

# International Conference on Dynamical Systems, Control Theory & their Applications

July 01-03, 2022

(Schedule)

- The plenary and invited talks for all three days will be held at H-601 (Mathematics-HSS Department Building)
- The inaugural function, felicitation and valedictory function will be held at H-601 (Mathematics-HSS Department Building)

<b>Day 1 (July 1, 2022)</b>	Time
Registration	8:45-9:15
Kulgeet	9:15-9:17
Welcome and about the conference by Prof. D. N. Pandey	9:17-9:20
About the Department of Mathematics by Prof. P. Bera (HoD-Mathematics)	9:21-9:26
Short talk about the contributions of Prof. N. Sukavanam by Prof. Sanjeev Kumar	9:27-9:32
Speech by Chief Guest Prof. A. K. Chaturvedi (Director - IITR)	9:33-9:43
Vote of thanks by Prof. Arbaz Khan	9:44-9:48
National Anthem	9:49-9:50
High Tea	9:50-10:20
Prof. A. K. Nandakumaran, IISc Bangalore (Invited Talk 1) <i>Oscillating PDE in a Rough Domain with Curved Interface: Homogenization of an Optimal Control Problem</i>	10:20-11:05
Prof. Akash Anand, IIT Kanpur (Invited Talk 2) <i>Scattering Problems: Some computational challenges and their resolutions</i>	11:05-11:50

Mini-symposium session 1 <b>(Differential Equations)</b> Venue: H-601		Mini-symposium session 2 <b>(Numerical Applications)</b> Venue: M-602		Parallel sessions for Contributory Talks				
T1(Prof. Muslim Malik)	12:00-12:30	T1(Prof. Jagabandhu Paul)	12:00-12:30	Control (PS1) M-205	Modelling (PS2) H-205	SDE (PS3) M-206	Appl. (PS4) M-111	Time
T2(Prof. Rajesh Pandey)	12:30-13:00	T2(Prof. S. Bhattacharya)	12:30-13:00	6 cont. talks	6 cont. talks	6 cont. talks	6 cont. talks	12:00-13:30 (12+3=15/talk) (90 mins)
T3(Prof. Shruti Dubey)	13:00-13:30	T3(Prof. Ambuj Pandey)	13:00-13:30					
<b>Lunch Break</b>								13:30-15:00
Prof. Rathish Kumar, IIT Kanpur (Invited Talk 3) <i>A PDE Based Effective Image Denoising</i>								15:00-15:45
Prof. M. Thamban Nair, IIT Madras (Invited Talk 4) <i>On Regularization for an Inverse Problem in a Parabolic PDE</i>								15:45-16:30
Prof. S Sritharan, Go. AI., Inc. USA (Plenary Talk 1) <i>Modern advances in control and stochastic estimation of fluid dynamics</i>								16:30-17:30
Tea								17:30-17:45
Mini- symposium session 1 <b>(Differential Equations)</b> Venue: H-601		Mini-symposium session 2 <b>(Numerical Applications)</b> Venue: M-602		Parallel sessions for Contributory Talks				
T4 (Prof. Abdur Raheem)	17:45-18:15	T4 (Prof. C. A. Perez Arancibia)	17:45-18:15	Control (PS5) M-205	Modelling (PS6) H-205	SDE (PS7) M-206	Appl. (PS8) M-111	Time
T5 (Prof. Prashant Kumar)	18:15-18:45	T5 (Prof. Tahsin Khajah)	18:15-18:45	6 cont. talks	6 cont. talks	6 cont. talks	6 cont. talks	17:45-19:15 (90 mins)
T6 (Prof. Syed Abbas)	18:45-19:15	T6 (Prof. R. K. Mishra)	18:45-19:15					

