

**BULLETIN OF THE  
ALLAHABAD MATHEMATICAL SOCIETY**

Vol. 24, Part 2, 2009

---

**CONTENTS**

**Alexandra Ciupa**

POSITIVE LINEAR OPERATORS FOR THE APPROXIMATION IN  
POLYNOMIAL WEIGHTED SPACES 233-240

**Abstract:** We consider a sequence of positive linear operators for the approximation of functions having a polynomial growth at infinity. We give results on the convergence of the considered sequence and we estimate the order of approximation of a function by these operators.

**Peng Meijun and Liu Lanzhe**

BOUNDEDNESS FOR VECTOR-VALUED MULTILINEAR INTEGRAL  
OPERATORS ON TRIEBEL-LIZORKIN SPACES 241-257

**Abstract:** In this paper, the boundedness for some vector-valued multilinear operators associated to certain integral operators on Triebel-Lizorkin spaces are obtained. The operators include Littlewood-Paley operators, Marcinkiewicz operators and Bochner-Riesz operator.

**Peter Danchev**

ON A  $p^\alpha$ -th POWER FORMULA IN MODULAR GROUP RINGS 259-262

**Abstract:** Let  $R$  be a commutative unital ring of prime characteristic  $p$  and  $G$  an Abelian group with  $p$ -component of torsion  $G_p$ . We prove that if  $G_p$  is nice in  $G$ , then the following formula for the normed  $p$ -component  $V_p(RG)$  and the idempotent subgroup  $Id(RG)$  in the group ring  $R(G)$  holds for any ordinal  $\alpha$ :

$$[V_p R(G) Id R(G)]^{p^\alpha} = V_p R^{p^\alpha}(G^{p^\alpha}) Id R(G^{p^\alpha}).$$

**K. K. Dixit and Vikas Chandra**

SOME FAMILIES OF NORMALIZED ANALYTIC FUNCTIONS  
WITH NEGATIVE COEFFICIENTS 263-280

**Abstract:** In the present paper, we introduce and study a certain subclass  $T_{m,n}^{\lambda,k}(\alpha, \beta, \gamma)$  of normalized analytic functions with negative coefficients by making use of familiar Salagean derivative operator. Coefficients estimates, inclusion properties associated with modified Hadamard products, class preserving integral operator are obtained for the class  $T_{m,n}^{\lambda,k}(\alpha, \beta, \gamma)$ . Finally, several applications involving some fractional calculus operators are also considered.

**A. A. Shaikh, T. Basu and K. K. Baishya**

ON THE EXISTENCE OF LOCALLY  $\phi$ -RECURRENT LP-SASAKIAN  
MANIFOLDS 281-295

**Abstract:** The object of the present paper is to provide the existence of locally  $\phi$ -recurrent LP-Sasakian manifolds with several non-trivial examples.

**P. K. Gupta, Jaideep Goyal and Rajesh Kumar**

POSTERIOR ANALYSIS OF THE QUEUE CHARACTERISTICS IN  
POWER SUPPLY SYSTEM MODEL

297-306

**Abstract:** With exponential arrival and service time distributions, the traffic intensity is defined as the ratio of the arrival rate to the service rate. This ratio is also known as availability ratio in reliability theory. The system can be improved if the experimenter has and is able to combine, the prior belief about the system with the experimental data. Pursuing these concepts, the present study deals with the analysis of posterior traffic intensity distribution for a power supply system. Time truncated arrival and service information and prior beliefs about the arrival and service rate of the system have been employed in the analysis.

**M. O. Olatinwo, O. O. Owojori and A. P. Akinola**

SOME RESULTS ON SEGMENTING KIRK-TYPE ITERATES

307-313

**Abstract:** In this paper, we introduce Kirk-Mann type and Kirk-Ishikawa type iteration processes for nonexpansive operators in uniformly convex Banach spaces. And strong convergence theorems are established for the new iterations in Banach space. Our results improve, extend and generalize those of [5, 8, 9, 10, 13, 14].

**S. Elumalai and B. Baskaran**

APPROXIMATION IN LINEAR 2-NORMED SPACES

315-325

**Abstract:** In this paper we provide some characterization theorems of best approximation in the context of linear 2-normed space  $(X, \|\cdot, \cdot\|)$ . We also provide some results on the properties of a closed hyperplane in the context of 2-normed space. We have

also extended the Riesz lemma in the context of linear 2-normed space. We also provide some results in unicity and strong unicity of best approximations.

**Sunita Deswal and Rajneesh Kumar**

MICROPOLAR ELASTIC WAVES IN A CYLINDRICAL BORE  
CONTAINING MICROPOLAR FLUID

327-340

**Abstract:** A problem of wave propagation in a cylindrical cavity filled with micropolar fluid and situated in a micropolar elastic medium of infinite extent is investigated. Frequency equation for surface wave propagation near the surface of the cylindrical bore is obtained, characterizing the dispersive nature of the wave. An earlier problem of Banerji and Sengupta has been deduced as a special case in this problem. The numerical results obtained from a magnesium crystal like material have been illustrated graphically to understand the behaviour of phase velocity versus wave number of the wave. The phase velocity in empty bore is found to be very small as compared to the bore filled with micropolar fluid.

