
67. Z. Yousaf, **M.Z. Bhatti** and H. Aman: *Cosmic Bounce with Power Law $f(G,T)$ Model,*
International Journal of Geometric Methods in Modern Physics, **19**(2022)2250206 (**World Scientific**).
68. M.Z. Bani-Fwaz, **M.Z. Bhatti**, Z. Yousaf, U. Farwa and A.M. Galal: *Study of Generalized Lemaitre-Tolman-Bondi Spacetime in Palatini $f(R)$ Gravity,*
European Physical Journal C, **82**(2022)631 (**Springer**).
69. Z. Yousaf, **M.Z. Bhatti** and S. Khan: *Analysis of Charged Self-gravitational Complex Structures Evolving Quasi-Homologously,*
International Journal of Modern Physics D, **31**(2022)2250099 (**World Scientific**).
70. Z. Yousaf, **M.Z. Bhatti** and H. Aman: *The Bouncing Cosmic Behavior with Logarithmic Law $f(G,T)$ Model,*
Chinese Journal of Physics, **79**(2022)275 (**Elsevier**).
71. Z. Yousaf, **M.Z. Bhatti** and U. Farwa: *Dissipative Collapse of Cosmic Structures in Modified Gravity,*
Chinese Journal of Physics, **78**(2022)363 (**Elsevier**).
72. Z. Yousaf, G. G. L. Nashed, **M.Z. Bhatti** and H. Asad: *Significance of Charge on the Dynamics of Hyperbolically Distributed Fluids,*
Universe, **8**(2022)337 (**MDPI**).

73. Z. Yousaf, **M.Z. Bhatti** and A. Farhat: *Various Phases of Irregular Energy Density in Charged Spheres*,
Annals of Physics, **422**(2022)168935 (**Elsevier**).
74. Z. Yousaf, **M.Z. Bhatti** and H. Aman: *Cosmic Bounce with $\alpha(e^{-\beta G} - 1) + 2\lambda T$ Model*,
Physica Scripta, **97**(2022)055306 (**IOP, UK**).
75. **M.Z. Bhatti**, Z. Yousaf and S. Hanif: *Electromagnetic Influence on Hyperbolically Symmetric Sources in $f(T)$ Gravity*,
European Physical Journal C, **82**(2022)340 (**Springer**).
76. Z. Yousaf, **M.Z. Bhatti**, S. Khan and P.K. Sahoo: *$f(G, T_{\alpha\beta} T^{\alpha\beta})$ Theory and Complex Cosmological Structure*,
Physics of the Dark Universe **36**(2022)101015 (**Elsevier**).
77. Z. Yousaf, **M.Z. Bhatti** and H. Asad: *Consequences of Electric Charge on Anisotropic Hyperbolically Symmetric Static Spacetime*,
Physica Scripta, **97**(2022)055304 (**IOP, UK**).
78. **M.Z. Bhatti**, Z. Yousaf and M. Yousaf: *Effects of Non-Minimally Coupled $f(R, T)$ Gravity on the Stability of a Self-gravitating Spherically Symmetric Fluid*,
International Journal of Geometric Methods in Modern Physics, **19**(2022)2250120 (**World Scientific**).
79. **M.Z. Bhatti**, Z. Yousaf and M. Yousaf: *Stability Analysis of Restricted Non-Static Axial Geometry in $f(R, T)$ Gravity*,
Chinese Journal of Physics, **77**(2022)2617 (**Elsevier**).
80. **M.Z. Bhatti**, Z. Yousaf and A. Rehman: *Cylindrical Gravastar Like-Structures in $f(G)$ Gravity*,
Galaxies, **10**(2022)40 (**MDPI**).
81. Z. Yousaf, **M.Z. Bhatti** and S. Khan: *Non-Static Charged Complex Structures in $f(G, T^2)$ Gravity*,
European Physical Journal Plus, **137**(2022)322 (**Springer**).
82. Z. Yousaf, K. Bamba and **M.Z. Bhatti**: *Structure Scalars and an Extensions to LTB Metric*,
International Journal of Modern Physics D, **31**(2022)2250043 (**World Scientific**).
83. Z. Yousaf, **M. Z. Bhatti** and H. Asad: *Matter-Curvature Gravity Modification and the Formation of Cylindrical Isotropic Systems*,
Pramana, **96**(2022)111 (**Springer**).
84. **M.Z. Bhatti**, Z. Yousaf and S. Khan: *Quasi-homologous Evolution of Relativistic Charged Objects Within $f(G, T)$ Gravity*,
Chinese Journal of Physics, **77**(2022)2168 (**Elsevier**).
85. M. Sharif, **M.Z. Bhatti**, F. De Paolis and G.J. Olmo: *Preface 4th PU International Conference on Gravitation and Cosmology*,
International Journal of Modern Physics D, **31**(2022)2202004 (**World Scientific**).

