108th Indian Science Congress - 2023
January 03-07, 2023
Rashtrasant Tukadoji Maharaj Nagpur University, Nagpur
Section: Mathematical Sciences (Including Statistics)

January 04, 2023		
Sectional President	**Prof. Shishir Gupta** Department of Mathematics & Computing Indian Institute of Technology (ISM) Dhanbad-826004, Jharkhand	
Sectional Secretary	**Prof. Ganesh Kedar** Head, Department of Mathematics RTM Nagpur University Nagpur-440033, Maharashtra	
Sectional Recorder	**Prof. Basaweshwar Sahebrao Mudagi** S.No. 37-37/1 Sasoon Road, Shardaram Park, C12, 3rd floor, Near Jahangir Hospital, Pune-411001, Maharashtra	
SECTIONAL COMMITTEE MEETING		
Venue	**Srinivasa Ramanujan Auditorium** **Department of Mathematics, RTM Nagpur University, Nagpur**	
Presidential Address	**14:00-15:00**	**Prof. Shishir Gupta** Department of Mathematics & Computing Indian Institute of Technology (ISM) Dhanbad-826004, Jharkhand ***"Torsional surface wave in anisotropic media"***
Platinum Jubilee Lecture	**15:00-16:00**	**Prof. Malla Reddy Perati** Department of Mathematics, Kakatiya University Warangal-506009 ***"Edge Waves in Double Porosity Isotropic Semi-Infinite Thin Plate under Plane Stress Conditions"***
Award Lecture for YSA, Session	**16:00-17:30**	**Award Lecture/Young Scientist Award Presentations**
Ms. Sonali Mondal Department of Mathematics and Computing, Indian institute of technology (Indian school of mines), Dhanbad *Mathematical analysis of surface wave transference in imperfectly bonded viscoelastic- FGPM bedded structure*		
Mr. Sayantan Guha Department of Mathematics and Computing, Indian Institute of Technology (Indian school of mines), Dhanbad *Mathematical study of plane wave reflection and transmission at the interface of two dissimilar rotating piezoelectric fiber-reinforced composite half-spaces*		
Dhwani Umesh Sheth Department of Mathematics, The Maharaja Sayajirao University of Baroda, Vadodara *Effects of eccentricity of orbit of primaries on separatrices of Sun-Saturn ERTBP using PSS*		

Dr. Totan Garai Dept. Of Mathematics, Syamsundar College, Purba Bardhaman *Bipolar expected value based MCDM technique on wastewater management under trapezoidal bipolar fuzzy environment*		
Dr. Radhika Thakur Dept. of Mathematics, Sri Sai University Palampur, H.P *Statistical Investigations on Camellia Sinensis Production Data of Green and Black Tea in Palm Valley of Himachal Pradesh*		
Presentation by USIEF		**Information session on Fulbright-Nehru and other Fulbright Fellowship opportunities**
ELECTION	**17:30-18:00**	**SECTIONAL COMMITTEE ELECTION**

January 05, 2023		
Venue	**Srinivasa Ramanujan Auditorium** **Department of Mathematics, RTM Nagpur University, Nagpur**	
Symposium **"Women in Data Analytics, Modeling and Optimization-A Big Red Flag: Bridging the Gender Gap for Sustainable Development"** **Organizer: Dr. B.S. Kushvah**		
Lecture Session	**14:00-14:20**	**Prof. Rashmi Bhardwaj** NonlinearDynamicsResearchLab UniversitySchoolofBasic and AppliedSciences GuruGobind SinghIndraprasthaUniversity, Delhi-110078 ***"Nonlinear Pathways of Covid 19"***
	14:20-14:40	**Dr. B.S. Kushvah** Department of Mathematics & Computing Indian Institute of Technology (ISM) Dhanbad-826004, Jharkhand ***"Classification of Asteroids using Optimization Algorithms of Machine Learning"***
Invited Lectures		
Invited Lectures	**14:40-15:00**	**Prof. Sharvari Shukla** Director, Symbiosis Statistical Institute (SSI) Symbiosis International (Deemed University) Vishwabhavan Campus, Pune – 411004,Maharastra ***"Modeling approach for assessing growth trajectories with longitudinal data"***
	15:00-15:20	**Prof. Bibhas Chandra Giri** Department of Mathematics Jadavpur University,Kolkata-700032, West Bengal ***"Evolutionary game theory analysis for non-cooperative behaviour of entities in a closed-loop green supply chain"***