<b>Day 2 (July 2, 2022)</b>								Time
Prof. E. Hernandez, University of Sao Paulo, Brazil (Plenary Talk 2) TBA								9:00-10:00
Prof. Raju K. George, IIST Trivandrum (Invited Talk 5) <i>On controllability of networked systems</i>								10:00-10:45
Prof. Vivek Borkar, IIT Bombay (Invited Talk 6) <i>In search of Markov solutions</i>								10:45-11:30
Tea								11:30-11:45
Mini-symposium session 3 <b>(Control Theory)</b> Venue: H-601		Mini-symposium session 4 <b>(Stoch. &amp; Partial Diff Eqns)</b> Venue: M-602		Parallel sessions for Contributory Talks				
T1 (Prof. Surendra Kumar)	11:45-12:15	T1 (Prof. Suprio Bhar)	11:45-12:15	Diff Eqn (PS9) M-205	Num. Ana.(PS10) H-205	Diff. Eqn. (PS11) M-206	Appl. (PS12) <b>M-111</b>	Time
T2 (Prof. Nutan Kumar)	12:15-12:45	T2 (Prof. S. Karthikeyan)	12:15-12:45	7 cont. talks	7 cont. talks	7 cont. talks	7 cont. talks	11:45-13:30 (12+3=15/talk) 105 minutes
T3 (Prof. Sheetal Dharmatti)	12:45-13:15	T3 (Prof. Utpal Manna)	12:45-13:15					
<b>Lunch Break</b>								13:30-15:00
Prof. Enrique Zuazua, Friedrich Alexander University, Germany (Plenary Talk 3) <i>Control and Machine Learning</i>								15:00-16:00
Prof. K. Balachandran, Bharathiar University (Invited Talk 7) <i>On the solutions of abstract fractional differential equations and semigroup theory</i>								16:00-16:45
Prof. A. K. Pani, IIT Bombay (Invited Talk 8) <i>Feedback Control Laws: Theoretical and Computational Studies</i>								16:45-17:30
Tea								17:30-17:45
Mini- symposium session 3 <b>(Control Theory)</b> Venue: H-601		Mini- symposium session 4 <b>(Stoch. &amp; Partial Diff Eqns)</b> Venue: M-602		Parallel sessions for Contributory Talks				
T4 (Prof. Dimple K. Chalishajar)	17:45-18:15	T4 (Prof. K Sakthivel)	17:45-18:15	Diff Eqn (PS13) M-205	Num Ana (PS14) H-205	Diff Eqn (PS15) M-206	Appl (PS16) <u>    </u> M-111	Time
T5 (Prof. Anurag Shukla)	18:15-18:45	T5 (Prof. Barun Sarkar)	18:15-18:45	6 cont. talks	6 cont. talks	6 cont. talks	6 cont. talks	17:45-19:15 (90 mins)
T6 (Prof. Naveen Kumar)	18:45-19:15	T6 (Prof. M. Suvinthra)	18:45-19:15					
<b>Felicitaton and Cultural Program followed by Dinner</b>								<b>19:15 onwards</b>

<b>Day 3 (July 3, 2022)</b>						Time
Prof. Irena Lasiecka, University of Memphis, USA (Plenary Talk 4) <i>Long time behavior in flow-structure interactions</i>						8:45-9:45
Prof. P Balasubramaniam, GRI Dindigul (Invited Talk 9) <i>Controllability and Optimal control for fractional higher order stochastic impulsive systems</i>						9:45-10:30
Tea						10:30-10:45
Prof. Chee Peng Lim, Deakin University, Australia (Plenary Talk 5) <i>Modelling and Data Analytics with Computational Intelligence Paradigms</i>						10:45-11:45
Parallel sessions for Contributory Talks						
Num. Ana. (PS17) <b>Venue:H-601</b>	Num. Ana. (PS18) M-602	Diff. Eqn. (PS19) <b>M-205</b>	Appl. (PS20) M-111	Modelling (PS21) H-205	Modelling (PS22) M-206	Time
7 cont. talks (12+3=15 mins/talk)	7 cont. talks (12+3=15 mins/talk)	7 cont. talks (12+3=15 mins/talk)	7 cont. talks (12+3=15 mins/talk)	7 cont. talks (12+3=15 mins/talk)	7 cont. talks (12+3=15 mins/talk)	11:45-13:30 (105 minutes)
<b>Lunch Break</b>						13:30-15:00
Prof. Nazim Mahmudov, Eastern Mediterranean University, Turkey (Plenary Talk 6) <i>Perturbation theory and linear evolution equations with delay</i>						15:00-16:00
Prof. Venky Krishnan, TIFR-CAM (Invited Talk 10) <i>Momentum ray transforms and a Calderon-type inverse problem</i>						16:00-16:45
Tea						16:45-17:00
Prof. D. Bahuguna, IIT Kanpur (Invited Talk 11) <i>Approximate controllability of finite delay fractional functional integro-differential equations with the nonlocal condition</i>						17:00-17:45
<b>Valedictory Ceremony</b>						<b>18:00-18:30</b>

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**(Schedule)**

**TITLES OF SYMPOSIUM SPEAKERS' TALKS**

Prof. Jagbandhu Paul	Fourier Continuation and its applications
Prof. C. A. Perez Arancibia,	Density Interpolation Methods for Boundary Integral Equations
Prof. Suprio Bhar	On a class of Stochastic PDEs driven by Levy noise
Prof. Sombuddha Bhattacharyya,	Inverse Problems for Fractional Laplacian
Prof. Naveen Kumar	Control of uncertain robotics systems
Prof. Shruti Dubey	Existence of solution for abstract fractional semilinear differential equation with delay
Prof. S. Karthikeyan	Explosive Solutions of Stochastic Partial Differential Equations
Prof. Tahsin Khajah,	High-order acoustic wave propagation analyses
Prof. Utpal Manna	TBA
Prof. R. K. Mishra	Vector tomography with V-line and stars in $R^2$
Prof. Ambuj Pandey	Fast High-Order Hybrid Solver for Scattering by Penetrable Inhomogeneous Media
Prof. Rajesh Pandey	Fractional Filters for Retinal Blood Vessel Segmentation
Prof. Abdur Raheem	Some results on controllability for a class of fractional impulsive differential equations.
Prof. K. Sakthivel	Dynamic Programming of Stochastic Navier-Stokes Equations with Levy Noise
Prof. Barun Sarkar	Existence and Uniqueness of solutions for SPDEs in the space of tempered distributions.
Prof. Prashant Kumar Srivastava	Bifurcation Analysis of Predator-prey Model with Allee Effect, Fear Effect in Prey and Hunting Cooperation in Predator
Prof. M . Suvinthra	On Large Deviations for the Stochastic Cahn-Hilliard/Allen-Cahn Equation
Prof. Syed Abbas	Introduction to fractional calculus with applications
Prof. Muslim Malik	Controllability of Differential Equations on Time Scales
Prof. Dimplekumar N. Chalishajar	Controllability of neutral stochastic impulsive functional integrodifferential system via resolvent operator
Prof. Nutan Kumar Tomar	Functional Observers for Descriptor Systems
Prof. Surendra Kumar	Approximate Controllability and Optimal Control for Impulsive Differential Systems
Prof. Sheetal Dharmatti	Cahn-Hilliard-Navier-Stokes equations with Nonhomogeneous Boundary: Existence, Uniqueness, Regularity
Prof. Anurag Shukla	Approximate controllability of semilinear discrete control systems

