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Qualification

Year	Degree/Certificate	Name of the Institute/ University	Field of study
	Post Doctorate		
	PhD	University of Science and Technology of China (USTC)	General Relativity/Cosmology
	MS/ MPhil	COMSATS University Abbottabad Campus	Applied Mathematics
	Graduation	University of Peshawar	Mathematics

Publications in HEC Recognized journals

1. Black hole formation due to collapsing dark matter in the presence of dark energy in the brane-world scenario, **Hasrat Hussain Shah (Solo author),** Int. *J. Mod. Phy. D*, Vol. 27 (2018) (2018) 1850020. **(IF: 2.47)**

2. Gravitational collapse of dark matter interacting with dark energy: Black hole formation, **Hasrat Hussain Shah (Lead and corresponding author)** and Quaid Iqbal, *Int. J. Mod. Phy. D,* Vol. 26, No. 13 (2017) 1750142. (**IF: 2.47)**

3. Strong Lensing of a Regular Black Hole with an Electrodynamics Source, Tuhina Manna, Farook Rahaman, Sabiruddin Molla, Jhumpa Bhadra and **Hasrat Hussain Shah**, *Gen. Relativ, Gravit*. (2018) 50:54 https://doi.org/10.1007/s10714-018-2375-3. **(IF: 2.03)**

4. Gravitational Collapse with Dust Cloud and Dark Energy, Zahid Ahmad and **Hasrat Hussain Shah,** *Int. J. Theor. Phys*. (2013) 52: 1490. https://doi.org/10.1007/s10773-012-1469- z. **(IF: 1.34)**

5. Gravitational Collapse of Interacting Combination of Dark Matter and Dark Energy in the Context of Brane Regime, **Hasrat Hussain Shah (Lead and corresponding author)**, Farook Rahman https://doi.org/10.1142/S0217732318501328 *Mod. Phys. Lett. A* **(IF: 1.34)**

6. High Speed Cylindrical Gravitational Collapse with Anisotropic Pressure, Quaid Iqbal, **Hasrat Hussain Shah (Corresponding author)**, Zahid Ahmad, *Universe 2018*, 4(6), 70; https://doi.org/10.3390/universe4060070. **(IF:2.4)**

7. Gravitational Collapse with an Interacting Vacuum Energy Density in Anisotropic Background, **Hasrat Hussain Shah (Lead and corresponding author),** Farook Rahman, Amna Ali, Sabirudin Molla, *Physics of the Dark Universe* 24 (2019) 100291 **(IF:6.5).**

8. Anisotropic fluid spheres satisfying the Karmarkar condition, Nayan Sarkar, Susmita Sarkar, Farook Rahman, **Hasrat Hussain Shah**, *Modern Physics Letters A,* Vol. 34, No. 15 (2019) 1950113, **(IF:1.34).**

9. Gravitational collapse of dust fluid and dark energy in the presence of curvature: Black hole formation, Syed Zaheer Abbas, **Hasrat Hussain Shah (Corresponding author)** Huafei Sun et al. *Mod. Phys. Lett. A* https://doi.org/10.1142/S0217732319502407, **(IF:1.34).**

10. Gravitational Collapse of Interacting and Non-Interacting Combination of Dark Matter and Dark Energy: Curvature Effect, Syed Zaheer Abbas,: **Hasrat Hussain Shah (Corresponding author)** and Huafei Sun, *Int. J. Mod. Phys. A*, https://doi.org/10.1142/S0217751X20500785, **(IF: 1.48)**

11. Mathematical modelling and analysis of gravitational collapse in curved geometry. Syed Zaheer Abbas, **Hasrat Hussain Shah** and Huafei Sun, *Comput Methods Programs Biomed.* 2020 Feb; 184:105283. doi: 10.1016/j.cmpb.2019.105283. **(IF: 6.1)**