86. **M.Z. Bhatti**, Z. Yousaf, M. Yousaf and K. Bamba: *Dynamical Analysis of Charged Fluid under Non-Minimally Coupled Gravity Theory*, *International Journal of Modern Physics D*, **31**(2022)2240002 (**World Scientific**).
87. F. Maqsood, Z. Yousaf and **M.Z. Bhatti** and Z. Rasool: *Electromagnetic Field and Spherically Symmetric Dissipative Fluid Models*, *Pramana*, **96**(2022)105 (**Springer**).
88. Z. Yousaf, **M. Z. Bhatti**, M. Y. Kholopv and H. Asad: *A Comprehensive Analysis of Hyperbolic Fluids in Modified Gravity*, *Entropy*, **24**(2022)150 (**MDPI**).
89. Z. Yousaf, **M.Z. Bhatti** and M.M.M. Nasir: *On the Study of Complexity for Charged Self-Gravitating Systems*, *Chinese Journal of Physics*, **77**(2022)2078 (**Elsevier**).
90. Z. Yousaf, **M. Z. Bhatti** and H. Asad: *Electromagnetic Effects on Cylindrical Gravastars-Like Strings in $f(R, T, R_{\{\sigma\alpha\eta\}} T^{\{\sigma\alpha\eta\}})$ Gravity*, *International Journal of Geometric Methods in Modern Physics*, **19**(2022)2250070 (**World Scientific**).
91. Z. Yousaf, **M. Z. Bhatti** and H. Asad: *Hyperbolically Symmetric Sources in $f(R, T)$ Gravity*, *Annals of Physics*, **437**(2022)168753 (**Elsevier**).
92. **M.Z. Bhatti**, Z. Yousaf and S. Hanif: *Hyperbolically Symmetric Sources, A Comprehensive Study in $f(T)$ gravity*, *European Physical Journal Plus*, **137**(2022)65 (**Springer**).
93. Z. Yousaf, **M.Z. Bhatti** and M.M.M. Nasir: *Role of $f(G)$ Gravity in the Study of Non-Static Complex Systems*, *Canadian Journal of Physics*, **100**(2022)185 (**NRC Research Press**).
94. Z. Yousaf, **M.Z. Bhatti** and U. Farwa: *Evolution of Axially and Reflection Symmetric Source in Energy Momentum Squared Gravity*, *European Physical Journal Plus*, **137**(2022)49 (**Springer**).
95. Z. Yousaf, K. Bamba, **M.Z. Bhatti** and U. Farwa: *Quasi Static Evolution of Compact Objects in Modified Gravity*, *General Relativity and Gravitation*, **54**(2022)7 (**Springer**).
96. Z. Yousaf, M. Y. Kholopv, **M. Z. Bhatti** and H. Asad: *Hyperbolically Symmetric Static Charged Cosmological Fluid Models*, *Monthly Notices of the Royal Astronomical Society*, **510**(2022)4100 (**Oxford University Press**).
97. Z. Yousaf, **M.Z. Bhatti** and U. Farwa: *Quasi-static Approximation in the Study of Compact Stars*, *Chinese Journal of Physics*, **77**(2022)2014 (**Elsevier**).
98. **M.Z. Bhatti**, Z. Yousaf and M. Yousaf: *Dynamical analysis for cylindrical geometry in non-*

- minimally coupled $f(R, T)$ gravity,*
International Journal of Geometric Methods in Modern Physics, 19(2022)2250018 (World Scientific).
99. **M.Z. Bhatti**, Z. Yousaf and A. Rehman: *Analysis of Charged Gravastar in $f(R, G)$ Gravity,*
International Journal of Modern Physics D, 31(2022)2150124 (World Scientific).
 100. **M.Z. Bhatti**, Z. Yousaf and Z. Tariq: *Hyperbolically Symmetric Sources in Palatini $f(R)$ gravity,*
European Physical Journal C, 81(2021)1070 (Springer).
 101. **M.Z. Bhatti**, Z. Yousaf and T. Ashraf: *Charged Gravastars in Modified Gauss-Bonnet Gravity,*
Modern Physics Letters A, 36(2021)2150233 (World Scientific).
 102. Z. Yousaf, **M.Z. Bhatti** and A. Ali: *Electromagnetic field and Quasi-Homologous Constraint for Spherical Fluids in $f(R, T)$ Gravity,*
European Physical Journal Plus, 136(2021)1013 (Springer).
 103. **M.Z. Bhatti**, Z. Yousaf and F. Hussain: *Generalized Lemaitre-Tolman-Bondi Spacetime under the Influence of Electric Charge and Palatini $f(R)$ Gravity,*
European Physical Journal C, 81(2021)853 (Springer).
 104. Z. Yousaf, **M.Z. Bhatti** and U. Farwa: *Axially and Reflection Symmetric Systems and Structure Scalars in $f(R, T)$ Gravity,*
Annals of Physics, 433(2021)168601 (Elsevier).
 105. **M.Z. Bhatti**, Z. Yousaf and S. Khan: *Role of Quasi-homologous Condition to Study Complex Systems in $f(G, T)$ Gravity,*
European Physical Journal Plus, 136(2021)975 (Springer).
 106. **M.Z. Bhatti**, Z. Yousaf and Z. Tariq: *Influence of Electromagnetic Field on Hyperbolically Symmetric Source,*
European Physical Journal Plus, 136(2021)857 (Springer).
 107. **M.Z. Bhatti**: *Structure Scalars with Charged Dissipative Systems in $f(G, T)$ Gravity,*
Chinese Journal of Physics, 73(2021)658 (Elsevier).
 108. Z. Yousaf, **M.Z. Bhatti** and A. Ali: *Quasi-Homologous Evolution of Relativistic Stars,*
Annals of Physics, 432(2021)168570 (Elsevier).
 109. Z. Yousaf, **M.Z. Bhatti** and A. Rehman: *Electrically Charged String-like Axially Symmetric Object Composition in $f(R, G)$ Gravity,*
Chinese Journal of Physics, 73(2021)493 (Elsevier).
 110. **M.Z. Bhatti**, M. Y. Kholopv, Z. Yousaf and S. Khan: *Electromagnetic Field and Complexity of Relativistic Fluids in $f(G)$ Gravity,*
Monthly Notices of the Royal Astronomical Society, 506(2021)4543 (Oxford University Press).
 111. **M.Z. Bhatti**, Z. Yousaf and S. Khan: *Influence of $f(G)$ Gravity on the Complexity of*

