



Faculty of Physical Sciences

Department of Mathematics, IGU Meerpur

● Chairperson

SNo.	Name	From	To	Office Order
5.	Prof. Suresh Kumar	17.08.2023	Continuing	Link
4.	Prof. Mamta Kamra		16.08.2023	Link
3.	Prof. Manju Pruthi			
2.	Prof. Mamta Kamra			
1.	Prof. Manju Pruthi			

● Faculty Members

Sr. No.	Faculty	Name	Designation (Highest Qualification)	Research Area	E-mail	Profile
1.		Manju Pruthi	Professor Ph.D.	Algebra, Algebraic Coding Theory	manju.math@igu.ac.in	Link
2.		Mamta Kamra	Professor Ph.D.	Functional Analysis	mamra.math@igu.ac.in	Link
3.		Suresh Kumar	Professor and Chairperson Ph.D.	Bayesian Statistics and Data Analysis in Cosmology	suresh.math@igu.ac.in	Link

4.		Satish Kumar	Associate Professor M.Phil.	Inventory Modeling, Nonlinear Analysis	satish.math@igu.ac.in	Link
5.		Mahabir Barak	Assistant Professor Ph.D.	Theoretical Seismology and Reliability Modeling	ms_barak@igu.ac.in	Link
6.		Rajender Kumar	Assistant Professor Ph.D.	Inventory Management	rajender.math@igu.ac.in	Link
7.		Partibha Yadav	Assistant Professor (Resource Person) Ph.D.	Network Security	partibha.math@igu.ac.in	Link

● Supporting Staff

Sr. No.	Staff	Name	Designation	Status(Regular/Contractual/Outsourced)
1.		Usha	Clerk	Outsource
2.		Sanjay	Peon	Outsource

● Research Scholars

Sr. No.		Name	Ph.D. Reg. Year	Title of thesis	Name of Supervisor/ Co-Supervisor	Status (awarded/ on-going)	E-mail	Profile

26.		Saurabh Verma	—	Study of Cosmological Models in General Relativity and Modified Theories of Gravity.	Prof. Suresh Kumar	On-going	saurabh.math.rs@gmail.com	
25.		Manish Yadav	—	Study of Cosmological Models with Negative Dark Energy.	Prof. Suresh Kumar	On-going	manish.math.rs@gmail.com	
24		Manju Rani	2023	Study of Inventory Models of Deteriorating Products with Lifetime, Shortage and Price.	Prof. Suresh Kumar	On-going	manju.math.rs@ignou.ac.in	
23		Pooja Soni	2023	Construction of Quantum Codes Using Cyclic Codes Over Finite Rings.	Prof. Manju Pruthi	On-going		
22		Priti	2022	Some dynamic problems in the generalized thermoelastic continuum.	Dr. Mahabir Barak	On-going	priti.math.rs@ignou.ac.in	
21		Shelly	2022	The Generalized Deterministic Inventory Models in respect of Cost, Demand, Deterioration and Backlogging	Dr. Rajender Kumar	On-going	shelly.math.rs@ignou.ac	
20		Priya	2022	Study of Cosmological models relaxing the Hubble constant tension.	Prof. Suresh Kumar	On-going	priya.math.rs@ignou.ac.in	

19.		Anita	2022	Study of Cosmological models with sign switching dark energy.	Prof. Suresh Kumar	On-going	anita.math.rs@igu.ac.in	
18.		Vipin Kumar	2021	On the Study of Cyclic Codes and Application to Quantum Codes.	Prof. Manju Pruthi	On-going	vipinkumar.math.rs@igu.ac.in	
17.		Rajesh Kumar	2021	Wave Propagation in Double Porous Thermoelastic Continuum.	Dr. Mahabir Barak/Dr. Vijayata Pathania	On-going	rajesh.math.rs@igu.ac.in	
16.		Vipin Gupta	2021	Propagation of Waves in Piezothermoelastic Media.	Dr. Mahabir Barak/Dr. Vijayata Pathania	On-going	vipin.math.rs@igu.ac.in	
15.		Pooja Yadav	2021	Some Fixed Point Results for Self-Mappings on Various Vectors Valued Generalized Metric Space.	Prof. Mamta Kamra	On-going	pooja.math.rs@igu.ac.in	
14.		Arun Kumar Yadav	2021	On the Study of Classical Error-Correction Codes and Quantum Codes.	Prof. Manju Pruthi	On-going	arun.math.rs@igu.ac.in	
13.		Krishan Kumar	2020	Fixed point results for mappings under various contractive conditions in vector valued rectangular metric spaces	Prof. Mamta Kamra	On-going	krishan.math.rs@igu.ac.in	