Invited Lectures by Foreign Scientist (Online Mode)	**15:20-15:55**	**Prof. Elbaz Abouelmagd** Celestial Mechanics and Space Dynamics Research Group Astronomy Department National Research Institute of Astronomy and Geophysics (NRIAG) Helwan 11421 - Cairo - Egypt.
Oral Presentation	**16:00-17:30**	**Oral Presentations (3 Parallel sessions)**

Parallel Session - 5A
Venue: Srinivasa Ramanujan Auditorium, Department of Mathematics

1. Mahendra Kumar Jena, ShubhashreeBebarta-Some Hermite Subdivision Schemes and Their Comparison.
2. P.P. Khade, M.S. Palaspagar, Bianchi Type V Cosmological Scenario n f(R, T) Gravity Theory.
3. Ather Husain, G.S. Khadekar, S.W. Samdurkar and S.D. Tade, Isotropic background for logamediate f(T) gravity.
4. B.D. Dawkar, Existence and Uniqueness of R-L Fractional Differential Equations with Initial Time Difference.
5. BhausahebSontakke and RajshriPandit, Crank-Nicolson Difference Scheme for Solving Space Fractional Convection Diffusion Equation.
6. Damodhar F Shastrakar and Sharad S Pokley, To Study the Changes in the Performance Measures of the Single Server Finite Source Queuing Model when Converted to Multiple Servers Finite Source Queuing Model.
7. Govind Kumar JhaandSaritaJha, Global Stability Analysis of SIQR-QS-QI Model.
8. Kumbinarasaiah S., Numerical and Theoretical analysis of the Parabolic Partial Differential Equation through Bernoulli wavelet collocation scheme.
9. N.P. Gaikwad, LRS Bianchi Type II Magnetized String Cosmological Model with Bulk Viscous Fluid in Rosen's Bimetric Gravity.
10. Tasneem Firdous Islam, G.D. Kedar, and Sajid Anwar, Hygrothermal buckling analysis of Exponential Functionally Graded plates based on Classical plate theory.
11. Thirumalai Nallasivan Parthasarathy, Samayan Narayanamoorthy, An end-to-end categorizing process based on renewable energy sources: Interval valued q-rung orthopair fuzzy MADM Approach.

Parallel Session-5B
Venue: Hall-I (First Floor), Department of Statistics

1. P.V. Gayakwad, M.S. Borkar- Bianchi Type-I Anisotropic Dark Energy Models with Constant Deceleration Parameter in Lyra Geometry.
2. PushapLata Sharma, Thermosolutal Convection in Elastico-viscous Rivlin-EricksenNanofluid with Porous Medium.

3. Y.V. Rathod, G.R. Avachar and S.W. Samdurkar, Study of Modified Equation of State with Massive Scalar Field in General Relativity.
4. DipenduPramanik, ManasaBhat and Santanu Manna, Modelling of Love-like surface wave in a homogeneous-coated poroelastic anisotropic stratum with sliding contact and point source effect.
5. Amlan K Halder, RajeswariSeshadri, R Sinuvasan, and Pgl Leach, Symmetries and Lie Algebra of Ramanujan Equation.
6. B.D. Dawkar, Existence and Uniqueness of R-L Fractional Differential Equations with Initial Time Difference.
7. Jagdish A. Nanware, K.A. Shanediwan and V.B. Kulkarni, Existence and Uniqueness of Solution for System of Fractional Nonlinear Boundary Value Problems.
8. P.A.S. Naidu and S.K. Chandbhanani Normalised Three Parametric Bi-Measure Of Entropy, Directed Divergence, Inaccuracy.
9. N.G. Patil, Analytical Solution of Price Adjustment Equation Involving Constant Proportional Caputo Derivative by Sumudu transform.
10. Trupti Thakre, Fuzzy TOPSIS Algorithm for the Evaluation of Student's Performance in University Level Debate Competition: Model Development & Application.
11. V.C. Borkar, Fixed Point Theorems for One Type of Weak-Generalized F-Contractions on A B-Metric-Like Space and it is Applications to Some Trigonometric Functions on $\left[0, \frac{\pi}{2}\right]$.