- Relativistic Self-Gravitating Fluids,*
International Journal of Modern Physics D, **30**(2021)2150097 (**World Scientific**).
112. **M.Z. Bhatti**, Z. Yousaf and Z. Tariq: *Analysis of Structure Scalars in $f(R)$ Gravity with an Electric Charge,*
Physics Scripta, **96**(2021)115301 (**IOP, UK**).
113. **M.Z. Bhatti**, Z. Yousaf and T. Ashraf: *Gravastars in Modified Gauss-Bonnet Gravity,*
Chinese Journal of Physics, **73**(2021)167 (**Elsevier**).
114. **M.Z. Bhatti** and Z. Yousaf: *Dynamical Instability of Charged Self-Gravitating Stars in Modified Gravity,*
Chinese Journal of Physics, **73**(2021)115 (**Elsevier**).
115. Z. Yousaf and **M. Z. Bhatti**: *Charged Gravastars in $f(R, T, R_{\mu\nu} T^{\mu\nu})$ gravity,*
International Journal of Modern Physics D, **30**(2021)2150084 (**World Scientific**).
116. Z. Yousaf, **M.Z. Bhatti** and K. Bamba: *Formation of Cylindrical Gravastars in Modified Gravity,*
International Journal of Geometric Methods in Modern Physics, **18**(2021)2150167 (**World Scientific**).
117. **M.Z. Bhatti**, Z. Yousaf and Z. Tariq: *Role of Structure Scalars on the Evolution of Compact Objects in Palatini $f(R)$ Gravity,*
Chinese Journal of Physics, **72**(2021)18 (**Elsevier**).
118. Z. Tariq, **M.Z. Bhatti** and Z. Yousaf: *On the Stability of Pressure Isotropy Condition in Palatini $f(R)$ Gravity,*
International Journal of Modern Physics D **30**(2021)2150058 (**World Scientific**).
119. U. Sheikh, S. Liaqut, Z. Yousaf and **M.Z. Bhatti**: *Information Paradox for a Collapsing String Cloud in Rainbow Gravity,*
International Journal of Geometric Methods in Modern Physics, **18**(2021) 2150084 (**World Scientific**).
120. Z. Yousaf, K. Bamba, **M.Z. Bhatti** and K. Hassan, *Measure of Complexity in Self-Gravitating Systems using Structure Scalars,*
New Astronomy, **84**(2021)101541 (**Elsevier**).
121. **M.Z. Bhatti**, Z. Yousaf and Z. Tariq: *Structure Scalars and their Evolution for Massive Objects in $f(R)$ Gravity,*
European Physical Journal C, **81**(2021)16 (**Springer**).
122. U. Sheikh, **M.Z. Bhatti** and Z. Yousaf: *Gravitational Collapse of a Self-gravitating Unidirectional Fluid Flow,*
New Astronomy, **84**(2021)101533 (**Elsevier**).
123. Z. Yousaf, **M.Z. Bhatti** and T. Naseer: *Evolution of the Charged Dynamical Radiating Spherical Structures,*
Annals of Physics, **420**(2020)168267 (**Elsevier**).