12		Anup Singh	2017	Study of seismic wave propagation in partially saturated medium(s)	Dr. Mahabir Barak	Awarded (2022) Link		
11.		Manjeet	2015	Wave propagation in porous media saturated by Fluid(s)	Dr. Mahabir Barak	Awarded (2020)		
10.		Rajpal	2015	Various types of labeling of Graphs.	Prof. Mamta Kamra	Awarded (2021) Link		
9.		Kumari Sarita	2015	Some fixed point results for non-linear operators in vector valued metric.	Prof. Mamta Kamra	Awarded (2020) Link		
8.		Vishvajit Singh	2015	Minimal cyclic code of length $16pn$ over $GF(q)$ where order of q modulo pn is $f(pn)/2$.	Prof. Manju Pruthi	Awarded (2021) Link		
7.		Sudesh	2015	Codes over non-abelian Groups	Prof. Manju Pruthi	Awarded (2021) Link		
6.		Vinod Kaliraman	2014	Behaviour of seismic waves in liquid saturated porous medium at some interface	Dr. Mahabir Barak	Awarded (2019) Link		
5.		Dheeraj Yadav	2014	Stochastic modeling or redundant systems with standby and server failure.	Dr. Mahabir Barak	Awarded (2019) Link		

4.		Neeraj	2014	Profit analysis of reliability models with preventive maintenance and repair different weather conditions.	Dr. Mahabir Barak	Awarded (2018) Link		
3.		Rajender Kumar	2014	Study of some deterministic inventory models for deteriorating products and their further development.	Prof. Manju Pruthi	Awarded (2020) Link		
2.		Sunil Kumar	2014	Hamming distances and weight distributions of cyclic codes.	Prof. Manju Pruthi	Awarded (2020) Link		
1.		Pankaj Kumar	2014	Cyclic codes from cyclotomic Sequences.	Prof. Manju Pruthi	Awarded (2018) Link		

4. Research Lab facility/ infrastructure details of the Department.

Sr. No.	Labs/Equipments	Quantity
1.	Mathematical Lab-I, fully loaded with 30 latest computers, one projector, MatLab software with (10 users), UPS Backup, and supporting infrastructure.	Computer=30, Projector=01, UPS= (09 batteries).
2.	Mathematical Lab-II, with 30 latest computers, one projector, and one smart board.	Computer=30, Projector=01, Smart Board=01
3.		90 Watts Podium=01

	Ahuja 90 Watts Podium with one Gooseneck Microphone, two wireless Mikes & support USB, SD & MMC Card Reader	
--	---	--

● **Research Papers (with IGU affiliation only)**

S. No.	Title of Paper	Author(s)	Journal, Volume, Page (Year)	ISSN Number(s)	Journal WebLink	Abstract Link	SCI/SCOPUS/UGC Care
52.	New late-time constraints on f (R) gravity	S. Kumar , R.C. Nunes, P. Yadav	Physics of the Dark Universe, 42, 101281 (2023)	2212-6864(online)	Link	Link	SCI

S. No.	Title of Paper	Author(s)	Journal, Volume, Page (Year)	ISSN Number(s)	Journal WebLink	Abstract Link	SCI/SCOPUS/UGC Care
50.	New late-time constraints on f (R) gravity	S. Kumar , R.C. Nunes, P. Yadav	Physics of the Dark Universe, 42, 101281 (2023)	2212-6864(online)	Link	Link	SCI
49.	Reflection/transmission of plane waves at the interface of an ideal fluid and nonlocal piezothermoelastic medium.	V. Gupta, R. Kumar, M. Kumar, V. Pathania, M.S. Barak	International Journal of Numerical Methods for Heat & Fluid Flow, 33, 912 (2023)	0961-5539(Online)	Link	Link	SCI
48.	The effect of memory and stiffness on energy ratios at the interface of distinct media	M.S. Barak , R. Kumar, R. Kumar, V. Gupta	Multidiscipline Modeling in Materials and Structures, 19, 492 (2023)	1573-6105(online)	Link	Link	SCI
47.	Energy analysis at the boundary interface of elastic and piezo thermoelastic half-spaces	M. S. Barak , <u>R. Kumar</u> , <u>R. Kumar</u> , <u>V. Gupta</u>	Indian Journal of Physics, 97, 2369 (2023)	0973-1458(Online)	Link	Link	SCI
46.	Energy analysis at the interface of piezo/thermoelastic half spaces	<u>V. Gupta</u> , <u>R. Kumar</u> , <u>R. Kumar</u> , M.S. Barak	International Journal of Numerical Methods for Heat & Fluid Flow, 33, 2250 (2023)	0961-5539(Online)	Link	Link	SCI
45.	Performance of computer system with three types of failure using Weibull distribution subject to hardware repair and software up-gradation	A. Kumar, R.Garg, and M.S. Barak	Int. Sys. Assur Eng Manag., 14, 483 (2023)	0975-6809(Online)	Link	Link	Scopus