Parallel Session - 5C
Venue: Hall –II (Ground Floor), Department of Statistics

1. J.P. Tripathi, Dharmendra Kumar, traffic light controller for smart cities using fuzzy logic.
2. Rahul Som and Santanu Manna, A traveling edge wave on a non-homogeneous sandy plate supported by the Winkler foundation.
3. A. Chakraborty, Effect of the radiation pressure on the equilibrium points in BiElliptic Restricted Four Body Problem.
4. Kumbinarasaiah S Numerical and Theoretical analysis of the Parabolic Partial Differential Equation through Bernoulli wavelet collocation scheme.
5. Srinivasa Rao Pentyala, Sandip Chowdhury, and Prabir Barman, Numerical computation of natural convection of nanofluid in an open wavy porous cavity heated partially.
6. P.V. Gayakwad, M.S. Borkar, Bianchi Type-I Anisotropic Dark Energy Models with Constant Deceleration Parameter in Lyra Geometry.
7. Rama Jain, Shulva Sutra - A Geometrical Interpretation.
8. Deepak Umrao Sarwe, Vinayak S. Kulkarni, Thermal analysis of an Annular fin with temperature-dependent thermal conductivity and heat generation by using DTM-Pade approximation.

9. Gokula N. Chhatria, Second order noncanonical difference equations withsublinear neutral term: improved oscillation criteria.

10. B. Ramu Naidu, K.P.R. Sastry and Kiran D.M.K. Data Encryption to Decryption by Using Laplace Transform.

11. Sajid Anwar and Tasneem Firdous Islam, Competent Novel Strategies for Strong Convergence with Variational Inequality and Split Equality Crisis in Fixed Point Theory.

Poster Session	**16:30-18:00**	**Poster Session including Best Poster Award**
Poster Session	**17:00- 18:00**	**Concurrent Poster Session**

1. Neetu Dhiman, Mansi Harish and Shalini Gupta, Constructions of Maximum Distance Separable Rhotrices over Finite Fields.
2. Gaikwad Priyanka Balasaheb, Exact Solution of Multilayered Annular Disc of Steady-State Problems of Temperature and Thermal Stresses.
3. Shankar R. Rautand Bhausaheb R. Sontakke, Analysis of fractional Gas Dynamic equations using Atangana-Baleanue derivative operator.
4. Rajnish Kumar Singh, Rodrigue's Formula for The Hypergeometric Polynomial Set $R_n(x_1, x_2, x_3)$.
5. Jagdish A. Nanware and Pandurang D. Kundgar, Monotone Method for Finite System of Fractional Reaction Diffusion Equation and Applications.
6. Archana Gajanan Ingle and Shailendra D. Deo, Bianchi Type-I universe in presence of Perfect Fluid with numerical solution.
7. Punam M. Lambat and A. M. Pund, Higher Dimensional Bianchi Type –III Viscous Fluid String Cosmological Model.
8. Shirish V. Kadu, Mathematical Aspects of Indian Classical Music.
9. Makkella Venkateswarlu and Braou Hyd, Mathematical Modeling Or And Elementary Functions.
10. Amendra Singh and Sanjeev Kumar, Numerical solution of blood flow by K-L model through multiple stenosis in narrow wartery.
11. Ashwini R Lalke, G P Singh, and Binaya K Bishi, Study of periodic cosmic evolution in modified f(Q,T) gravity theory.
12. Deepika Bora (Golechha), Gajanan Avachar and Subhash Tade, Dynamics of Bianchi type-VI0 Universe in General and Modified Theories of Gravitation.
13. Geeta Kumari, The Recurrence Relations for the Classical Polynomial Set $D_n\{(x_k), y\}$.
14. Harshal S. Dorkhande, Kalpana P. Pande and Subhash D. Tade, Bianchi Type- II Cosmological Model with Varying Cosmological Term.
15. Pooja A. Kotalwar, Kalpana P. Pande and Subhash D. Tade, Study of Bianchi Type – VI Domain Walls Cosmology in Saez-Ballester Theory of Gravitation.
16. Pooja S. Motwani, Kalpana P. Pande and Subhash D. Tade, Kaluza-Klein Universe interacting with wet dark fluid in General Relativity.