124. Z. Yousaf, M. Y. Khlopov, **M.Z. Bhatti** and T. Naseer: *Influence of Modification of Gravity on the Complexity Factor of Static Spherical Structures*, *Monthly Notices of the Royal Astronomical Society*, **495**(2020)4334 (**Oxford University Press**).
125. **M.Z. Bhatti** and Z. Tariq: *Effects of Electromagnetic Field on the Structure of Massive Compact Objects*, *Physics of the Dark Universe*, **29**(2020)100600 (**Elsevier**).
126. Z. Yousaf, **M.Z. Bhatti** and T. Naseer: *Measure of Complexity for Dynamical Self-gravitating Structures*, *International Journal of Modern Physics D*, **29**(2020)2050061 (**World Scientific**).
127. **M.Z. Bhatti**, Z. Yousaf and A. Khadim: *Dynamical Analysis of Self-gravitating Stars in Modified Gauss-Bonnet Gravity*, *Physical Review D*, **101**(2020)104029 (**American Physical Society**).
128. Z. Yousaf, **M.Z. Bhatti**, T. Naseer and I. Ahmad: *The measure of Complexity in Charged Celestial Bodies in $f(R, T, R_{\mu\nu}, T^{\mu\nu})$ Gravity*, *Physics of the Dark Universe*, **29**(2020)100581 (**Elsevier**).
129. Z. Yousaf, **M.Z. Bhatti** and K. Hassan: *Complexity for Self-gravitating Fluid Distributions in $f(G, T)$ gravity*, *European Physical Journal Plus*, **135**(2020)397 (**Springer**).
130. **M.Z. Bhatti**, Z. Yousaf and A. Rehman: *Gravastars in $f(R, G)$ Gravity*, *Physics of the Dark Universe*, **29**(2020)100561 (**Elsevier**).
131. Z. Yousaf, **M.Z. Bhatti** and T. Naseer: *New Definition of Complexity Factor in $f(R, T, R_{\mu\nu}, T^{\mu\nu})$ Gravity*, *Physics of the Dark Universe*, **28**(2020)100535 (**Elsevier**).
132. Z. Yousaf, **M.Z. Bhatti** and T. Naseer: *Study of Static Charged Spherical Structure in $f(R, T, Q)$ Gravity*, *European Physical Journal Plus*, **135**(2020)323 (**Springer**).
133. Z. Yousaf, **M. Z. Bhatti** and H. Asad, *Gravastars in $f(R, T, R_{\mu\nu}, T^{\mu\nu})$ Gravity*, *Physics of the Dark Universe*, **28**(2020)100527 (**Elsevier**).
134. **M.Z. Bhatti**, Z. Yousaf and M. Yousaf, *Stability of Self-Gravitating Anisotropic Fluids in $f(R, T)$ Gravity*, *Physics of the Dark Universe*, **28**(2020)100501 (**Elsevier**).
135. **M.Z. Bhatti** and Z. Tariq: *Electromagnetic Effects on Polytropes in $f(R)$ Gravity*, *Physics of the Dark Universe*, **28**(2020)100482 (**Elsevier**).
136. **M.Z. Bhatti**, Z. Yousaf and M. Nawaz: *Spherical Collapse with Heat Dissipation in $f(R, T, R_{\nu\delta}, T^{\nu\delta})$ Gravity*, *International Journal of Geometric Methods in Modern Physics* **17**(2020)2050017 (**World Scientific**).

137. **M.Z. Bhatti**: *Charged Gravastars with Cylindrical Spacetime*,
Modern Physics Letters A **33**(2020)2050069 (**World Scientific**).
138. Z. Yousaf, A. Ikram, M. Ilyas and **M.Z. Bhatti**, *Existence of Dynamical Wormholes in $f(R)$ Gravity*,
Canadian Journal of Physics, **98**(2020)474 (**NRS Research Press**).
139. **M.Z. Bhatti**, Z. Yousaf and Zarnoor: *Stability Analysis of Neutron Stars in Palatini $f(R, T)$ Gravity*,
General Relativity and Gravitation **51**(2019)144 (**Springer**).
140. **M.Z. Bhatti** and Z. Tariq: *Conformally Flat Polytropes for Anisotropic Fluid in $f(R)$ Gravity*,
European Physical Journal Plus, **134**(2019)521 (**Springer**).
141. **M.Z. Bhatti**, K. Bamba, M. Nawaz and Z. Yousaf: *Dissipative Self-gravitating Systems in Modified Gravity*,
Journal of Cosmology and Astroparticle Physics, **09**(2019)011 (**IOP, UK**).
142. Z. Yousaf, **M.Z. Bhatti** and M.F. Malik: *Non-reversible Evolution of Tilted Szekeres Spacetimes with $f(R)$ Gravity*,
European Physical Journal Plus, **134**(2019)470 (**Springer**).
143. Z. Yousaf, K. Bamba, **M.Z. Bhatti** and U. Ghafoor: *Charged Gravastars in Modified Gravity*,
Physical Review D, **100**(2019)024062 (**American Physical Society**).
144. Z. Yousaf, **M.Z. Bhatti** and S. Yaseen: *Tilted Shear-free Axially Symmetric Fluids in $f(R)$ Gravity*,
European Physical Journal Plus, **134**(2019)487 (**Springer**).
145. **M.Z. Bhatti**, Z. Yousaf and Zarnoor: *Stability of Charged Neutron Star in Palatini $f(R)$ Gravity*,
Modern Physics Letters A, **33**(2019)1950252 (**World Scientific**).
146. **M.Z. Bhatti**, Z. Yousaf and M. Ajmal: *Locally Isotropic Gravastars with Cylindrical Spacetime*,
International Journal of Modern Physics D, **28**(2019)1950123 (**World Scientific**).
147. M. Ilyas, Z. Yousaf and **M.Z. Bhatti**: *Bounds on Higher Derivative $f(R, \square R, T)$ Models from Energy Conditions*,
Modern Physics Letters A, **34**(2019)1950082 (**World Scientific**).
148. Z. Yousaf, **M.Z. Bhatti** and R. Saleem: *Electromagnetic Field and Dark Dynamical Scalars for Spherical Systems*,
European Physical Journal Plus, **134**(2019)142 (**Springer**).
149. **M.Z. Bhatti**, Z. Yousaf and A. Yousaf: *Energy Content of a Collapsing Sphere with $f(R)$ Gravity*,
International Journal of Geometric Methods in Modern Physics, **16**(2019)1950041 (**World**

Scientific).