12. Seismo ionospheric anomalies possibly associated with the 2018 Mw 8.2 Fiji earthquake detected with GNSS TEC, Amna Kiyani, Munawar Shah, Arslan Ahmed, **Hasrat Hussain Shah**, Saman Hameed, Muhammad Arqam, Adila Najam, Abbas Naqvi, V. 140, Oct. 2020, 101782, *Journal of Geodynamics,* https://doi.org/10.1016/j.jog.2020.101782, **(IF:1.85).**

13. Electromagnetic Counterpart to Gravitational Waves from Coalescence of Binary Black Hole with Magnetic Monopole Charge: **Hasrat Hussain Shah** et. al **(Corresponding author),** *Int. J. Mod. Phys. A*, **(IF:1.48).**

14. Upper bound of the third Hankel determinant for a subclass of close-to-convex functions associated with the lemniscate of Bernoulli, Hari M. Srivastava, et. al., *Mathematics 2019*, 7(9), 848; https://doi.org/10.3390/math7090848. **(IF: 1.74)**.

15. Gravitational collapse of an anisotropic fluid and interacting vacuum energy density: The curvature effect, **Hasrat Hussain Shah (Lead author)** et. al *Int. J. Mod. Phys. D* (**IF:2.15)**

16. On the evaluation of Poisson equation with dual interpolation boundary face

method Suliman et al. European Journal of Mechanics - A/Solids Volume 88, July–August 2021, 104248 **(IF:3.78)**

17. Quintessence background for 4D Einstein-Gauss-Bonnet black holes Hassan Shah, Zahid Ahmed and **Hasrat Hussain Shah**, *Physics Letters B* 818 (2021) 136383 (**IF:4.78)**

18. A well-conditioned and efficient Levin method for highly oscillatory integrals with compactly supposed radial basis functions Suleman et al, Engineering analysis with boundary elements, Suliman Khan , Sakhi Zaman, Muhammad Arshad, Hongchao Kang, **Hasrat Hussain Shah** , Alibek Issakhov, *Engineering analysis with boundary elements*, **Pub Date : 2021-07-03** , DOI: 10.1016/j.enganabound.2021.06.012 **(IF: 3.3)**

19. A well-conditioned and efficient implementation of dual reciprocity method for Poisson equation, **Suleman et al, AIMS Mathematics** AIMS Mathematics 2021, Volume 6, Issue 11: 12560-12582. doi: 10.3934/math.2021724 **(IF:2.3)**

20. The curvature effect on the gravitational collapse of interacting and non-interacting combination of dark matter and dark energy, SZ Abbas, **Hasrat Hussain Shah (Corresponding author),** W Chammam, H Sun, Wasim Ul Haq, H Shah, *Int. J. Mod. Phys. A* Vol. 35, No. 17, 2050078 (2020). **(IF:1.5)**

21. Comparison between Computational Cost of Fractals using Line-doublets, Sardar Muham- mad Hussain, **Hasrat Hussain Shah**, Jong-Suk Ro, *Mathematics and Computers in Simulation*, Volume 202, December 2022, Pages 374-387**. (IF:4.6)**

22. Gravitational Collapse of Dissipative Fluid in f(R,G) Gravity, Hassan Shah, **Hasrat Hussain Shah (Corresponding author),** *Int. J. Mod. Phys. A* https://doi.org/10.1142/S0217751X22501433. **(IF:1.5)**

23. Fractals flow simulation for groundwater flow with varying apertures using analytic element method, Maryam Atta, Sardar Muhammad Hussain, Farooq Hussain, **Hasrat Hussain Shah** et. al. *Fractal Fract*. 2022, 6, 573. **(IF: 5.4)**

24. Collapsing Solutions in 4D Einstein Gauss Bonnet Gravity**, Hasrat Hussain Shah (Lead author)**, Hassan Shah, Sardar Muhammad Hussain, *Int. J. Geo. Meths. in Mod. Phys.* https://doi.org/10.1142/S0219887823500925 **(IF:1.8)**

