

**Titles and Abstracts
(Poster Presentations)**

Presenter: *Chhaya Gangwal, B.B.M. College, Agartala, Tripura*

Title: *Intuitionistic fuzzy set theory*

Abstract: In this presentation, the intuitionistic fuzzy rough relational database model is presented. The notion of indiscernibility from rough set theory coupled with the idea of membership and non-membership values from intuitionistic fuzzy set theory is utilized.

Presenter: *Deepti Seth, Uttar Pradesh Techninical University*

Title: *Mathematical Modeling of Transport Phenomena in the Eye*

Abstract: Intraocular transport phenomena are vital physiological processes governing fluid and solute coupled fluid exchanges, and homeostasis of the ocular system. The flow phenomena of the intraocular fluid, the transport of nutrients and removal of metabolites are essential for the survival of various ocular components and for the visual function of the eye. These processes under pathological conditions contribute to development of a variety of ocular diseases such as glaucoma corneal edema, retinal pigmentosa, age related maculopathy. Besides, some of the ocular diseases tend to affect these transport phenomena, adversely creating an environment suitable for development of some pathological states, secondary to the earlier ones. Moreover the knowledge of the properties of interfacing systems and the complete understanding of basic mechanism of various ocular phenomena and of the systems in which the processes occur is required for the development of more effective and viable diagnostic procedures and therapeutic tools to treat the ocular diseases.

Presenter: *Garima Tomar, Central University of Rajasthan, Ajmer*

Title: *Escaping sets and their properties*

Abstract: In dynamical system escaping sets is an interesting concept as we deal with the points which go to infinity after a number of iterations. It is denoted by $I(f)$. Mathematically

$$I(f) = \{z \in C : f^n(z) \rightarrow \infty \text{ as } n \rightarrow \infty\}.$$

Moreover we also discuss fast escaping sets which includes the points which go to infinity as fast as possible. Mathematically

$$A(f) = \{z : \text{there exists } L \in \mathbb{N} \text{ such that } |f^{n+L}(z)| \geq M^n(R, f)\}$$

Here boundary of $I(f)$ as well as $A(f)$ is Julia set. and some intricate structure formation occurs with imposed conditions on these sets namely SpiderSerre spectral sequences we have been able to show that the group G can act freely on mod 2 cohomology k -sphere only when $k = 4n - 1$. If X is a mod 2 cohomology real projective space or mod p cohomology lens space, p an odd prime then we have shown that G cannot act freely on X .

Presenter: *Gayathri Varma, NIT Calicut, Kerala*

Title: *On Multi-fuzzy Rough Sets*

Abstract: Rough sets have been invented to cope with uncertainty and to deal with intelligent systems characterized by insufficient and incomplete information. This paper proposes a general framework for the study of relation based multi-fuzzy rough approximation operators. An arbitrary multi-fuzzy relation is used to approximate multi-fuzzy sets. A pair of lower and upper rough approximation operators is hence obtained and basic properties of these approximation operators are examined. By introducing the cut sets of multi-fuzzy sets, we studied the connections between multi-fuzzy rough approximation operators and crisp approximation operators.

Presenter: *Jaspreet Kaur, University of Delhi*

Title: *On the Existence of Free Action of the Group S^3 on Certain Finitistic Mod p Cohomology Spaces.*

Abstract: It has been an interesting problem in the theory of transformation groups to determine the groups which can act freely on spheres, projective spaces, and lens spaces and in case of free action, find the orbit spaces. Many mathematicians such as Milnor, Madsen, Thomas, Wall, Swan, to name a few, have contributed to this problem. We have investigated the possibility of free actions of the group $G = S^3$ on a finitistic mod p cohomology spheres, real projective spaces and lens spaces. Using the Leray Serre spectral sequences we have been able to show that the group G can act freely on mod 2 cohomology k -sphere only when $k = 4n - 1$. If X is a mod 2 cohomology real projective space or mod p cohomology lens space, p an odd prime then we have shown that G cannot act freely on X .

Presenter: *Jyoti Talwar, University of Delhi*

Title: *Spline in Compression method for non-linear two point boundary value problems on a geometric mesh*

Abstract: In this, we present a new method of order four, based on spline in compression approximation for the numerical solution non-linear of two-point boundary value problems, on uniform mesh. The method is extended to non-uniform mesh. Derivation and the convergence analysis of the proposed method are discussed, and numerical results are provided to illustrate the usefulness of the proposed method.

Presenter: *Loyimee Gogoi, Dibrugarh University, Assam*

Title: *A New Value for Cooperative games*

Abstract: In this paper, we introduce a new solution concept for Cooperative games, which fall under the broad discipline of Game Theory- a branch of Applicable Mathematics. We characterize our solution with standard game theoretic axioms. Our model applies to cost sharing problems that discourage the role of a middleman.

