

STEADY THREE-DIMENSIONAL HYDROMAGNETIC STAGNATION POINT FLOW TOWARDS A STRETCHING SHEET WITH HEAT GENERATION

Hazem Ali Attia

An analysis is made of the steady hydromagnetic laminar three dimensional stagnation point flow of an incompressible viscous fluid impinging on a permeable stretching sheet with heat generation or absorption. A uniform magnetic field is applied normal to the plate which is maintained at a constant temperature. Numerical solution for the governing nonlinear momentum and energy equations is obtained. The effect of the strength of the uniform magnetic field, the surface stretching velocity, and the heat generation/absorption coefficient on both the flow and heat transfer is presented and discussed. (pp. 9-18)

TRANSIENT MHD COUETTE FLOW OF A CASSON FLUID BETWEEN PARALLEL PLATES WITH HEAT TRANSFER

Hazem Ali Attia, Mohamed Eissa Sayed-Ahmed

The unsteady magnetohydrodynamic flow of an electrically conducting viscous incompressible non-Newtonian Casson fluid bounded by two parallel non-conducting porous plates is studied with heat transfer considering the Hall effect. An external uniform magnetic field is applied perpendicular to the plates and the fluid motion is subjected to a uniform suction and injection. The lower plate is stationary and the upper plate is suddenly set into motion and simultaneously suddenly isothermally heated to a temperature other than the lower plate temperature. Numerical solutions are obtained for the governing momentum and energy equations taking the Joule and viscous dissipations into consideration. The effect of the Hall term, the parameter describing the non-Newtonian behavior, and the velocity of suction and injection on both the velocity and temperature distributions are studied. (pp. 19-38)

TWO-DIMENSIONAL WAVELETS FOR NONLINEAR AUTOREGRESSIVE MODELS WITH AN APPLICATION IN DYNAMICAL SYSTEM

H. Doosti, M.S. Islam, Y.P. Chaubey, P. Góra

In this note we introduce a new estimator for estimating autoregressive model function based on two-dimensional wavelet expansion of joint density function. We investigate some asymptotic properties of the proposed estimator. We also added the problem of estimating of derivative of autoregressive estimator through new approach. Finally, we apply our method in dynamical systems. In particular, we estimate a chaotic map from a noisy data and filter entropy of the chaotic map. (pp. 39-62)

ON PERIODIC SOLUTIONS FOR NESTED POLYGON PLANAR $2N+1$ -BODY PROBLEMS WITH ARBITRARY MASSES

Liu Xuefei, Zhang Shiqing, Luo Jianmei

In this paper we study some necessary conditions and sufficient conditions for the nested periodic polygon solutions of planar $2N+1$ -body problem, in which N -body lie at the vertex of one regular polygon, other N -body lie at the vertex of another regular polygon with a running angle, and $2N+1$ th body lies at their geometrical center (origin) of $2N$ -body. (pp. 63-80)

ON GENERALIZED PRE-CLOSURE SPACES AND SEPARATION FOR SOME SPECIAL TYPES OF FUNCTIONS

Miguel Caldas, Erdal Ekici, Saeid Jafari

In this paper, we show that a pointwise symmetric pre-isotonic pre-closure functions is uniquely determined by the pairs of sets it separates. We then show that when the pre-closure function of the domain is pre-isotonic and the pre-closure function of the codomain is pre-isotonic and pointwise-pre-symmetric, functions which separate only those pairs of sets which are already separated are pre-continuous. (pp. 81-90)

CERTAIN SUBCLASSES OF ANALYTIC FUNCTIONS INVOLVING SĂLĂGEAN OPERATOR

J.K. Prajapat, R.K. Raina

The familiar Sălăgean operator is used here to define a new subclass of analytic and univalent functions in the open unit disk \mathbb{U} . In this note we obtain some sufficient conditions for functions belonging to this class and mention few important consequences of our main results. (pp. 91-98)

FUZZY STABILITY OF QUARTIC MAPPINGS

Alireza Kamel Mirmostafae

We establish some stability results concerning the quartic functional equation

$$f(2x + y) + f(2x - y) = 4f(x + y) + 4f(x - y) + 24f(x) - 6f(y)$$

in the setting of fuzzy normed spaces that in turn generalize a Hyers–Ulam stability result in the framework of classical normed spaces. (pp. 99-106)