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## SESSION-WISE DETAILS OF THE CONTRIBUTORY TALKS

<b>Contributory Talks Parallel Session 1 (Controllability)</b>		<b>July 01, 2022 (12:00-13:30)</b>	<b>Venue: M-205 (Mathematics Dept Building)</b>	
<b>Session Chair:</b>				
<b>Name</b>	<b>Title</b>	<b>Mode</b>	<b>Timings</b>	
Arnab Mapui and Santwana Mukhopadhyay	An improved fixed-time stability theorem and its application to perturbed chaotic system using sliding mode control.	Online	12:00-12:15	
Parveen Kumar , Harshvardhan Salunkhe , Ramesh Kumar vats	Approximate Controllability of Sobolev-type Inclusion Integro differential system with infinite delay.	Online	12:15-12:30	
R. S. Shivasivapriyaa	Controllability of integro-dynamical systems with prescribed controls on time scales	Online	12:30-12:45	
E. Thilakraj, K. Kaliraj and C. Ravichandran	New results on Controllability Analysis for Sobolev-type Volterra -Fredholm Functional Integro-differential Equation with non-local condition in Banach space	Online	12:45-13:00	
Bholanath Kumbhakar , Dwijendra Narain Pandey	Exact controllability of semilinear differential inclusion with control acted on a reflexive Banach space	Offline	13:00-13:15	
Sumit Arora, Manil T. Mohan and Jaydev Dabas	Finite-approximate controllability of fractional functional evolution equation via variational approach	Offline	13:15-13:30	
<b>Contributory Talks Parallel Session 2 (Modelling)</b>		<b>July 01, 2022 (12:00-13:30)</b>	<b>Venue: H-205 (HSS Dept. Building)</b>	
<b>Session Chair:</b>				
<b>Name</b>	<b>Title</b>	<b>Mode</b>	<b>Timings</b>	
Manoj Kumar, Syed Abbas	Analysis of steady state solutions to an age structured SEQIR model with optimal vaccination	Online	12:00-12:15	
Nazmul Sk	A nonautonomous model for the interactive effects of fear, refuge and additional food in a prey-predator system	Online	12:15-12:30	

Vijay Kumar Shukla	Modified generalized projective synchronization between systems with external disturbances	Online	12:30-12:45
Sushmitha Jayachandran, Gnanavel Soundararajan	A Parabolic equation modeling thin film growth with Logarithmic non linearity	online	12:45-13:00
Ankur Jyoti Kashyap , Willy Govaerts	Center manifolds, Hopf bifurcation in an epidemic model	online	13:00-13:15
Balajied Me Syrti , Anuradha Devi	Analysis of stability, sensitivity index and Hopf bifurcation of Eco-epidemiological SIR model under pesticide application	online	13:15-13:30

**Contributory Talks Parallel Session 3 (Stochastic Diff. Equation) July 01, 2022 (12:00-13:30) Venue: M-206 (Mathematics Dept. Building)**  
**Session Chair:**

Name	Title	Mode	Timings
Asma Afreen	Existence of mild solution and optimal control for a multi-term time-fractional stochastic system with non-instantaneous impulses	Online	12:00-12:15
Areefa Khatoun	Controllability for neutral stochastic differential equation of order $0 < \gamma < 1$ with infinite delay in abstract space	online	12:15-12:30
Sridevi C.S.	Moderate deviations for stochastic predator prey model with Lévy noise	Online	12:30-12:45
Neelima, Sani Biswas, Chaman Kumar, Gonçalo dos Reis and Christoph Reisinger	Well-posedness and tamed Euler schemes for McKean–Vlasov equations driven by Lévy noise	Online	12:45-13:00
Chaman Kumar , Tejinder Kumar	Milstein-type Scheme for Stochastic Differential Equation with Markovian Switching	Online	13:00-13:15
A. Siva Ranjani	Large Deviations for Stochastic Fractional Differential Equation with Levy Noise	Online	13:15-13:30

**Contributory Talks Parallel Session 4 (Applications) July 01, 2022 (12:00-13:30) Venue: M-111 (Maths Department)**  
**Session Chair:**

Name	Title	Mode	Timings
Nabin Kumar Sahu and Shalini Chauhan	Dynamical representations of frames via iterative actions of operators	Online	12:00-12:15