44.	Cost-Benefit Analysis of a Redundant System with Refreshment	M. S. Barak and D. Yadav	Computational Intelligence in Sustainable Reliability Engineering, 217 (2023)	9781119865018 (Online)	Link	Link	
43.	Contribution of Refreshment Provided to the Server During His Job in the Repairable Cold Standby System	M. S. Barak , A. Kumar and R. Garg	Computational Intelligence in Sustainable Reliability Engineering	9781119865018 (Online)	Link	Link	
42.	Double porous thermoelastic waves in a homogeneous, isotropic solid with inviscid liquid.	V. Pathania, R. Kumar, V. Gupta, M. S. Barak	Archive of Applied Mechanics, 93, 1943 (2023)	0939-1533(Online)	Link	Link	SCI
41.	Memory-dependent and fractional order analysis of the initially stressed piezo-thermoelastic medium	M. S. Barak and V. Gupta	Mechanics of Advanced Materials and Structures	1537-6532(Online)	Link	Link	SCI
40.	Quasi-P wave through orthotropic piezo-thermoelastic materials subject to higher order fractional and memory-dependent derivatives	V. Gupta and M.S. Barak	Mechanics of Advanced Materials and Structures	1537-6532(Online)	Link	Link	SCI
39.	New cosmological constraints on $f(T)$ gravity in light of full Planck-CMB and type Ia supernovae data	S. Kumar , R. C. Nunes, and P. Yadav	Physical Review D, 107, 063529 (2023)	2470-0029(Online)	Link	Link	SCI
38.	Testing spatial curvature and anisotropic expansion on top of the Λ CDM model	Akarsu, Ö., Di Valentino, E., Kumar, S., Özyiğit, M., & Sharma, S.	Physics of the Dark Universe, 39, (2023)	2212-6864(Online)	Link	Link	SCI
37.	Reliability measures of a cold standby system subject to refreshment	A. Kumar, R. Garg, and M. S. Barak	International Journal of System Assurance Engineering and Management, 14, 147 (2023)	0976-4348(Online)	Link	Link	Scopus
36.	Common fixed point results for three and four mappings on vector-b-metric space with a graph	R. Hooda, M.Kamra , and A. Malik	Rendiconti del Circolo Matematico di Palermo Series 2, 72, 2721 (2023)	1973-4409(Online)	Link	Link	Scopus
35.	Horizontal and vertical motion at the surface of partially saturated soils layer sandwiched between water and elastic solid	M. Kumari, A. Singh, M. S. Barak , and M. Kumar,	Waves in Random and Complex Media,	1745-5030(Online)	Link	Link	SCI
34.	Thermo-mechanical interactions in a rotating nonlocal functionally graded transversely isotropic elastic half-space	M. S. Barak and P. Dhankhar	ZAMM - Journal of Applied Mathematics and Mechanics/Zeitschrift für Angewandte Mathematik und Mechanik, 103 (2022)	1521-4001(Online)	Link	Link	SCI
33.	Effect of inclined load on a functionally graded fiber-reinforced thermoelastic medium with	M. S. Barak , and P. Dhankhar	Acta Mechanica, 233, 3645 (2022)	1619-6937(Online)	Link	Link	SCI