SOME RESULTS ON NON-COMMUTING GRAPH OF A FINITE GROUP

M.R. Darafsheh, H. Bigdely, A. Bahrami, M. Davoudi Monfared

Let G be a finite non-abelian group. We define a graph Γ_G , called the non-commuting graph of G , with vertex set $G - Z(G)$ such that two vertices x and y adjacent if and only if $xy \neq yx$. In this paper some results on the number of edges of Γ_G and also its chromatic number are obtained in general. For some special group G we will prove that if H is a group such that $\Gamma_G \cong \Gamma_H$, then $|G| = |H|$ and in some cases $G \cong H$. (pp. 107-118)

HYPER K -ALGEBRAS INDUCED BY A DETERMINISTIC FINITE AUTOMATON

M. Golmohamadian, M.M. Zahedi

In this note first we define a hyper K -algebra S on the states of a deterministic finite automaton. Then we obtain some commutative hyper K -ideals of types 3, 4, 5, 6 and 9 and also positive implicative hyper K -ideals of types 1, 2, 3, 4, 5, 6, 7, 8 and 9 of S . Also we prove some theorems and obtain some results, to show that some properties of this hyper K -algebra. Then we define another hyper K -algebra on the states of a deterministic finite automaton which is simple and normal. Finally, we introduce a hyper K -algebra on the set of all equivalence classes of an equivalence relation on states. (pp. 119-140)

COMMON FIXED POINT FOR LIPSCHITZIAN MAPPING SATISFYING RATIONAL CONTRACTIVE CONDITIONS

Mujahid Abbas

Common fixed point theorems for a class of mappings called occasionally weakly compatible in a symmetric space (X, d) under Lipschitzian type rational contractive conditions are obtained. (pp. 141-146)

FUZZY MINIMAL STRUCTURES AND FUZZY MINIMAL SUBSPACES

Mohammad Javad Nematollahi, Mehdi Roohi

At the present paper, the notions of induced fuzzy minimal structures, fuzzy minimal subspaces and relatively fuzzy minimal continuous functions are introduced and studied. (pp. 147-156)

INTERVAL-VALUED INTUITIONISTIC FUZZY SUBSEMIMODULES WITH (S, T) -NORMS

H. Hedayati

On the basis of the concept of the interval valued intuitionistic fuzzy sets introduced by K. Atanassov, the notion of interval valued intuitionistic fuzzy subsemimodule of a semimodule with respect to t -norm T and s -norm S is given and the characteristic properties are described. The homomorphic image and inverse image are investigated. In particular, by the help of the congruence relations on semimodules, new interval valued intuitionistic (S, T) -fuzzy subsemimodules are constructed. (pp. 157-166)

α -GENERALIZED-CONVERGENCE THEORY OF L -FUZZY NETS AND ITS APPLICATIONS

Bin Chen

The convergence theory not only is a significantly basic theory of fuzzy topology and fuzzy analysis but also has wide applications in fuzzy inference and some other aspects. In this paper, we introduce the concept of α -generalized-remote-neighborhood of fuzzy points and establish the Moore-Smith α -generalized-convergence theory of L -fuzzy nets. Then, we introduce and study the concept of L -fuzzy α -generalized-irresolute mappings and L -fuzzy α -generalized compactness. Also we discuss the applications of α -generalized-convergence of L -fuzzy nets. (pp. 167-178)

CERTAIN TRANSFORMATION AND SUMMATION FORMULAE FOR q -SERIES

Remy Y. Denis, S.N. Singh, S.P. Singh

In this paper, making use of certain summation formulae, an attempt has been made to establish certain new and interesting transformation and summation formulae for q -series. (pp. 179-190)

A NOTE ON CONTINUED FRACTIONS AND ${}_3\psi_3$ SERIES

Maheshwar Pathak, Pankaj Srivastava

The present paper concerns with the continued fraction representation for ${}_3\psi_3$ basic bilateral hypergeometric series. Several special cases are also discussed. (pp. 191-200)

A CONNECTION BETWEEN CATEGORIES OF (FUZZY) MULTIALGEBRAS AND (FUZZY) ALGEBRAS

R. Ameri, T. Nozari

The purpose of this paper is study the relationship between the categories of fuzzy multialgebras and crisp algebras. In this regards first we briefly study the categories of multialgebras and fuzzy multialgebras and then by using the fundamental relation of multialgebras we construct a functor from category of fuzzy multialgebras to the category of fuzzy algebras and hence. Hence it can be derived a fuzzy algebra from every fuzzy multialgebras through the fundamental relation. (pp. 201-208)