K. Sri Raja Priyanka, G. Nagamani	Robust $H^\infty$ Anti-Synchronization of Delayed Discrete-Time Complex-Valued Neural Networks	Online	12:15-12:30
B. Adhira, G. Nagamani	A Delay-Partitioning Approach for (Q, S, R)-Dissipative Output-feedback Control of Discrete-Time BAM Neural Networks	Online	12:30-12:45
Paras C. Shingadiya , Chetansinh R. Vaghela	Two ware-house inventory model for Inventory control of non-instantaneous Deteriorating items and Dynamic selling price.	Online	12:45-13:00
Rimpi Pal, Anuj Sharma, Shivani	Hybrid projective function synchronization of time-delayed Genesio and Lorenz systems with applications to secure communication	Online	13:00-13:15
P. Girija, A. Kavitha, M. Prakash	Design of integral sliding mode control for T-S fuzzy-based Grid-connected PMSM Model	Offline	13:15-13:30
<b>Contributory Talks Parallel Session 5 (Controllability) July 01, 2022 (17:45-19:15) Venue: M-205 (Mathematics Building)</b>			
<b>Session Chair:</b>			
<b>Name</b>	<b>Title</b>	<b>Mode</b>	<b>Timings</b>
Kallu Vetty Muhammed Rafeek, Vijayakumar S. Muni, Gudala Janardhana Reddy	Observability of Consensus of Multi-Agent Networks Under Signed Laplacian Dynamics	Offline	17:45-18:00
Kamal Jeet and D.N. Pandey	Approximate controllability of nonlocal fractional differential equations of finite delay using an approximating technique	Offline	18:00-18:15
Athira V. S., Vijayakumar S. Muni and G. Janardhana Reddy	Controllability of discrete-time heterogeneous multi-agent systems	Offline	18:15-18:30
Sanjukta Das	Controllability of Backward Stochastic Control Systems with application in portfolio problem with consumption	Offline	18:45-19:00
Lavina Sahijwani and N. Sukavanam	Total approximate controllability of impulsive fractional differential systems involving Riemann-Liouville derivatives of order $\beta \in (1,2)$	Offline	18:30-18:45
Swati Garg	Homogenization of optimal control problem governed by Stokes equations	Offline	19:00-19:15



<b>Contributory Talks Parallel Session 6 (Modelling)</b>		<b>July 01, 2022 (17:45-19:15)</b>		<b>Venue: H-205 (HSS Building)</b>	
<b>Session Chair:</b>					
<b>Name</b>	<b>Title</b>	<b>Mode</b>	<b>Timings</b>		
Sudhakar Yadav, Vivek Kumar	Mathematical Model for Crop-Pest and Pest Control Strategy Using Green Insecticide and Mating Disruption	Online	17:45-18:00		
M. Pradeesh and P. Balasubramaniam	Stability, bifurcation and optimal control design for HIV-1 infection model with time-delays	Offline	18:00-18:15		
Sagar R. Khirsariya , Snehal B. Rao	A fractional order SEIR Model of COVID-19 using Homotopy Perturbation Transform Method through Atangana-Baleanu fractional derivative	Offline	18:15-18:30		
Prof.B V Baby	Stability Analysis Of Dynamics Of Mathematical Model Of Hiv Infection Of Cd4 T Cells	Offline	18:30-18:45		
Viney Kumar <sup>1</sup> , Samit Bhattacharyya <sup>1</sup>	A simple model of opinion spreading and its impact on vaccination in face of an outbreak: A multiplex network approach	Offline	18:45-19:00		
Sapna Devi, Reda Fatma and Vinay Verma	Impacts of Lockdown on the Dynamics of Forestry Biomass, Wildlife Species and Control of Atmospheric Pollution	Offline	19:00-19:15		
<b>Contributory Talks Parallel Session 7 (Stochastic Diff. Equation)</b>		<b>July 01, 2022 (17:45-19:15)</b>		<b>Venue: M-206 (Mathematics Dept. Building)</b>	
<b>Session Chair:</b>					
<b>Name</b>	<b>Title</b>	<b>Mode</b>	<b>Timings</b>		
Ajeet Singh, Anurag Shukla	Asymptotic Stability of Fractional Order Stochastic Delay Differential Equations	Offline	17:45-18:00		
S. Sankar, Manil T. Mohan, S. Karthikeyan	Finite time blow-up of a system of semilinear SPDEs with fractional noise	Offline	18:00-18:15		
K. Kinra , R. Wang , M. T. Mohan	Asymptotic Autonomy of Random Attractors in Regular Spaces for Non-autonomous Stochastic Navier-Stokes Equations	Offline	18:15-18:30		
Ankit Kumar and Manil T. Mohan	Absolute Continuity Of The Solution To Stochastic Generalized Burgers-Huxley Equation	Offline	18:30-18:45		