150. **M.Z. Bhatti**, Z. Yousaf and A. Yousaf: *Tolman Mass of Spherical Fluids with Electromagnetic Field*, *Modern Physics Letters A*, **34**(2019)1950012 (**World Scientific**).
151. **M.Z. Bhatti**, Z. Yousaf and M. Ilyas: *Existence of Wormhole Solutions and Energy Conditions in $f(R, T)$ Gravity*, *Journal of Astrophysics and Astronomy*, **39**(2018)69 (**Springer**).
152. **M.Z. Bhatti**: *Stability of Celestial Objects and Adiabatic Index*, *European Physical Journal Plus*, **133**(2018)431 (**Springer**).
153. Z. Yousaf, K. Bamba, **M.Z. Bhatti** and Ume Farwa: *Dynamical Instability of Spherical Anisotropic Sources in $f(R, T, R_{\gamma\delta} T^{\gamma\delta})$ Gravity*, *European Physical Journal A*, **54**(2018)122 (**Springer**).
154. Z. Yousaf and **M.Z. Bhatti**: *Some Anisotropic Planar Stellar Models*, *International Journal of Geometric Methods in Modern Physics*, **15**(2018)1850160 (**World Scientific**).
155. Z. Yousaf, M. Sharif, M. Ilyas and **M.Z. Bhatti**: *Energy Conditions in Higher Derivative $f(R, \square R, T)$ Gravity*, *International Journal of Geometric Methods in Modern Physics*, **15**(2018)1850146 (**World Scientific**).
156. Z. Yousaf, **M.Z. Bhatti** and M. Ilyas: *Existence of Compact Structures in $f(R, T)$ Gravity*, *European Physical Journal C*, **78**(2018)307 (**Springer**).
157. **M.Z. Bhatti**, M. Sharif, Z. Yousaf and M. Ilyas: *Role of $f(G, T)$ Gravity on the Evolution of Relativistic Stars*, *International Journal of Modern Physics D*, **27**(2018)1850044 (**World Scientific**).
158. M. Ilyas, Z. Yousaf, **M.Z. Bhatti** and B. Masud: *Existence of Relativistic Structures in $f(R, T)$ Gravity*, *Astrophysics and Space Science*, **362**(2017)237 (**Springer**).
159. **M.Z. Bhatti** and Z. Yousaf: *Stability of Anisotropic Stellar Filaments*, *Annals of Physics*, **387**(2017)253 (**Elsevier**).
160. Z. Yousaf, M. Sharif, M. Ilyas and **M.Z. Bhatti**: *Influence of $f(R)$ Models on the Existence of Anisotropic Self-Gravitating Systems*, *European Physical Journal C*, **77**(2017)691 (**Springer**).
161. **M.Z. Bhatti**, Z. Yousaf and M. Ilyas: *Evolution of Compact Stars and Dark Dynamical Variables*, *European Physical Journal C*, **77**(2017)690 (**Springer**).
162. Z. Yousaf, M. Ilyas and **M.Z. Bhatti**: *Influence of Modification of Gravity on Spherical Wormhole Models*,

- Modern Physics Letters A*, **32**(2017)1750163 (**World Scientific**).
163. K. Bamba, M. Ilyas, **M.Z. Bhatti** and Z. Yousaf: *Energy Conditions in Modified $f(G)$ Gravity, General Relativity and Gravitation*, **49**(2017)112 (**Springer**).
164. **M.Z. Bhatti**, Z. Yousaf and Sara Ashraf: *Charged Black String Thin-Shell Wormholes in Modified Gravity*, *Annals of Physics*, **383**(2017)439 (**Elsevier**).
165. Z. Yousaf, **M.Z. Bhatti** and Aamna Razaqat: *Evolution of Inhomogeneous LTB Geometry with Tilted Congruence and Modified Gravity*, *Canadian Journal of Physics*, **95**(2017)1246 (**NRS Research Press**).
166. Z. Yousaf, **M.Z. Bhatti** and Ume Farwa: *Stability Analysis of Stellar Radiating Filaments*, *Classical and Quantum Gravity*, **34**(2017)145002 (**IOP, UK**).
167. Z. Yousaf, **M.Z. Bhatti** and Ume Farwa: *Role of $f(R, T, R_{\gamma\delta} T^{\gamma\delta})$ Model on the Stability of Cylindrical Stellar Model*, *European Physical Journal C*, **77**(2017)359 (**Springer**).
168. **M.Z. Bhatti**, A. Aslam and S. Ashraf: *Construction of Thin-Shell Wormholes from Metric $f(R)$ Gravity*, *Modern Physics Letters A*, **32**(2017)1750111 (**World Scientific**).
169. Z. Yousaf, M. Ilyas and **M.Z. Bhatti**: *Static Spherical Wormhole Models in $f(R, T)$ Gravity*, *European Physical Journal Plus*, **132**(2017)268 (**Springer**).
170. **M.Z. Bhatti**, Z. Yousaf and Sonia Hanif: *Gravitational Collapse in Generalized Teleparallel Gravity*, *European Physical Journal Plus*, **132**(2017)230 (**Springer**).
171. **M.Z. Bhatti**, Z. Yousaf and Sonia Hanif: *Role of $f(T)$ Gravity on the Evolution of Collapsing Stellar Model*, *Physics of the Dark Universe*, **16**(2017)34 (**Elsevier**).
172. Z. Yousaf, **M.Z. Bhatti** and Aamna Razaqat: *Electromagnetic Effects on the Evolution of LTB Geometry in Modified Gravity*, *Astrophysics and Space Science*, **362**(2017)68 (**Springer**).
173. Z. Yousaf, **M.Z. Bhatti** and Aamna Razaqat: *LTB Geometry with Tilted and Non-Tilted Congruences in $f(R, T)$ Gravity*, *International Journal of Modern Physics D*, **26**(2017)1750099 (**World Scientific**).
174. **M.Z. Bhatti**, Z. Yousaf and Sonia Hanif: *Stability of Anisotropic Compact Objects in $f(T)$ Gravity*, *Modern Physics Letters A*, **32**(2017)1750042 (**World Scientific**).
175. Z. Yousaf, K. Bamba and **M.Z. Bhatti**: *Role of Tilted Congruence and $f(R)$ Gravity on Regular Compact Objects*, *Physical Review D*, **95**(2017)024024 (**American Physical Society**).
176. Z. Yousaf, **M.Z. Bhatti** and Ume Farwa: *Stability of Compact Stars in $\alpha R^2 + \beta(R_{\gamma\delta} T^{\gamma\delta})$*

