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Anna Mućka

**SUBDIRECTLY IRREDUCIBLE FIBERED AUTOMATA,
PART 2**

Abstract. An earlier paper characterized all subdirectly irreducible permutational fibered automata. This paper characterizes all subdirectly irreducible fibered automata which are not permutational. The characterization is both graphtheoretical and algebraic.

G. Bińczak, J. Kaleta

**FINITE SIMPLE MONOGENIC ENTROPIC
QUASIGROUPS WITH QUASI-IDENTITY**

Abstract. In this paper we describe finite simple monogenic entropic quasigroups with quasi-identity.

Leszek Pysiak

**IMPRIMITIVITY THEOREM FOR
GROUPOID REPRESENTATIONS**

Abstract. We define and investigate the concept of the groupoid representation induced by a representation of the isotropy subgroupoid. Groupoids in question are locally compact transitive topological groupoids. We formulate and prove the imprimitivity theorem for such representations which is a generalization of the classical Mackey's theorem known from the theory of group representations.

M. Adil Khan, Marek Niezgoda, Josip Pečarić

**ON A REFINEMENT OF THE MAJORISATION
TYPE INEQUALITY**

Abstract. In this note, two mean value theorems are proved by using some recent results by Barnett et al. [N. S. Barnett, P. Cerone, S. S. Dragomir, *Majorisation inequalities for Stieltjes integrals*, Appl. Math. Lett. 22 (2009), 416-421]. A new class of Cauchy type means for two functions is studied. Logarithmic convexity for differences of power means is proved. Monotonicity of Cauchy means is shown.

Paulina Szczuka*

**MAXIMUMS OF UPPER SEMICONTINUOUS STRONG
ŚWIĄTKOWSKI FUNCTIONS**

Abstract. In this paper we characterize the family of the maximums of upper semicontinuous strong Świątkowski functions and we show that the family of all upper semicontinuous strong Świątkowski functions is not closed with respect to maximums.

Nasser-eddine Tatar, Abderrahmane Zraï

**EXPONENTIAL STABILITY AND BLOW UP FOR A
PROBLEM WITH BALAKRISHNAN–TAYLOR DAMPING**

Abstract. This work is devoted to the study of a nonlinear viscoelastic Kirchhoff equation with Balakrishnan–Taylor damping. We show that the weak dissipation produced by the memory term is strong enough to stabilize solutions exponentially. Also, we show that a nonlinear source of polynomial type is able to force solutions to blow up in finite time even in presence of a stronger damping.

Włodzimierz Fechner

**FUNCTIONAL EQUATIONS MOTIVATED
BY THE LAGRANGE'S IDENTITY**

Abstract. We solve two functional equations motivated by the following Lagrange's identity:

$$a_i b_i^2 = a_i^2 b_i^2 - \sum_{1 \leq i < j \leq n} (a_i b_j - a_j b_i)^2,$$

which is valid for every $n \in \mathbb{N}$ and each $a_1, \dots, a_n, b_1, \dots, b_n$ from a commutative ring.

Mehmet Şengönül

THE FUZZY BASIS OF THE SEQUENCE SPACE $\ell_p(\mathcal{F})$

Abstract. In 1989, Nanda introduced and discussed $\ell_p(\mathcal{F})$ space of sequences of fuzzy numbers, and various authors studied many different properties of the space $\ell_p(\mathcal{F})$. In the sequel of these studies, we have shown in this paper that the set $(E_k) = (E_0, E_1, E_2, \dots, E_k, \dots)$ is Schauder basis for $\ell_p(\mathcal{F})$ and dual space of the $\ell_p(\mathcal{F})$ is $\ell_q(\mathcal{F})$, where $p^{-1} + q^{-1} = 1$.