17. Pratik V. Lepse and Binaya K. Bishi, Dark energy cosmological models for Bianchi type-I space-time with constant deceleration parameter in Lyra geometry.
18. Ravi Kumar and J. P. Tripathi, Some Study of Black Hole through Gravitational – Lensing.
19. Sushama G. Ghodmare, Kalpana P. Pande and Pravin Kumar, (2+1)-dimensional Bianchi Type I Universe with Wet Dark Fluid in General Theory of Relativity.
20. Yeesha Vermaand Vyas Dubey, An Estimator Of Population Mean Using Auxiliary Information For Small Samples.
21. Shrivallabha, S. Suresh R, A Note on The Estimation of Variance of Sar (1) and Sma (1) Models In The Presence of Seasonal Level Shift Outlier.
22. Swapnil S. Charjan, N.P. Gaikwad, P.V. Gayakwad and R.K. Thakre, LRS Bianchi Type-I Magnetized Cosmological Model in Bimetric Theory of Relativity.
23. Prasant Verma, Kaushalendra Kumar Singh, Mukti Khetan, Prediction of unwanted pregnancy in India: A machine learning approach.
24. Diksha Gautam and Sanjeev Kumar, Optimal control solution for the treatment of natural killer cells along with CD8+ T cells in tumor growth.
25. Chitra Singh and Ayushma Sahu, Weak leader-type contractions in quasi-trinagular spaces.

January 06,2023		
Venue	**Srinivasa Ramanujan Auditorium** **Department of Mathematics, RTM Nagpur University, Nagpur**	
Symposium **"Intrinsic behaviour of elastic solid due to waves and vibrations"** **Organizer - Dr. Santanu Manna**		
Lecture Session	**14:00-14:20**	**Dr. Santanu Manna** Assistant Professor Department of Mathematics, IIT Indore ***"Velocity behavior of the Rayleigh waves in two layered nonlocal elastic model"***
	14:20-14:40	**Dr. Nantu Sarkar** Assistant Professor Department of Applied Mathematics, University of Calcutta ***"Plane waves in nonlocal thermoelasticity II"***
Invited Lectures		
Invited Lectures	**14:40-15:00**	**Dr. Mahendra Kumar Jena** Associate Professor, Department of Mathematics Veer SurendraSai University of Technology, Burla, Odisha ***"Construction and Smoothness Analysis of Hermite Interpolatory Subdivision Schemes"***

Invited Lectures	**15:00-15:20**	**Prof. Joginder Singh Dhiman** Department of Mathematics, Himachal Pradesh University, Shimla-171005, Himachal Pradesh *"A Unified Stability Analysis of Some Double-Diffusive Convection Problem"*
	15:20-15:40	**Prof. (Dr.) Rita Choudhury** Department of Mathematics, The Assam Royal Global University, Guwahati -781035, Assam ***"MHD Elastico-Viscous Thermal Boundary Layer Flow: An Overview"***
	15:40-16:00	**Prof. G.P. Singh** Department of Mathematics VNIT, Nagpur ***"Relativistic Cosmological Models"***
	16:00-16:20	**Prof. Bhola Ishwar** Retd University Professor B.R.A.Bihar University, Muzaffarpur **"*Basics of Dynamical Systems*"**
Oral Presentations	**16:20-17:50**	**Oral Presentations (3 Parallel sessions)**