- Gravity*,
Monthly Notices of the Royal Astronomical Society, **464**(2017)4509 (**Oxford University Press**).
177. **M.Z. Bhatti** and Z. Yousaf: *Gravitational Collapse and Dark Universe with LTB Geometry*, *International Journal of Modern Physics D*, **26**(2017)1750045 (**World Scientific**).
178. **M.Z. Bhatti** and Z. Yousaf: *Dynamical Variables and Evolution of the Universe*, *International Journal of Modern Physics D*, **26**(2017)1750029 (**World Scientific**).
179. **M.Z. Bhatti**, *Shear-Free Stellar Solutions in Λ -Dominated Era*, *European Physical Journal Plus*, **131**(2016)428 (**Springer**).
180. Z. Yousaf, K. Bamba and **M.Z. Bhatti**: *Causes of Irregular Energy Density in $f(R,T)$ Gravity*, *Physical Review D*, **93**(2016)124048 (**American Physical Society**).
181. M. Sharif and **M.Z. Bhatti**: *Binding Energy in Self-gravitating Charged Plane Symmetric Systems*, *Chinese Journal of Physics*, **54**(2016)451 (**Elsevier**).
182. Z. Yousaf and **M.Z. Bhatti**: *Cavity Evolution and Instability Constraints of Relativistic Interiors*, *European Physical Journal C*, **76**(2016)267 (**Springer**).
183. **M.Z. Bhatti** and Z. Yousaf: *Influence of Electric Charge and Modified Gravity on Density Irregularities*, *European Physical Journal C*, **76**(2016)219 (**Springer**).
184. Z. Yousaf, K. Bamba and **M.Z. Bhatti**: *Influence of Modification of Gravity on the Dynamics of Radiating Spherical Fluids*, *Physical Review D*, **93**(2016)064059 (**American Physical Society**).
185. Z. Yousaf and **M.Z. Bhatti**: *Electromagnetic Field and Cylindrical Compact Objects in Modified Gravity*, *Monthly Notices of the Royal Astronomical Society*, **458**(2016)1785 (**Oxford University Press**).
186. M. Sharif and **M.Z. Bhatti**: *Stability Analysis of Axial Reflection Symmetric Spacetime*, *Monthly Notices of the Royal Astronomical Society*, **455**(2016)1015 (**Oxford University Press**).
187. M. Sharif and **M.Z. Bhatti**: *Role of Bulk Viscosity and Electromagnetic Field on the Stability of Collapsing Cylinder*, *International Journal of Theoretical Physics*, **54**(2015)2921 (**Springer**).
188. M. Sharif and **M.Z. Bhatti**: *Dynamics of Charged Planar Geometry in Tilted and Non-Tilted Frames*, *Journal of Experimental and Theoretical Physics*, **120**(2015)813 (**Springer**).
189. M. Sharif and **M.Z. Bhatti**: *Structure Scalars and Super-Poynting Vector of Tilted Szekeres*