Barnabás Bede, Lucian Coroianu, Sorin G. Gal

APPROXIMATION BY TRUNCATED FAVARD–SZÁSZ–MIRAKJAN OPERATOR OF MAX-PRODUCT KIND

Abstract. Starting from the study of the *Shepard nonlinear operator of max-prod type* made by Bede et al. in 2006 and 2008, in the book of Gal in 2008 (Open Problem 5.5.4, pp. 324–326) the *Favard–Szász–Mirakjan max-prod type operator* is introduced and the question of the approximation order by this operator is raised. In the paper of Bede and Gal in 2010, an answer is given by obtaining a pointwise upper estimate of the approximation error of the form $C\omega_1(f; \sqrt{x}/\sqrt{n})$, with $C > 0$ unexplicit absolute constant. The aim of this note is to obtain the order of uniform approximation $C\omega_1(f; 1/\sqrt{n})$ (with $C = 6$) by another operator, much simpler and called *truncated Favard–Szász–Mirakjan operator of max-product kind* and to prove by a counterexample that in some sense, in general this type of order of approximation with respect to $\omega_1(f; \cdot)$ cannot be improved. In addition, for some subclasses of functions including, for example, the nondecreasing concave functions, the essentially better order $\omega_1(f; 1/n)$ is obtained. Finally, some shape preserving properties are proved.

Zoltán Finta

QUANTITATIVE ESTIMATES FOR THE LUPAŞ q-ANALOGUE OF THE BERNSTEIN OPERATOR

Abstract. We establish quantitative results for the approximation properties of the q-analogue of the Bernstein operator defined by Lupaş in 1987 and for the approximation properties of the limit Lupaş operator introduced by Ostrovska in 2006, via Ditzian-Totik modulus of smoothness. Our results are local and global approximation theorems.

Belmesnaoui Aqzzouz, Aziz Elbour

SEMI-COMPACTNESS OF ALMOST DUNFORD–PETTIS OPERATORS ON BANACH LATTICES

Abstract. We study the semi-compactness of positive Almost Dunford–Pettis (resp. the square of positive Almost Dunford–Pettis) operators on Banach lattices and we give some consequences.

Stanislav Shkarin

MIXING OPERATORS ON SPACES WITH WEAK TOPOLOGY

Abstract. We prove that a continuous linear operator T on a topological vector space X with weak topology is mixing if and only if the dual operator T' has no finite dimensional invariant subspaces. This result implies the characterization of hypercyclic operators on the space ω due to Herzog and Lemmert and implies the result of Bayart and Matheron, who

proved that for any hypercyclic operator T on ω , $T \oplus T$ is also hypercyclic.

Mohamed Akkouchi

**COMMON FIXED POINTS FOR WEAKLY COMPATIBLE
MAPS SATISFYING IMPLICIT RELATIONS
WITHOUT CONTINUITY**

Abstract. The purpose of this paper is to prove a common fixed point theorem for a set of four mappings on a complete metric space, using weak compatibility and a general implicit relation without appeal to continuity. Our results improve and generalize all the results obtained by A. Djoudi in a paper published in 2003.

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

**ON WEAKLY BR-OPEN FUNCTIONS AND THEIR
CHARACTERIZATIONS IN TOPOLOGICAL SPACES**

Abstract. In this paper, we introduce and study a new class of functions by using the notions of b - θ -open sets and b - θ -closure operator called weakly BR-open functions. The connections between this function and the other existing topological functions are studied.

Zbigniew Duszyński

**ON SOME CLASSES OF SETS
IN EXTREMALLY DISCONNECTED SPACES**

Abstract. In the present paper several characterizations of the classical notion of extremally disconnected spaces are obtained. A few relationships for finite products of extremally disconnected spaces are also studied.

Marian Przemski

**ON CONTINUOUS CONVERGENCE
OF NETS OF MULTIFUNCTIONS**

Abstract. This paper expands the classical concept of the continuous convergence of nets of multifunctions introduced by Cao, Reilly and Vamanamurthy in [7]. We introduce some new types of properties of convergence of such nets which guarantee the upper or lower semicontinuity of the limit multifunction. Furthermore, we obtain some analogous results concerning generalized continuity properties of multifunctions.