<b>Contributory Talks Parallel Session 8 (Applications)</b>		<b>July 01, 2022 (17:45-19:15)</b>	<b>Venue: M-111 (Maths Department)</b>	
<b>Session Chair:</b>				
<b>Name</b>	<b>Title</b>	<b>Mode</b>	<b>Timings</b>	
Narveen Kumar, Neelam Choudhary, E.A. Strelnikova	A note on computation of sloshing frequencies due to free surface oscillations	Offline	17:45-18:00	
Suman Kaswan, Mahendra Devanda, Chandra Shekhar	Controllable Online Joining and Balking Strategies of Customers in a Two-stage Service Systems	Offline	18:00-18:15	
S. Sasikala, P. Balasubramaniam, M. Prakash	Sampled-data control scheme for Stochastic T-S fuzzy Hindmarsh-Rose neuronal model	Offline	18:15-18:30	
Ankit Agrawal	AI/ML/DL for Forward and Inverse Problems in Science and Engineering	Offline	18:30-18:45	
Ruchi Panwar and N. Sukavanam	Smooth trajectory generation using different Neural Network	Offline	18:45-19:00	
Kriti A.Dheerawat, Umme Salma M. Pirzada, Haribhai R.Kataria	Design of Neuro-Fuzzy Controller for Washing Machine	Offline	19:00-19:15	

<b>Contributory Talks Parallel Session 9 (Differential Equation)</b>		<b>July 02, 2022 (11:45-13:30)</b>	<b>Venue: M-205 (Mathematics Dept. Building)</b>	
<b>Session Chair:</b>				
<b>Name</b>	<b>Title</b>	<b>Mode</b>	<b>Timings</b>	
Gourav Arora, Rajesh Kumar	Mathematical study for condensing coagulation and Lifshitz-Slyozov models using variational iteration	Offline	11:45:12:00	
Saddam Hussain, Rajesh Kumar	Solving Condensing Coagulation and Lifshitz-Slyozov models via Daftardar-Jafari method	Offline	12:00-12:15	
Inzamamul Haque, Javid Ali	A generalized Darbo's fixed point theorem and its application to system of implicit fractional order integral equations in $p(1 \leq p < \infty)$ space	Offline	12:15-12:30	
Deepa Gupta and Sachin Bhalekar	Stability Analysis of Generalized Fractional Order Ucar System	Offline	12:30-12:45	
Ananta Thakur , Javid Ali	Existence of solutions to a class of nonlinear arbitrary order differential equations subject to integral boundary conditions	Offline	12:45-13:00	

Pardeep Kumar , Manil T. Mohan	Existence, uniqueness and stability of an inverse problem for two-dimensional convective Brinkman-Forchheimer equations with the integral overdetermination	Offline	13:00-13:15
Sanjiv Kumar Bariwal, Rajesh Kumar	Semi-analytical Solutions for Breakage and Aggregation-breakage Equations via Daftardar-Jafari Method.	Offline	13:15-13:30
<b>Contributory Talks Parallel Session 10 (Numerical Analysis)</b>			
<b>July 02, 2022 (11:45-13:30)</b>		<b>Venue: H-205 (HSS Dept. Building)</b>	
<b>Session Chair:</b>			
<b>Name</b>	<b>Title</b>	<b>Mode</b>	<b>Timings</b>
Shipra Gupta, Amiya Kumar Pani, Sangita Yadav	Hybridizable Discontinuous Galerkin Method for Nonlinear Klein-Gordon Equations	Offline	11:45:12:00
Renu Choudhary, Devendra Kumar	Modified Atangana-Baleanu Caputo operator for time-fractional Kuramoto-Sivashinsky equation via Quintic B-splines	Offline	12:00-12:15
Sonali Kaushik , Rajesh Kumar	A New Approximation Method to Solve Pure Breakage Equation	Offline	12:15-12:30
Sumit Mahajan, Arbaz Khan , and Manil T. Mohan	Solvability of the Generalized Burgers-Huxley Equation with Memory	Offline	12:30-12:45
Riya Jain, Amiya K Pani, Sangita Yadav	HDG Method for Linear Parabolic Integro-Differential Equation with Weakly Singular Kernel.	Offline	12:45-13:00
Reetika Chawla, Devendra, Haitao Qi	Numerical simulation of time-fractional damped diffusion wave differential equation with time delay	Offline	13:00-13:15
Darshak P. Pandya, Ramakanta Meher	A Novel Approach to Fractional Fin Problem using Homotopy Analysis Method with J-transform	Offline	13:15-13:30
<b>Contributory Talks Parallel Session 11 (Differential Equation)</b>			
<b>July 02, 2022 (11:45-13:30)</b>		<b>Venue: M-206 (Mathematics Dept. Building)</b>	
<b>Session Chair:</b>			
<b>Name</b>	<b>Title</b>	<b>Mode</b>	<b>Timings</b>
Amlan K Halder, Rajeswari Seshadri A Paliathanasis, PGL Leach	Analysis of the generalized Bogoyavlenskii equation	Online	11:45:12:00
Anshika, Debdas Ghosh	Perturbed Interval-value Value Function and Its Stability Analysis in Interval Optimization Problems	online	12:00-12:15