	temperature-dependent properties						
32.	Generalized Plane Waves in a Rotating Thermoelastic Double Porous Solid	V. Pathania, R. Kumar, V. Gupta, and M.S. Barak	International Journal of Applied Mechanics and Engineering, 27, 138 (2022)	1734-4492(Online)	Link	Link	Scopus
31.	Updating non-standard neutrinos properties with Planck-CMB data and full-shape analysis of BOSS and eBOSS galaxies	S. Kumar , R. C. Nunes, and P. Yadav	Journal of Cosmology and Astroparticle Physics, 09, 60 (2022)	1475-7516(Online)	Link	Link	SCI
30.	Cosmology intertwined: A review of the particle physics, astrophysics, and cosmology associated with the cosmological tensions and anomalies	Abdalla, Elcio, Guillermo Franco Abellán, Amin Aboubrahim, Adriano Agnello, Özgür Akarsu, Yashar Akrami, George Alestas et al.	Journal of High Energy Astrophysics, 34, 49 (2011)	2214-4056(Online)	Link	Link	SCI
29.	New tests of dark sector interactions from the full-shape galaxy power spectrum	R. C. Nunes, S. Vagnozzi, S. Kumar , E. D. Valentino, and O. Mena	Physical Review D, 105, 123506 (2022)	2470-0029(Online)	Link	Link	SCI
28.	Reconstruction of the dark sectors' interaction: A model-independent inference and forecast from GW standard sirens	A. Bonilla, S. Kumar , R. C. Nunes, and S. Pan	Monthly Notices of the Royal Astronomical Society, 512, 4231 (2022)	1365-2966(Online)	Link	Link	SCI
27.	Some fixed point theorems for self-mappings on vector valued rectangular metric spaces	K. Kumar, M. Kamra and Rajpal	Specialusis Ugdymas, 1, 6482 (2022)	1392-5369(Online)	Link	Link	Scopus
26.	Common Fixed Point Theorems for Self Mappings on a Complete Vector S-metric Space	P. Yadav, M. Kamra and Rajpal	Specialusis Ugdymas, 1, 43 (2022)	1392-5369(Online)	Link	Link	Scopus
25.	Some fixed point results on a vector valued s-metric space	P. Yadav and M. Kamra	Tianjin University Science and Technology, 55, 209 (2022)	0493-2137(Online)	Link	Link	Scopus
24.	An Inventory Model having Polynomial Demand with Time Dependent Deterioration and Holding Cost	Shelly and R. Kumar	International Journal of Innovative Science and Research Technology, 7, 2456 (2022)	2348-1269(Online)	Link	Link	
23.	Wave propagation characteristics at the welded interface of double-porosity solid and double-porosity dual-permeability materials	M. Kumari, , M. Kumar, and M. S. Barak .	Waves in Random and Complex Media, 31, 1682 (2021)	1745-5049(Online)	Link	Link	SCI
22	Reliability measures analysis of a milk plant using RPGT	M. S. Barak , R. Garg, and A. Kumar	Life Cycle Reliability and Safety Engineering, 10, 295 (2021)	2520-1360(Online)	Link	Link	Peer-revi Linkewe d

21.	Stochastic Analysis of a Unit Wise Redundant Computer System with Priority to Hardware Repair and Failure of Service Facility during Software Up-gradation	S. C. Malik, R. K. Yadav, and M. S. Barak.	International Journal of Statistics and Reliability Engineering, 28, 2150013 (2021)	2456-2378(Online)	Link	Link	UGC Listed
20.	Relaxing cosmological tensions with a sign switching cosmological constant	A. Özgür, S. Kumar , E. Özütker, and J. A. Vazquez	Physical Review D, 104, 123512 (2021)	2470-0029(Online)	Link	Link	SCI
19.	Minimal theory of massive gravity in the light of CMB data and the S 8 tension	de. Araujo, Jose CN, A. De Felice, S. Kumar , and R. C. Nunes	Physical Review D, 104, 104057 (2021)	2470-0029(Online)	Link	Link	SCI
18.	Remedy of some cosmological tensions via effective phantom-like behavior of interacting vacuum energy	S. Kumar	Physics of the Dark Universe, 33, 100862 (2021)	2212-6864(Online)	Link	Link	SCI
17.	Fixed Points for the (G) -Contraction on (E) - (b) -Metric Spaces with a Graph	R.Hooda, M. Kamra , and A. Malik	Communications in Mathematics and Applications, 12, 803 (2021)	0975-8607(Online)	Link	Link	Scopus
16.	Inhomogeneous wave propagation in partially saturated soils	M.S. Barak , M. Kumar, M. Kumari, A. Singh	Wave Motion, 93, 102470 (2020)	0165-2125(Online)	Link	Link	SCI
15..	Stochastic analysis of a non-identical repairable system of three units with priority for operation and simultaneous working of cold standby units	S. Kadyan, and M. S. Barak	International Journal of Statistics and Reliability Engineering, 7, 269 (2020)	2456-2378(Online)	Link	Link	UGC Listed
14.	Estimation of missing values in fuzzy matrices (FM) and interval-valued fuzzy matrices (IVFM)	D. S. Hooda and M. S. Barak	Life Cycle Reliability and Safety Engineering, 9, 241 (2020)	2520-1360(Online)	Link	Link	Peer-reviewed
13.	Estimation of missing data in design of experiment and contingency table	D. S. Hooda and M. S. Barak	SN Applied Sciences, 1, 670 (2019)	2523-3971(Online)	Link	Link	Scopus
12.	Reflection and transmission of elastic waves from an imperfect boundary between micropolar elastic solid half space and fluid saturated porous solid half space	M. S. Barak and V. Kaliraman	Mechanics of Advanced Materials and Structures, 26, 1226 (2019)	1537-6532(Online)	Link	Link	SCI
11.	Reflection and refraction of plane waves at the boundary of an elastic solid and double-porosity dual-permeability materials	M. Kumar, M. S. Barak , and M. Kumari	Petroleum Science, 16, 298 (2019)	1672-5107(Online)	Link	Link	SCI
10.	Four mappings with a common fixed point on E-b-metric spaces	M. Kamra, S. Kumari and R. Chugh	International Journal of Recent Technology and Engineering, 11, 88 (2019)	0975-4024(Online)	Link	Link	Scopus