Presenter: *Mami Sharma, Tezpur University, Assam*

Title: *An overview of fuzzy normed linear spaces*

Abstract: I would like to show the evolution of fuzzy functional analysis through the notion of fuzzy normed linear spaces (FNLS). I would also like to show the development as well as gaps in the theory of FNLS in comparison to the classical normed linear spaces and we are attempting

to span that difference in our research work.

Presenter: *Mansi, University of Delhi*

Title: *Approximate solutions in set-valued optimization problems*

Abstract: In this paper, notions of approximate solutions for a set-valued optimization problem using two approaches are considered. For both the solution concepts, existence and scalarization results using extensions of Gerstewitz's function are also provided in this paper.

Presenter: *Megha Sharma, University of Delhi*

Title: *Approximate optimality conditions, duality in vector optimization problem over cones.*

Abstract: In this paper, we obtain the necessary and sufficient approximate optimality conditions for a vector optimization problem over cones involving sub-arcwise cone connected, quasi cone connected and pseudo cone connected functions. We introduce the concept of approximate saddle point and derive the approximate saddle point theorems. Consequently, approximate mixed type dual is formulated and duality theorems have been established in terms of approximate quasi efficient solutions of the vector optimization problem over cones.

Presenter: *Neha Bhatia, Daulat Ram College, University of Delhi*

Title: *Composition and weighted composition operators on Generalized Lorentz-Zygmund spaces.*

Abstract: In this paper, T inducing the composition operator on the generalized Lorentz-Zygmund space (GLZ) has been studied. The generalization of the composition operator on the GLZ space is also studied. Various properties like boundedness, compactness and closed range of these operators are explored on this space.

Presenter: *Pallavi Jain, Dayalbagh Educational Institute, Agra, U.P.*

Title: *Some Results on the Cyclic Cutwidth Minimization Problem*

Abstract: Cyclic Cutwidth (ccw) Minimization Problem consists of embedding a graph onto a cycle such that the maximum cut in a region is minimized. We have proved exact results of ccw for some standard classes of graphs and also upper bounds for some classes of graphs.

Presenter: *Parangama Sarkar, IIT Bombay, Maharashtra*

Title: *Hilbert polynomials of multigraded filtrations of ideals*

Abstract: Hilbert functions and Hilbert polynomials of Z^s -graded admissible filtrations of zero-dimensional ideals are studied. A formula for the difference of the Hilbert polynomial and Hilbert function in terms of local cohomology of the extended Rees algebra of the filtration is proved which is used to obtain sufficient linear relations among coefficients of the Hilbert polynomial the Hilbert function is same as Hilbert polynomial for all n in N^s . A theorem of Rees about joint reductions of the filtration $I^r J^s$ is generalised for admissible filtrations of ideals in two dimensional Cohen-Macaulay local rings. Necessary and sufficient conditions are provided for the multi- Rees algebra of an admissible Z^2 -graded filtration F to be Cohen-Macaulay.

Presenter: *Poonam Redhu, IIT Ropar, Punjab*

Title: *A basic introduction of traffic flow*

Abstract: I will discuss about some basic about traffic flow and what is need of study of traffic flow modelling. I introduced the types of modelling approaches to model the traffic flow. Particularly, I will talk about lattice hydrodynamic model and describe the traffic jam in term of kink-antikink density waves.

Presenter: *Shijina V., NIT Calicut, Kerala*

Title: *Aggregation Operations on Multiple Sets*

Abstract: As an approach towards the vagueness and multiplicity, a new mathematical model, called multiple sets, are introduced. It is noticed that multiple sets are generalization of fuzzy sets, fuzzy multisets, multi fuzzy sets and multisets. It is, also noticed that multiple sets are special types of L-fuzzy sets. Standard set operations, namely, complement, union, intersection are defined on multiple sets. Aggregation operations on multiple sets are defined and their properties are explored.

Presenter: *Vanita, Central University of Rajasthan*

Title: *Effect of Radial magnetic field on natural convective flow in vertical concentric annuli*

Abstract: In our study, the effect of radial magnetic field on natural convective flow in vertical annuli has been analysed. The induced magnetic field has also been taken into account and we have imposed derivative type boundary conditions on induced magnetic field. The effect of the Hartmann number and Buoyancy force distribution on the fluid velocity, induced magnetic field and temperature profile have been analysed by using the graphs. The effect of Hartmann number is to decrease the magnitude of maximum value of the velocity and induced magnetic field increases. The effect of buoyancy force distribution parameter is opposite to that of Hartmann number.