Parallel Session - 6A
Venue: Srinivasa Ramanujan Auditorium, Department of Mathematics

1. J.A. Nanware, Monotone Method for Finite System of Fractional Differential Equations with Initial Time Difference.
2. Kotcherlakota _l_n, Anti- Photon, Zq Meson and Quonic Number n Conservation.
3. Joginder Singh Dhiman, The onset of Convective Motions in Completely Confined Fluids.
4. B.V. Baby, Exact Solutions of Nonlinear Partial Differential Equations $U_{tt} - U_{xx} = U2N + 1$, Where N Is Any Nonzero Real Rational Number.
5. Satish T. Rathod and KalpanaPawar, Numerical study of Five-Dimensional Cosmological Model in presence of Perfect Fluid with variable \mathbit{G}.
6. JyotiShrikantBadaik, Recent Advances in Graph theory and it's Applications.
7. Abhik Singh, Analysis and Approximation Theory in Numerical Analysis.
8. N.T. Katre, KalpanaPawar and Salim H. Shekh, Under the Hubble's Cutoff physical acceptability of the Renyi Holographic Dark Energy Model in f(T,B) Gravity.
9. ManasaBhat and Santanu Manna, A study of the Rayleigh wave field in an unbounded medium with interior initial conditions.
10. P.R. Agrawal, H. G. Paralikar, A. P. Nile, LRS Bianchi Type-I Cosmological Model with Polytropic Equation of State in $f(R,T)$ Theory of Gravitation.
11. M. Vivek Prabu, and M. Rahini, Stock Movement of Sun Pharmaceutical Industry Limited Post Covid-19 – Technical Analysis.

Parallel Session - 6B
Venue: Hall-I (First Floor), Department of Statistics

1. Sumanta Kumar Das, Fitting Heterogeneous Lanchester Models on The Kursk Campaign of The Second World War.
2. Girish Chandra and Dinesh S. Bhoj, Estimating Response of Developmental Programs using Ranked Set Sampling.
3. G. Madhu Sudan, Abhay Pratap Pandey and M. Bhupati Naidu, Construction and Analysis of Latin Squares for the order (P x P) & (Pm X Pm) by using Galois Field through the 'R' Program.
4. Neeta W. Andure (Yawale) and Rajeshwar B. Ade, Development of Length Biased Power Akash Distribution and estimation of its parameters.
5. Priyanka Singh, A Super Population Model approach to Imputation for Estimating Population Mean.
6. Vyas Dubey, A Quadratic Type Estimator of Population Mean on Two Occasions.
7. ShaikNafeez Umar, B. Ramana Murthy and K Murali, Green gram price forecasting using Time Series models in Andhra Pradesh.
8. Pritee Singh, Piyush Lanjewar and Sameer Rewatkar, Factors affecting the prices and forecasting model for prediction of the prices of gold in India.
9. Rajesh Singh and Kailash R. Kale, Bayes estimators for the parameters of Binomial type Rayleigh class software reliability model using non-informative and Inverted Gamma Prior.
10. Diwakar Shukla, Timber Estimation using Euler Graph and Sampling with Imputation Economic Prediction of Forest**.**
11. B.S. Desalea & Gaurav Sonib Some Fixed Point Theorems for Set Valued Functions in Partially Ordered Metric Spaces.

Parallel Session - 6C
Venue: Hall-II (Ground Floor), Department of Statistics

1. Anil K. Vashisth, SH Wave Propagation in Functionally Graded Composites.
2. Suresh, R. Shrivallabha, S., Effect of Seasonal Level Shift Outlier on the Residuals and Variance of SARMA (1,1) Model.
3. Anil K. Vashisth and Umang Bareja, Mathematical modeling of Love waves propagation in a composite structure.
4. Akhilesh Prasad and Amit Kumar, Weyl transform associated with linear canonical transform.
5. Asit Kumar Gupta and Anand Mohan Prasad, Propagation of Love waves in an elastic medium over a gravitating anisotropic porous half space
6. Vyas Dubey and Reena Sonkar, An improved ratio estimator of a finite population mean using two auxiliary variables.