**M. J. Rani**

ON THE LATTICE OF INTUITIONISTIC FUZZY IDEALS OF  
A LATTICE

341-352

**Abstract:** In this paper the notion of the intuitionistic fuzzy ideal of a lattice is investigated and its properties are studied. The images and pre images of intuitionistic fuzzy ideals under lattice homomorphism are discussed. Also we establish a correspondence between the families of intuitionistic fuzzy ideals of two homomorphic lattices.

**Ryûki Matsuda**

NOTE ON KRONECKER FUNCTION RINGS OF SEMISTAR  
OPERATIONS

353-362

**Abstract:** We give a direct proof for the fact that, for any semistar operation on an integral domain, the Kronecker function ring which was defined by M. Fontana, F. Halter-Koch and K.A. Loper is well-defined. Furthermore, we study results on e.a.b. semistar operations for any semistar operations.

**Abhishek Singh and P. K. Banerji**

ON WEIERSTRASS TRANSFORM OF TEMPERED BOEHMIANS 363-370

**Abstract:** Tempered Boehmians are introduced as a natural extension of tempered distribution. In this paper we have attempted for an extension of Weierstrass transform, which is, further studied for the tempered Boehmians.

**G. Satheesh Kumar and P. Dheena**

ON BI-IDEALS AND GS IDEALS OF SUBTRACTION SEMIGROUPS 371-380

**Abstract:** In this paper we introduce the notion of bi-ideals and generalized semi ideals in subtraction semigroup. The notion of po-regularity has been defined and characterizations for a subtraction semigroup to be po-regular has been obtained.

**Prem Chandra, S. S. Thakur and Ratna Verma**

APPROXIMATION OF FUNCTIONS IN  $L_p$ -NORM BY BOREL'S  
MEANS

381-386

**Abstract:** In this paper we take up the Borel exponential means to study the degree of approximation of an  $f \in \text{Lip}(a, p)$  under  $L_p$ -norm. Two theorems are given that improve upon some earlier results due to Holland, Mohapatra and Sahney [4]. One of our theorems provides the Jakson order estimate of the function.

**Peter Danchev**

A NOTE ON ISOTYPE SUBGROUPS OF  $S$ -GROUPS

387-390

**Abstract:** We show that each isotype weakly fully invariant subgroup of an  $S$ -group, which group is a countable extension of this subgroup, is also an  $S$ -group. This extends in some aspect a result due to Hill-Megibben (Math. Z., 1985) and somewhat answers a question raised by Warfield (Trans. Amer. Math. Soc., 1975).

**B. D. Acharya**

ROLE OF COGNITIVE BALANCE IN SOME NOTIONS OF GRAPH LABELINGS:  
INFLUENCE OF FRANK HARARY, FRIETZ HEIDER, GUSTAV  
KIRCHHOFF AND LEONHARD EULER

391-413

**Abstract:** A *social network* is viewed as a directed network  $N$  which consists of a finite set  $V$  of *vertices*, a set  $E$  of ordered pairs of distinct vertices called *arcs* each of which is associated with an  $n$ -tuple  $(a_1, a_2, a_3, \dots, a_n)$  of nonzero real numbers, called its *descriptor*, where, for each  $i \in \{1, 2, \dots, n\}$ ,  $a_i$  denotes the *intensity* of a *positive* or a *negative* sentiment expressed by the individual  $u$  to an individual  $v$  in the corresponding *dyad*  $\{u, v\}$  influenced

by the issue  $X_i$  of common concern.  $N$  is *balanced* (respectively, *cycle-balanced*) if the componentwise product of the  $n$ -tuples associated with the arcs in every semicycle (cycle) in  $N$  has all positive component values. This is the most recent form of the original definition of balance and cycle-balance given by Frank Harary way back in 1953 [28] following Friez Heider's seminal exposition of the phenomenon of *cognitive balance* in a *triad* (a social system consisting of three human individuals) in 1946 [35]. While the authors of [7] brought to light the point that the concept of balance is anticipated by Gustav Kirchhoff's Voltage Law (KVL) [43], Harary had asked this author whether such a connection of the balance principle could be linked to Leonard Euler's original notion of a connected 'even degree graph', or the famously called 'Eulerian graph'. The main objective of this paper is to exhibit existence of such a link *via* certain labeling schemes on graphs, digraphs and signed digraphs, which are not necessarily finite. Besides other results, a delightful gain in this effort has been a new extension of the notion of graceful graphs to the class of digraphs.

\*\*\*\*\*