Qamrul Hasan Ansari, Moinuddin	Iterative Methods for Hierarchical Variational Inequality Problems on Hadamard Manifolds	Online	12:15-12:30
Alok Kumar Sahoo	Entire non-radial sign-changing solutions for a fractional Schrödinger equation	Online	12:30-12:45
Ananya Tripathy, Subhadarshan Sahoo	New dispersive optical solitons for the (2+1)-dimensional evolution equation in spin dynamics	Online	12:45-13:00
Sherin Agnus, Amlan Kanti Halder, Rajeswari Seshadri and PGL Leach	Lie symmetry analysis of Calogero-Degasperis equation	Online	13:00-13:15
Jervin Zen Lobo	Complete Lie Group Analysis of the Heat Equation	Online	13:15-13:30
<b>Contributory Talks Parallel Session 12 (Applications)</b>			
<b>July 02, 2022 (11:45-13:30)</b>		<b>Venue: M-111 (Maths Department)</b>	
<b>Session Chair:</b>			
<b>Name</b>	<b>Title</b>	<b>Mode</b>	<b>Timings</b>
Umasankar Nayak and S. Chakraverty	Stock price prediction and forecasting via regression and neural network models	online	11:45:12:00
Sanooj B , Vinodkumar P B	Li-Yorke Chaotic Eigen Set of Direct Sum of Linear Operators	Online	12:00-12:15
Muzaffar Sarkar Raju, Qamrul Hasan Ansari	Explicit Iterative Method For Minimizing The Sum Of Non-Convex Functions	online	12:15-12:30
Krishnan Marimuthu , Jayaraman Uma	Certain Subclasses of P-valent Functions Associated with some Fractional Calculus Operator	Online	12:30-12:45
B. V. Prithvi , S. K. Katiyar	Active and Dull Fractals through nonconventional iterated function systems	Online	12:45-13:00
Kifayat Ullah and S.K Katiyar	Cyclic $\alpha$ -Meir-Keeler contraction and iterated function system on Branciari b-metric Spaces	Online	13:00-13:15
Gaurav Bhardwaj, Soham Dasgupta, N. Sukavanam, R. Balasubramanian	DDPG based Control for a Flat-Foot Biped Robot motion on Deformable Soil	Offline	13:15-13:30

<b>Contributory Talks Parallel Session 13 (Differential Equation)</b>		<b>July 02, 2022 (17:45-19:15)</b>	<b>Venue: M-205 (Mathematics Dept Building)</b>	
<b>Session Chair:</b>				
<b>Name</b>	<b>Title</b>	<b>Mode</b>	<b>Timings</b>	
A. K. Nandakumaran, Abu Sufian, And Renjith. T	Homogenization of elliptic pde with oscillating coefficients and $L^1$ source term in domains with boundary having very general oscillations	online	17:45-18:00	
Renu Chaudhary and Simeon Reich	On the Solvability of the Atangana-Baleanu Fractional Evolution Equations: An Integral Contractor Approach	Online	18:00-18:15	
Rajib Haloi	Bloch Periodic Solutions to Some Differential Equations	Online	18:15-18:30	
Ratul Choudhury, Ramesh Kumar Vats, Kanika Dhawan	Nonlocal Integral Boundary Value Problems involving Hilfer Fractional Derivative	Online	18:30-18:45	
Remadna Amira	Some insights on rightmost spectral values for time delay systems	Online	18:45-19:00	
T Tamil Selvan, M. Kumar	A study of dynamics of an epidemic model in the presence of two distinct epidemics	Offline	19:00-19:15	
<b>Contributory Talks Parallel Session 14 (Numerical Analysis)</b>		<b>July 02, 2022 (17:45-19:15)</b>	<b>Venue: H-205 (HSS Dept Building)</b>	
<b>Session Chair:</b>				
<b>Name</b>	<b>Title</b>	<b>Mode</b>	<b>Timings</b>	
Sonia Yadav, Sukhjit Singh, R.P. Badoni	Convergence of Chebyshev Kurchatov type methods for non-differentiable operators	online	17:45-18:00	
Eti Goel and Rajesh K. Pandey	A Numerical method for solving generalized fractional Sturm-Liouville problem with application in fractional diffusion equation	online	18:00-18:15	
Khushbu Agrawal and Sunil Kumar	Wavelet method for fractional-order Diabetes model	Online	18:15-18:30	
Deeksha Singh, Rajesh K. Pandey	High order approximation of Caputo-Prabhakar derivative and its application in solving time fractional Advection-Diffusion equation	Online	18:30-18:45	
Anshima Singh and Sunil Kumar	A convergent exponential B-spline collocation method for time-fractional telegraph equation	Online	18:45-19:00	
Sarita Kumari , Rajesh K. Pandey	Higher order numerical scheme to approximation generalized Caputo fractional derivatives and its application	Online	19:00-19:15	