LIPSCHITZ ESTIMATES FOR MULTILINEAR COMMUTATOR OF LITTLEWOOD-PALEY OPERATOR

Ying Shen, Lanzhe Liu

In this paper, we will study the continuity of multilinear commutator generated by Littlewood-Paley operator and the functions b_j on Triebel-Lizorkin space, Hardy space and Herz-Hardy space, where the functions b_j belong to Lipschitz space. (pp. 209-224)

A FUNCTIONAL ASSOCIATED WITH TWO BOUNDED LINEAR OPERATORS IN HILBERT SPACES AND RELATED INEQUALITIES

S.S. Dragomir

In this paper, several inequalities for the functional

$$\mu(A, B) := \sup_{\|x\|=1} \{\|Ax\| \|Bx\|\}$$

under various assumptions for the operators involved, including operators satisfying the uniform (α, β) -property and operators for which the transform $C_{\alpha, \beta}(\cdot, \cdot)$ is accretive, are given. (pp. 225-240)

GENERALIZATION OF GOLDBACH'S CONJECTURE AND SOME SPECIAL CASES

Ioannis Mittas

Concerned with Goldbach's conjecture, we accomplished a generalization that we called *generalized Goldbach's conjecture* and proved their equivalency. However, the generalized Goldbach's conjecture reveals a new direction for a potential generalized proof. In this paper we prove both claims for certain cases. (pp. 241-254)

STRONG COLOURINGS OF HYPERGRAPHS

Sandro Rajola, Maria Scafati Tallini

We define a new method of colouring for a hypergraph, in particular for a graph. Such a method is as usual meant as a partition of a hypergraph, in particular of a graph. However, it is more intrinsically linked to the geometric structure of the hypergraph and therefore enables us to obtain stronger results than in the classical case. For instance, we prove theorems concerning 3-colourings, 4-colourings and 5-colourings, while we have no analogous results in the classical case. Moreover, we prove that there are no semi-hamiltonian regular simple graphs of positive degree admitting a hamiltonian 1-colouring. Finally, we characterize the above graphs admitting a hamiltonian 2-colouring and a hamiltonian 3-colouring. (pp. 255-272)

***p*-FUZZY HYPERGROUPS AND *p*-FUZZY JOIN SPACES OBTAINED FROM *p*-FUZZY HYPERGRAPHS**

Yuming Feng

We construct a fuzzy hyperoperation from a *p*-fuzzy hypergraph and then use it to construct a *p*-fuzzy hypergroup and a *p*-fuzzy join space. Also, we study generalizations of this fuzzy hyperoperation.

(pp. 273-280)

FUZZY LIE IDEALS OVER A FUZZY FIELD

M. Akram, K.P. Shum

The concept of fuzzy Lie ideals of a Lie algebra over a fuzzy field is introduced and some fundamental properties of such fuzzy Lie ideals are given. We then characterize the Artinian and Noetherian Lie algebras by considering their fuzzy Lie ideals over a fuzzy field.

(pp. 281-292)

ON A FINER TOPOLOGICAL SPACE THAN τ_θ AND SOME MAPS

E. Ekici, S. Jafari, R.M. Latif

In 1943, Fomin [7] introduced the notion of θ -continuity. In 1966, the notions of θ -open subsets, θ -closed subsets and θ -closure were introduced by Veličko [18] for the purpose of studying the important class of H -closed spaces in terms of arbitrary filterbases. He also showed that the collection of θ -open sets in a topological space (X, τ) forms a topology on X denoted by τ_θ (see also [12]). Dickman and Porter [4], [5], Joseph [11] continued the work of Veličko. Noiri and Jafari [15], Caldas et al. [1] and [2], Steiner [16] and Cao et al [3] have also obtained several new and interesting results related to these sets. In this paper, we will offer a finer topology on X than τ_θ by utilizing the new notions of ω_θ -open and ω_θ -closed sets. We will also discuss some of the fundamental properties of such sets and some related maps.