7. Roshan K. Thakre, N.P. Gaikwad & S.S. Charjan, Bianchi Type-I space time with Matter Bounce cosmology in f(R, T) gravity.
8. Samayan Narayanamoorthy, Subramaniam Pragathi, Analysis of Post-COVID-19 Risks in the Elderly Using the CSF-MULTIMOORA Technique.
9. G. Kathyayini, Evaluation by Using Anonymization Method of Privacy Preservation Techniques with an Efficient Approach and A Systematic Comparison.
10. B.S. Desale and S.D. Shendage, Special Solutions to the Flow of Incompressible Fluids Coupling with Magnetic Field.
11. Shekhar Suman, R.K. Das, Abstract of a note on an equivalent of the Riemann hypothesis.

Poster Session	**17:00- 18:00**	**Concurrent Poster Session**

26. Rohit Madhukar Patne, On theory of an optimal drawing.
27. Priyanka Verma, Sheela Misra and Adity Kumari, A Qualitative Study: The Success Story of Indian Women despite Many Challenges.
28. Archana Gajanan Ingle and Shailendra D. Deo, Bianchi Type-I universe in presence of Perfect Fluid with numerical solution.
29. Mrudula Kulkarni and Sandhya Dhabe, Indian Classical Music: A statistical perspective to analyse invocation of emotions for creation of a digital alternative to gurukul.
30. Ratnasambhav Sahu, A new easy-to-use tool for quick statistical analysis.
31. Samayan Narayanamoorthy, J.V. Brainy, Analysing the wastewater treatment technologies: A multi-criteria decision making approach.
32. Rohit K. Bhardwaj and Tirth Ram, On Approximate Vector Variational Inequalities and Vector Optimization Problem Using Convexificator.
33. Tanisha Kumari and Santanu Manna, Effect of moving load and shear stress discontinuity on the free surface displacement due to the SH-type waves.
34. Thangaraj Manirathinam, Samayan Narayanamoorthy, Daekook Kang, An integrated fuzzy decision making model to identify sustainable plastic waste recycling method.
35. A.K. Dabre and K.N. Pawar, Minimally Interacting Two Fluid Cosmological Model in $f(T)$ Gravity".
36. Shaziya Farah Ahemed, Bayesian Estimation of Risk Factors for Multidrug-Resistant Tuberculosis (MDR-TB) in Amravati by informative Prior approach.
37. Ponsathya V., Jeevitha S., Stock Movement of Wipro Limited Using Technical Analysis.
38. Gurpreet Kaur Khokhar and Deepesh Kumar Patel, Unique common fixed point of maps involving rational inequalities via complex valued w-distance.
39. Bhupeshwar and Deepesh Kumar Patel, Best Proximity Point Results for Cyclic (Noncyclic) θ-Condensing Operator.
40. Akash Pradhanand D.K. Patel, "Pythagorean Fuzzy Relation Equations and NewComposition for Pythagorean Fuzzy Relations".

41. A.S. Nimkar and N.M. Tade, Anisotropic Reconstruction of String Cosmological Model in f(R,T) Gravity.
42. E. Siva Prasad, K. Phaneendra, Solution of Boundary Layer Differential-Difference Equations Using Exponentially Fitted Spline Method.
43. Dhanshri V. Dhote, Shailendra D. Deo, Plane symmetric and spherical symmetric solution in $f(R)$ gravity.
44. Illa Kumari, Lalan Singh, Stability of collinear libration points in restricted three body problem with radiating mass and variable masses.
45. Usha V. Kayarkar, Shailendra D. Deo, Bianchi Type-I models in f(R) theory of gravity.
46. Suruchi S. Somwanshi, Lopes Rokey, A Fraud Detection Model for Credit Card transactions.
47. N. Swathi, Development of Mathematics in Medieval Andhradesa.

17:30-18:00 PM **General Discussion and Recommendations**