<b>Contributory Talks Parallel Session 15 (Differential Equation)</b>		<b>July 02, 2022 (17:45-19:15)</b>		<b>Venue: M-206 (Mathematics Dept Building)</b>	
<b>Session Chair:</b>					
<b>Name</b>	<b>Title</b>	<b>Mode</b>	<b>Timings</b>		
Sunny Singh	Synchronization of Quaternion valued neural networks with mixed time delays using Lyapunov function method.	Online	17:45-18:00		
Shiv Shankar Chouhan	Multiple Exponential Stability of Octonion Valued Neural Networks	Online	18:00-18:15		
Reena Koundal	Exact solution of non-linear partial differential equations: Modified homotopy perturbation approach	Online	18:15-18:30		
Parthkumar P. Sattanpara , Ramakanta Meher	Semi-analytical Homotopy approach to solve time-fractional Fisher equation using Shehu transformation	Online	18:30-18:45		
Vishalkumar Prajapati and Ramakanta Meher	Solution of non-linear fractional partial differential equations using a robust homotopy analysis approach via fractional complex transform	Online	18:45-19:00		
Ajay Kumar and Ramakanta Meher	Analytical study for solving non-linear fractional partial differential equations by using a new robust approach q-HAShTM	Online	19:00-19:15		
<b>Contributory Talks Parallel Session 16 (Applications)</b>		<b>July 02, 2022 (17:45-19:15)</b>		<b>Venue: M-111 (Maths Department)</b>	
<b>Session Chair:</b>					
<b>Name</b>	<b>Title</b>	<b>Mode</b>	<b>Timings</b>		
Shivam Rawat, Rashmi Saini	Delineation of water bodies' and mapping up of flood damages using sentinel-2 dataset in Gopalganj sub district of Bihar, India	Online	17:45-18:00		
Sinumol S, Prof.Sunil Kumar R	Leverage center of some graphs	Online	18:00-18:15		
Sunita Kumawat, Subhrat Praharaj, Sumit Kumar Vishwakarma	Dynamics of torsional surface waves in a threefold concentric compounded cylinder with uneven interface	Online	18:15-18:30		
Md Arzoo Jamal and Santwana Mukhopadhyay	Improved fixed-time stability of Cohen-Grossberg BAM neural networks with impulsive effects	Online	18:30-18:45		

Komal Jangid and Santwana Mukhopadhyay	A domain of influence theorem under MGT thermoelasticity theory	Online	18:45-19:00
Bhagwan Singh and Santwana Mukhopadhyay	On the fundamental solutions for the strain and temperature rate-dependent generalized thermoelasticity theory	Online	19:00-19:15
<b>Contributory Talks Parallel Session 17 (Numerical Analysis) July 03, 2022 (11:45-13:30) Venue: H-601 (HSS Dept Building)</b>			
<b>Session Chair:</b>			
<b>Name</b>	<b>Title</b>	<b>Mode</b>	<b>Timings</b>
Munish Kansal, Litika Rani	New fourth-order derivative-free class to obtain multiple zeros and its dynamics	Online	11:45:12:00
Jai Tushar, Anil Kumar , Sarvesh Kumar	Virtual element methods for general linear elliptic interface problems on polygonal meshes with small edges	Online	12:00-12:15
Komal , Devendra Kumar	Fourth-order compact scheme for a mathematical model for the growth of tumors with moving boundaries	Online	12:15-12:30
Komal Deswal, Devendra Kumar	An Efficient Numerical Scheme to Investigate the Price and Greeks of Multi-Asset Options	Online	12:30-12:45
Sheetal Chawla , S. Chandra Sekhara Rao	Parameters-uniform numerical method for systems of singularly perturbed steady state convection-diffusion equations having boundary layers	Online	12:45-13:00
K.Sudar Mozhi and D.Iranian	Radiation effects on free convective flow past a vertical plate with variable viscosity and thermal conductivity: A Finite Difference Analysis	Online	13:00-13:15
Mani Sandeep Kumar Mylapalli, Rajesh Kumar Palli, Ramadevi Sri	Optimal Eighth Order Iterative Method to Solve Non-linear Equations	Online	13:15-13:30
<b>Contributory Talks Parallel Session 18 (Numerical Analysis) July 03, 2022 (11:45-13:15) Venue: M-602 (Mathematics Dept Building)</b>			
<b>Session Chair:</b>			
<b>Name</b>	<b>Title</b>	<b>Mode</b>	<b>Timings</b>
S. Chandra Sekhara Rao and Abhay Kumar Chaturvedi	Parameters-uniform convergence analysis of a numerical technique for a coupled system of $m(\geq 2)$ singularly perturbed parabolic semilinear reaction–diffusion equations having interior and boundary layers	Online	11:45:12:00

Munish Kansal, Himani Sharma	A derivative-free iterative family with memory for solving nonlinear equations and its dynamics	Online	12:00-12:15
Prof.Ravinder Kumar	Comparative study of 3-D Blasius and Sakiadis flow of Casson nanofluid in presence of heat source/sink	Online	12:15-12:30
Dalmalka Praveen kumar and Yadagiri Rameshwar	Numerical Computation of Incompressible Fluid Flows in Two-sided, Three-Sided, Four-Sided 2D Lid-Driven Cavities by the Projection Method	Online	12:30-12:45
Dalmalka Praveen kumar and Yadagiri Rameshwar	Simulation of Lid-Driven Cavity Flows with Internal Square and Rectangle Obstacles using Pressure Correction Method	Online	12:45-13:00
Yashveer Kumar, Vineet Kumar Singh	Numerical wavelet tau approximation scheme for distributed order fractional differential equations	Online	13:00-13:15
<b>Contributory Talks Parallel Session 19 (Differential Equation) July 03, 2022 (11:45-13:30) Venue: M-205 (Mathematics Dept Building)</b>			
<b>Session Chair:</b>			
<b>Name</b>	<b>Title</b>	<b>Mode</b>	<b>Timings</b>
Suprova Ghosh, Debdas Ghosh	Exact Penalization Property via gH-Mordukhovich Subdifferential and its Application on Analysing the Asymptotic Behaviour of Newton-Like Interval Dynamical System	online	11:45:12:00
Sapna Baluni	Lagrange $\alpha$ -exponential synchronization of non- identical fractional-order complex-valued neural networks	Online	12:00-12:15
Denis Fernandes	Global solutions and attractors for abstract differential equations with state-dependent delay	Online	12:15-12:30
James Viji and Velu Muthulakshmi	Oscillatory behavior of $\psi$ -Hilfer generalized proportional fractional differential equation with mixed nonlinearities	Online	12:30-12:45
Jyoti and Mandeep Singh	An iterative technique for solving a class of nonlinear three-point BVPs	Online	12:45-13:00
Pooja Gautam, Anurag Shukla	Stochastic controllability of semilinear fractional control systems with monotonic nonlinearity	Offline	13:00-13:15
M. Shafiya, G. Nagamani	Robust passivity of fractional-order neural networks with distributed delay via LMI approach	Online	13:15-13:30