25. Thermodynamical study of Black Hole with Cloud of Strings and Quintessence in the 4D Einstein-Gauss-Bonnet Context, Hassan Shah**, Hasrat Hussain Shah(corresponding author)**, Zahid Ahmad, Sardar Muhammad Hussain, and Abdul Quayam Khan, *Int. J. Mod. Phys. A*. https://doi.org/10.1142/S0217751X23500574 **(IF:1.5)**

26. Study of Gravastars in 4D Einstein-Gauss-Bonnet Gravity, Hassan Shah, **Hasrat Hussian Shah (corresponding author)** et al. *Physica Scripta* https://iopscience.iop.org/article/10.1088/ 1402-4896/acdcc3 **(IF:3.08)**

27. Blue Straggler Stars, Calcium-rich Transients and Eccentric Stellar Binaries with Super- massive Black Hole Binaries, Wu X-J**, Hasrat Hussain Shah,** Yuan Ye-Fei: Submitted to *Astronomy and Astrophysics Journal*

28. Study of Gravasatar in 5D Einstein Gravity, **Hasrat Hussain Shah**, Hassan Shah Submitted to *General Relativity and Gravitation*

29. Spherical Qusi-normal gravitational collapse, Hajra Asghar, **Hasrat Hussian Shah (corresponding author)**, Hassan Shah, submitted to *JCAP*

Paper Presented

S. No	Title of Paper	Name of Conference	National/ International	Date
1.	Gamma Ray Burst from the Coalescence of Compact Objects	Two Days International Conference on Mathematical Modelling	International	(Nov. 2022) (Invited Speaker)

		and Scientific Computing Abdus Salam School of Mathematical Sciences GC University, Lahore		
2.	Electromagnetic luminosity produced from mergers of BBHS	1st International Conference on Gravitation and Cosmology	International	27-31 Jan 2019
3.	Gravitational collapse of interacting combination of DM and De	International conference on general relativistic astrophysics and cosmology	International	15 Feb. 2014

Books Authored/ Edited

S. No	Name of book	Publisher	ISBN

Work Experience

S. No	From (year)	To (year)	Name of the Institution/ Organization	Position held
1.	Dec. 2021	date	BUITEMS Quetta	Associate Professor
2.	Aug. 2019	Dec. 2021	BUITEMS Quetta	Assistant Professor
3.	Sept. 2015	Dec. 2018	School of Physical Sciences, University of Science and Technology of China (USTC)	Teaching Assistant
4.	Dec. 2012	Aug. 2019	BUITEMS Quetta	Lecturer (On study leave from 2015 to 2018)
5.	2010	2012	Higher Education KPK	Lecturer

6.	2013	2015	SBK Women University Quetta	Visiting Lecturer
7.	2019	2022	National University of Science and Technology (NUST), NBC Campus Quetta	Visiting Assistant Professor
Area of specialization			Astrophysics, Cosmology,	
Research Interest			Black Hole Physics, Gravitational collapse, Coalescence of BBHs, EM Luminosity	
Future Research Plans				
HEC Approved supervisor			Yes	
If Yes, provide HEC URL			https://www.hec.gov.pk/english/scholarshipsgrants/ASA/Pages/Approved-PhD-Supervisors.aspx	
Research grants/ Projects			Comparison between the computational cost of fractals using analytic element method worth 1.3 million PKR march 2020 to Dec. 2020	

Additional Information

I am theoretical astrophysicist. My research interests focus on some fundamental problems of astrophysics and cosmology such as how the galaxies and black holes formed, how the gravitational collapse plays significant role in structure formation in our Universe. Particularly, I am working on, black hole physics, gravitational collapse, black hole formation, pressure effect on the gravitational collapse of dark matter and dark energy. I am also working on the project, electromagnetic counterpart of gravitational waves from the mergers of black hole with magnetic charge. Then, I extended my research area for the mergers of supermassive black hole. I can work independently or in team work.