9..	Reflection of plane seismic waves at the surface of double-porosity dual-permeability materials	M. Kumar, M. Kumari, and M. S. Barak	Petroleum Science, 15, 521 (2018)	1672-5107(Online)	Link	Link	SCI
8.	Propagation of elastic waves at micropolar viscoelastic solid/fluid-saturated incompressible porous solid interface	M.S. Barak , and V. Kaliraman	International Journal of Computational Methods, 15, 1850076 (2018)	1793-6969(Online)	Link	Link	SCI
7.	Reflection of inhomogeneous waves at the surface of a dissipative poroelastic media	M. Kumari, M. S. Barak , and M. Kumar	Journal of Porous Media , 21, 1025 (2018)	1934-0508(Online)	Link	Link	SCI
6.	Seismic reflection and transmission coefficients of a single layer sandwiched between two dissimilar poroelastic solids	M. Kumari, M. S. Barak , and M. Kumar	Petroleum Science, 14, 676 (2018)	1995-8226(Online)	Link	Link	SCI
5.	Effect of local fluid flow on the propagation of plane waves at an interface of water/double-porosity solid with underlying uniform elastic solid	M. S. Barak , M. Kumari, and M. Kumar	Ocean Engineering , 147, 195 (2018)	1873-5258(Online)	Link	Link	SCI
4.	Stochastic analysis of two-unit redundant system with priority to inspection over repair	M. S. Barak , D. Yadav, and S. K. Barak	Life Cycle Reliability and Safety Engineering, 7, 71 (2018)	2520-1360(Online)	Link	Link	Peer-reviewed
3.	Profit analysis of a two-unit cold standby system model operating under different weather conditions	M.S. Barak , Neeraj, Sudesh K. Barak	Life Cycle Reliability and Safety Engineering, 7, 173 (2018)	2520-1360(Online)	Link	Link	Peer-reviewed
2.	Stochastic analysis of a two-unit system with standby and server failure subject to inspection	M.S. Barak , D. Yadav, and S. Kumari	Life Cycle Reliability and Safety Engineering , 7, 23 (2018)	2520-1360(Online)	Link	Link	Peer-reviewed
1.	Some fixed point theorems for self mappings on vector b-metric spaces	M. Kamra ., S. Kumar, and S. Kumari	Global Journal of Pure and Applied Mathematics, 14, 1489 (2018)	0973-9750(Online)	Link	Link	Peer-reviewed

6. Research Projects

Sr. No.	Title of the Project	Name of funding Agency	Duration of the Project	Amount	PI/Co-PI	Status
1.	Remedy of the Hubble constant tension in some physically realistic models in general relativity and	SERB-DST, New Delhi	03 Year	20.91 Lakh	Prof. Suresh Kumar(PI)	On going

	modified theories of gravity					
--	------------------------------	--	--	--	--	--

7. Patents

Application No.	Title	Applicant(s)/ Inventor(s)	Filing date	Application status	Published/ Granted	Validity
2021103990	A novel Stochastic Model for Reliability Evaluation of Computing Machines Subject to Arrival Time of Service Facility Upon Failure	M.S.Barak & others.	09/07/2021	Granted	Granted/ 25/08/2021	08/07/2029
202111044508	Smart System and Method for Inventory Tracking and Management using AI	Rajender Kumar and Shelly	01/10/2021	Published	Published/ 15/10/2021	

8. Published Books

Sr. No.	Title of the Book	Authors Name/ Publisher Name
1.	Some fixed point results for mappings on E-b-Metric Space	Prof. Mamta Kamra/Research India Publications
2.	Sequences and Series	Dr. M.S.Barak/ Jeevansons Publications

9. Details of research awards and fellowship.

10. Details of the Conferences/Seminars/Workshops and any other research activities organised by the department.

11. Details of the MoU's signed by the department.