- Geometry,*
International Journal of Modern Physics D, **24**(2015)1550014 (**World Scientific**).
190. M. Sharif and **M.Z. Bhatti**: *Stability Analysis of Expansion-free Charged Planar Geometry,*
Astrophysics and Space Science, **355**(2015)389 (**Springer**).
191. M. Sharif and **M.Z. Bhatti**: *Dynamics and Stability of Charged Spherical Star with Tilted
and Non-Tilted Congruences,*
Modern Physics Letters A, **29**(2014)1450165 (**World Scientific**).
192. M. Sharif and **M.Z. Bhatti**: *Effects of Some Physical Factors on the Stability of Collapsing
Stars,*
International Journal of Modern Physics D, **23**(2014)1450085 (**World Scientific**).
193. M. Sharif and **M.Z. Bhatti**: *Electromagnetic Effects on the Inhomogeneity of Planar
Symmetry,*
Modern Physics Letters A, **29**(2014) 1450129 (**World Scientific**).
194. M. Sharif and **M.Z. Bhatti**: *Effects of Some Physical Factors on the Inhomogeneity in
Planar Symmetry,*
Modern Physics Letters A, **29**(2014)1450094 (**World Scientific**).
195. M. Sharif and **M.Z. Bhatti**: *Radiating Collapsing Relativistic Models,*
Physica Scripta, **89**(2014)084004 (**IOP, UK**).
196. M. Sharif and **M.Z. Bhatti**: *Shearfree and Cavity Models with Plane Symmetry,*
Astrophysics and Space Science, **352**(2014)883 (**Springer**).
197. M. Sharif and **M.Z. Bhatti**: *On the Stability of a Class of Radiating Viscous Self-
Gravitating Stars with Axial Symmetry,*
Astroparticle Physics, **56**(2014)35 (**Elsevier**).
198. M. Sharif and **M.Z. Bhatti**: *Stability of the Charged Radiating Cylinder,*
Physics Letters A, **378**(2014)469 (**Elsevier**).
199. M. Sharif and **M.Z. Bhatti**: *Charged Static Axial Symmetric Solutions and Scalar
Structures,*
Astrophysics and Space Science, **349**(2014)995 (**Springer**).
200. M. Sharif and **M.Z. Bhatti**: *Stability Analysis of Restricted Non-Static Axial-Symmetry,*
Journal of Cosmology and Astroparticle Physics, **11**(2013)014 (**IOP, UK**).
201. M. Sharif and **M.Z. Bhatti**: *Stability of the Expansion-free Charged Cylinder,*
Journal of Cosmology and Astroparticle Physics, **10**(2013)056 (**IOP, UK**).
202. M. Sharif and **M.Z. Bhatti**: *Effects of Electromagnetic Field on Shearfree Spherical
Collapse,*
Astrophysics and Space Science, **347**(2013)337 (**Springer**).
203. M. Sharif and **M.Z. Bhatti**: *Gravitational Binding Energy in Charged Cylindrical Symmetry,*
Canadian Journal of Physics, **90**(2012)1233 (**NRS Research Press**).
204. M. Sharif and **M.Z. Bhatti**: *Structure Scalars in Charged Plane Symmetry,*

Modern Physics Letters A, **27**(2012)1250141 (**World Scientific**).

205. M. Sharif and **M.Z. Bhatti**: *Structure Scalars for Charged Cylindrically Symmetric Relativistic Fluids*,
General Relativity and Gravitation, **44**(2012)2811 (**Springer**).

Worked as a Reviewer for Journals

Physics of the Dark Universe;
European Physical Journal C;
Classical and Quantum Gravity;
Physica Scripta;
European Physical Journal Plus;
Fortschritte der Physik - Progress of Physics;
International Journal of Modern Physics D;
Modern Physics Letters A;
International Journal of Theoretical Physics;
Physics Letters A;
Canadian Journal of Physics;
Chinese Journal of Physics;
New Astronomy;
Open Astronomy;
Advances in Mathematical Physics;
Gravitation & Cosmology;
Galaxies;
Symmetry;
Foundations;
Universe;
Mathematics;
Advances in Astronomy;
Mediterranean Journal of Physics;
Applications and Applied Mathematics: An International Journal.

Countries Visited

United States of America: To attend 21st International Conference on General Relativity and Gravitation during July 2016 for two weeks.
Australia: To attend Surveying the Cosmos, The Southern Cross Conference during June 2017 for two weeks.
France: To attend XIIth Spontaneous Workshop on

Cosmology « Hot Topics in Modern Cosmology »
during May 2018 for ten days.

Japan:

To execute collaboration works in the research field of Gravitation and Cosmology at the Faculty of Symbiotic Systems Science, Fukushima University in the City of Fukushima, Japan during May 2023 for eight days.

Supervised MS/MPhil Theses

1. **Name:** Miss Sonia Hanif
Thesis Title: *Role of $f(T)$ Gravity on the Perturbative Analysis of Compact Objects*
Session: 2015-17
Institution: University of the Punjab, Lahore-Pakistan
2. **Name:** Mr. Muhammad Ajmal
Thesis Title: *Stability Analysis of Gravastar Like Structures*
Session: 2017-19
Institution: University of the Punjab, Lahore-Pakistan
3. **Name:** Miss Zarnoor
Thesis Title: *Stability of Neutron Stars in Palatini Formalism by*
Session: 2017-19
Institution: University of the Punjab, Lahore-Pakistan
4. **Name:** Miss Mubeen Nawaz
Thesis Title: *Non-adiabatic Gravitational Collapse in Modified Gravity*
Session: 2017-19
Institution: University of the Punjab, Lahore-Pakistan
5. **Name:** Mr. Ateeq-ur-Rehman
Thesis Title: *Gravastars in $f(R,G)$ Gravity*
Session: 2018-20
Institution: University of the Punjab, Lahore-Pakistan
6. **Name:** Miss Ammara Khadim
Thesis Title: *Dynamical Instability and Modified Gravity*
Session: 2018-20
Institution: University of the Punjab, Lahore-Pakistan
7. **Name:** Mr. Muhammad Yousaf
Thesis Title: *Evolution of Celestial Axially Symmetric Objects in $f(R,T)$ Gravity*
Session: 2018-20
Institution: University of the Punjab, Lahore-Pakistan
8. **Name:** Miss Taiba Ashraf
Thesis Title: *Gravastars in Modified Gauss-Bonnet Gravity*