(pp. 293-304)

HOMOMORPHISMS AND EPIMORPHISMS OF SOME HYPERGROUPS

W. Phanthawimol, Y. Kemprasit

By a *homomorphism* of a hypergroup (H, \circ) we mean a function $f : H \rightarrow H$ satisfying $f(x \circ y) \subseteq f(x) \circ f(y)$ for all $x, y \in H$. A homomorphism f of a hypergroup (H, \circ) is called an *epimorphism* if $f(H) = H$. For a hypergroup (H, \circ) , denote by $\text{Hom}(H, \circ)$ and $\text{Epi}(H, \circ)$ the set of all homomorphisms and the set of all epimorphisms of (H, \circ) , respectively. For a positive integer n , let (\mathbb{Z}, \circ_n) be the hypergroup where $x \circ_n y = x + y + n\mathbb{Z}$ for all $x, y \in \mathbb{Z}$. In this paper, we characterize the elements of $\text{Hom}(\mathbb{Z}, \circ_n)$ and $\text{Epi}(\mathbb{Z}, \circ_n)$. In addition, we show that $|\text{Hom}(\mathbb{Z}, \circ_n)| = |\text{Epi}(\mathbb{Z}, \circ_n)| = 2^{\aleph_0}$.

(pp. 305-312)

ON HOMOMORPHISMS OF SOME MULTIPLICATIVE HYPERRING

M. Kaewneam, Y. Kemprasit

A *homomorphism* of a multiplicative hyperring $(A, +, \circ)$ is a function $f : A \rightarrow A$ satisfying the conditions $f(x + y) = f(x) + f(y)$ and $f(x \circ y) \subseteq f(x) \circ f(y)$ for all $x, y \in A$. Denote by $\text{Hom}(A, +, \circ)$ and $\text{Hom}(A, +)$ the set of all homomorphisms of the multiplicative hyperring $(A, +, \circ)$ and the set of all homomorphisms of the group $(A, +)$. Then $\text{Hom}(A, +, \circ) \subseteq \text{Hom}(A, +)$. It is known that if $(R, +, \cdot)$ is a ring and I is an ideal of R , then $(R, +, \circ)$ is a strongly distributive hyperring where $x \circ y = xy + I$ for all $x, y \in R$, and we shall write $(R, +, I)$ for $(R, +, \circ)$. The purpose of this paper is to prove the following results for positive integers m, n : $\text{Hom}(\mathbb{Z}, +, m\mathbb{Z})$ is infinite. $\text{Hom}(\mathbb{Z}, +, m\mathbb{Z}) = \text{Hom}(\mathbb{Z}, +)$ if and only if $m \leq 2$. If $m > 2$, then $\text{Hom}(\mathbb{Z}, +) \setminus \text{Hom}(\mathbb{Z}, +, m\mathbb{Z})$ is infinite. If $(m, n) > 1$, then $|\text{Hom}(\mathbb{Z}_n, +, m\mathbb{Z}_n)| \geq \frac{2n}{(m, n)}$. $\text{Hom}(\mathbb{Z}_n, +, m\mathbb{Z}_n) = \text{Hom}(\mathbb{Z}_n, +)$ if and only if $(m, n) \leq 2$. If $(m, n) > 2$, then $|\text{Hom}(\mathbb{Z}_n, +) \setminus \text{Hom}(\mathbb{Z}_n, +, m\mathbb{Z}_n)| \geq \frac{n}{(m, n)}$.

(pp. 313-320)

UPPER TOPOLOGICAL GENERALIZED GROUPS

F.H. Ghane, Z. Hamed

Here, we introduce the notion of generalized universal covers for topological generalized groups and present a method for constructing new topological generalized groups by using of universal covers. As a result a generalization of notion of fundamental groups which is called the generalized fundamental groups is deduced. (pp. 321-332)

ANALYSIS OF A TWO-STEP METHOD FOR NUMERICAL SOLUTION OF FUZZY ORDINARY DIFFERENTIAL EQUATIONS

M. Sh. Dahaghin, M. Mohseni Moghadam

Recently, fuzzy initial value problems or fuzzy differential equations have received considerable amount of attentions ([3], [4] and [5]). In all of them, one-step numerical methods have been considered, but in this paper we have a *two-step method* for solving fuzzy ordinary differential equations. In the first section, we present the necessary and introductory materials to deal with the fuzzy initial value differential equations. In the second section, a modified two-step Simpson method and the corresponding convergence theorem of our method are presented. In the last section, we will present an example of fuzzy differential equations. Our numerical results can compare with the results of the existing methods. (pp. 333-340)