**Contributory Talks Parallel Session 20 (Applications)****July 03, 2022 (11:45-13:30)****Venue: M-111 (Maths Department)****Session Chair:**

<b>Name</b>	<b>Title</b>	<b>Mode</b>	<b>Timings</b>
Rashmi Saini	Extreme Gradient Boosting for Sugarcane Crop Classification in a Heterogeneous Agricultural Environment Using Satellite Imagery	online	11:45:12:00
Lalchand Verma , Ramakanta Meher	Analytical investigation of one-dimensional fuzzy heat equation on double parametric fuzzy number	Online	12:00-12:15
A. Karnan, G. Nagamani.	Synchronization and robust synchronization of neural networks with additive delays via some new approaches	Online	12:15-12:30
Kajal Rani, S. Chakraverty	Deep Convolutional Neural Network-Based COVID-19 Detection from Chest X-ray Images	Online	12:30-12:45
A. Krishna rao, G. Srinivas, Y. Rameshwar	Nonlinear convection in dielectric fluids	Online	12:45-13:00
Harindri Chaudhary	Adaptive Projective Synchronization among Chaotic Hamiltonian Systems	Online	13:00-13:15
Arup Kumar Sahoo, S. Chakraverty	Wavelet Neural Network-based Approach to Solve Nervous Stomach TFM Model	Online	13:15-13:30

**Contributory Talks Parallel Session 21 (Modelling)****July 03, 2022 (11:45-13:30)****Venue: H-205 (HSS Dept Building)****Session Chair:**

<b>Name</b>	<b>Title</b>	<b>Mode</b>	<b>Timings</b>
Kanisha Pujaru, , Anupam Khatua , T. K. Kar	Dynamics of a critical depensation model with switching in harvesting strategy	Online	11:45:12:00
Rakesh Medda	Chaos in a nonautonomous model for the impact of media on disease outbreak	Online	12:00-12:15
Abhay Srivastava and Nilam	The Role of Strong and weak antivirus in the computer virus propagation model	Online	12:15-12:30
Anil Kumar Rajak and Nilam	Fractional-Order SIR Epidemic Model with Nonmonotonic Incidence and Saturated Treatment Rate	Online	12:30-12:45
Rajni and Bapan Ghosh	Multistability, Chaos and Mean Population Density in a Discrete-time Predator-prey System	Online	12:45-13:00
Ashutosh Upadhayay, Prof. Debas Ghosh	A Multi-objective Approach to Optimal Control for an SIR Epidemiological Model of Vaccination and Treatment	Online	13:00-13:15

Himanshu Dhumrash, Rakesh Kr. Bajaj	Machine learning Decision making processes using novel picture fuzzy (R-S)-Norm Discriminant Measure	Online	13:15-13:30
<b>Contributory Talks Parallel Session 22 (Modelling)</b>			
<b>July 03, 2022 (11:45-13:30)</b>		<b>Venue: M-206 (Mathematics Dept Building)</b>	
<b>Session Chair:</b>			
Name	Title	Mode	Timings
Nitesh Kumawat ,Amit Chakraborty	Site Density Functional Theory and Structural Bioinformatics Analysis of the SARS-CoV Spike Protein and hACE2 Complex.	Online	11:45-12:00
Tarun De , Ashok Das, Jitendra Kumar	Mechanistic model to predict the collision behaviour of resolved and coarse-grained systems	Online	12:00-12:15
Toufik Hossain and Prof.Sudip Mishra	Stability analysis of prey-predator model with delay terms	Online	12:15-12:30
Haresh P. Jani and Twinkle R. Singh	Hybrid analytical method for solving time fractional Swift Hohenberg equation	Online	12:30-12:45
B. P. Sarangi and S. N. Raw	Stability and dynamics of a food chain model with Beddington-DeAngelis functional response	Online	12:45-13:00
Jeshua Rajan1, G.Jeyakumar	Mathematical Analysis of SEIQR Model for COVID-19 Disease Containing Self-protection and Quarantine	Online	13:00-13:15
N. C. Pati and Bapan Ghosh	Effects of time delay in a bistable predator-prey system	Online	13:15-13:30