Session: 2019-21

Institution: University of the Punjab, Lahore-Pakistan

9. **Name:** Mr. Furqan Hussain

Thesis Title: *Generalization of LTB Geometry with Palatini Formalism*

Session: 2019-21

Institution: University of the Punjab, Lahore-Pakistan

10. **Name:** Mr. Suraj Khan

Thesis Title: *Impact of $f(G)$ Gravity on the Evolution of Self-gravitating Objects*

Session: 2019-21

Institution: University of the Punjab, Lahore-Pakistan

11. **Name:** Ms. Yousra Aziz

Thesis Title: *Gravitational Collapse of Unidirectional Perfect Fluid in Rastall Gravity*

Session: 2019-21

Institution: National Textile University, Faisalabad-Pakistan

12. **Name:** Miss Maryam Nazeer

Thesis Title: *A Study on the Formation of Thin Shell*

Session: 2020-22

Institution: University of the Punjab, Lahore-Pakistan

13. **Name:** Mr. Muhammad Munawar Ali

Thesis Title: *Cosmic Bounce with Perfect Fluid*

Session: 2020-22

Institution: University of the Punjab, Lahore-Pakistan

14. **Name:** Miss Fiza Arooj

Thesis Title: *Scalar Functions and their Applications*

Session: 2020-22

Institution: University of the Punjab, Lahore-Pakistan

15. **Name:** Mr. Tanveer Ahmad

Thesis Title: *Energy Momentum Squared Gravity and Gravastars*

Session: 2020-22

Institution: University of the Punjab, Lahore-Pakistan

16. **Name:** Mr. Muhammad Salman

Thesis Title: *Homologous Evolution of Compact Objects in Teleparallel Gravity*

Session: 2020-22

Institution: University of the Punjab, Lahore-Pakistan

17. **Name:** Ms. Iqra Sabir

Thesis Title: *Expansion-free Spherical Models in $f(R)$ Gravity*

Session: 2021-23

Institution: University of the Punjab, Lahore-Pakistan

18. **Name:** Mr. Muhammad Wajdan Hasnain

Thesis Title: *Cosmological Implications of $f(T, \mathcal{F})$ Theory*

Session: 2021-23

Institution: University of the Punjab, Lahore-Pakistan

19. **Name:** Ms. Sana Rashid

Thesis Title: *Cracking: Identifying Potentially Stable Regions of Charged Compact Objects*

Session: 2021-23

Institution: University of the Punjab, Lahore-Pakistan

20. **Name:** Ms. Zaeema Shoukat

Thesis Title: *Static Solutions through Decoupled Parameter and Brans-Dicke Theory*

Session: 2021-23

Institution: University of the Punjab, Lahore-Pakistan

21. **Name:** Ms. Seerat Ijaz

Thesis Title: *Stellar Models of Spherical Systems in $f(G)$ gravity*

Session: 2021-23

Institution: University of the Punjab, Lahore-Pakistan

22. **Name:** Mr. Jahanzaib

Thesis Title: *Diffused Topological Structures in our Universe*

Session: 2022-24

Institution: University of the Punjab, Lahore-Pakistan

23. **Name:** Ms. Iqra Sana

Thesis Title: *Few Features of Self-gravitating Non-Static irrotational Compact Objects*

Session: 2022-24

Institution: University of the Punjab, Lahore-Pakistan

24. **Name:** Ms. Sidrah Iftikhar

Thesis Title: *Anisotropic Fluid Distribution and Stability of Wormholes*

Session: 2022-24

Institution: University of the Punjab, Lahore-Pakistan

MPhil in Progress

2023 - 25 Mr. Jahanzaib

2023 - 25 Ms. Rubab Kamran

2023 - 25 Ms. Khush Bakht

Supervised PhD Thesis

1. **Name:** Ms. Zoha Tariq

Thesis Title: *Evolution of Self-Gravitating Objects in Modified Gravity*

Session: 2018-21

2. **Name:** Mr. Muhammad Yousaf

Thesis Title: *Investigation on Celestial Objects using Some Mathematical Methods*

Session: 2020-23

3. **Name:** Mr. Muhammad Ajmal

Thesis Title: *Mathematical Analysis for the Stable Compact Structures*

Session: 2020-23

4. **Name:** Mr. Mian Muhammad Muddassar Nasir

Thesis Title: *Study of Complex Systems in Modified Gauss-Bonnet Gravity*

Session: 2020-23

5. **Name:** Ms. Sonia Hanif

Thesis Title: *Orthogonal Splitting of the Riemann Tensor and its Applications*

Session: 2020-23

6. **Name:** Mr. Ateeq-ur-Rehman

Thesis Title: *Study of Compact Objects under Various Backgrounds*

Session: 2020-23

PhD in Progress

1. **Name:** Ms. Iqra Sabir

Session: 2023-26