

## THE STRUCTURE OF THE GROUPS ALL WHOSE CHARACTERS ARE RATIONAL VALUED ON THE ODD ORDER ELEMENTS

**Ion Armeanu**

**Abstract.** In this note we shall study the structure of the finite groups all whose irreducible characters are rational valued on the odd order elements.

## $H_v$ -RING OF FRACTIONS

**M.R. Darafsheh**

**B. Davvaz**

**Abstract.** In this paper we define the  $H_v$ -ring of fractions of a commutative hyperring. Some interesting results concerning this  $H_v$ -ring is proved.

## SOME ALTERNATIVITY AND FLEXIBILITY CONDITIONS FOR ALGEBRAS

**Mohamed Lamei El-Mallah**

Let  $A$  be a non-associative algebra, that is, an algebra in which the associativity for multiplication is not assumed. In [1] Coughlin and Rich have showed that if  $A$  has an identity element 1 and if  $(x, y, z) \in F1$  for all  $x, y, z$  in  $A$  (that is the associators  $(x, y, z) = (xy)z - x(yz)$  are scalar multiples of the identity element of  $A$ ) then  $A$  is associative. We know that the alternative algebra is an algebra which satisfies the identities  $(x, x, y) = 0$  and  $(y, x, x) = 0$ . In this paper we show that if  $(x, x, y)$  and  $(y, x, x)$  are scalar multiples of the identity element of an algebra  $A$  over a field  $F$  of characteristic not 2 or 3 then  $A$  is alternative or flexible. Consequently, if  $A$  is a simple algebra in which the associators  $(x, x, y)$  and  $(y, x, x)$  lie in its center, then  $A$  is alternative or flexible. We will use  $[x, y]$  to denote the commutator of  $x$  and  $y$ . We also notice that the notions of simple algebra and simple ring coincide [4].

## $m$ -COMPLETE HYPERGROUPOIDS

**Giuseppe Gentile**

**Abstract.** We introduce the classes of  $m$ -complete and feebly  $m$ -complete hypergroupoids and we study the relation between its. We find two sufficient conditions for the existence of feebly associative hypergroupoids. We find a sufficient condition for which  $\beta^* = \bigcap \beta^*$ .

## VARIATIONAL SOLUTIONS OF STATIONARY HAMILTON–JACOBI EQUATIONS

V. Iftode

**Abstract.** This work deals with the stationary Hamilton-Jacobi equations  $F(B^*\psi_y) - (Ay, \psi_y) = g$  in the class of convex continuous functions  $\psi$  on a real Hilbert space  $H$ . After obtaining an asymptotic result, the existence, the uniqueness and a Galerkin approximation of the solutions to the above equation are established.

## A NOTE ON GENERALIZED BIORTHOGONAL SYSTEMS IN BANACH SPACES

S. M. Maskey

**Abstract.** Let  $E$  be a Banach space. We establish a condition for a generalized biorthogonal system  $(G_n, v_n)$  to be total on  $E$ ; a set of equivalent conditions for an  $E$ -complete generalized biorthogonal system  $(G_n, v_n)$  to be a Schauder decomposition of  $E$ . Furthermore, some properties of generalized biorthogonal system have been established.

## OPERATEURS $S$ -COMPACTS

Yvette Perrin

On se place dans la théorie axiomatique I.S.T. de E. Nelson. On appelle  $S$ -propriété toute propriété  $P(x)$  de la théorie qui, restreinte aux objets standards, est équivalente à une propriété classique, et qui, énoncée dans le langage I.S.T., est plus simple et plus intuitive. Un paradigme de ces  $S$ -notions pourrait être la  $S$ -continuité: une fonction est  $S$ -continue si les images de points infiniment proches sont infiniment proches. On se propose d'étudier un autre exemple de  $S$ -propriété: la  $S$ -compacité des opérateurs. Le plus souvent les  $S$ -propriétés sont utilisées comme moyens d'étude de propriétés "classiques", c'est-à-dire qu'elles sont appliquées aux objets standards. On abandonne ici ce point de vue, on étudiera tous les objets de la théorie, i.e. les opérateurs internes, qui possèdent la propriété de  $S$ -compacité. On s'intéressera en particulier aux propriétés spectrales de ces opérateurs. Les opérateurs  $S$ -compacts étant  $S$ -continus, on commencera par rappeler quelques propriétés des opérateurs  $S$ -continus.

## THE PRIME IDEAL THEOREM AND SEMIPRIME IDEALS IN MEET-HYPERLATTICES

## **A. Rahnamai–Barghi**

**Abstract.** It is known that the notion of hyperlattice [4] is a generalization of the lattice notion in the classical theory. The difference between hyperlattice and lattice is that in the hyperlattice the union of any two elements is a hyperoperation. In this paper we introduce the concept of meet–hyperlattice (M.H.L.) and show that the quotient of a M.H.L. is a M.H.L. The notion of meet–hyperlattice is a generalization of the notion of distributive lattice. In a meet–hyperlattice, while the join operation is a usual binary operation, the meet is a hyperoperation. Also we define the semiprime meet–hyperlattices and prove the prime ideal theorem and obtain some of properties of semiprime ideals in a meet–hyperlattice. Finally, we obtain the concept of join–hyperlattice (J.H.L.) by duality the notion of M.H.L., and show that every J.H.L. is a hyperlattice.

## **OPTIMAL AND $\varepsilon$ –OPTIMAL STRATEGIES IN SOME THREE-PERSON GAMES**

### **Rodica Brânzei**

**Abstract.** In this paper we introduce the three–person games with linear entropic criteria and restrictions, based on the weighted Shannon entropy, and we give the main results on the optimal and  $\varepsilon$ –optimal strategies for one of the players. We use here the principle of maximum entropy according to S. Guiaşu [4],[5],[6] and some results on entropy optimization problems from Fang, Tsao [3]. We also present the general sketches of two algorithms which allow us to compute these strategies.

## **CONTINUOUS CONSTANT FUNCTIONS ON COMPONENTS AND AMENABILITY**

### **A. Riazi**

### **G.H. Esslamzadeh**

**Abstract.** Let  $S$  be a right topological semigroup,  $B(S)$  the space of bounded real valued functions on  $S$  and  $CB(S)$  be the space of continuous bounded real valued functions on  $S$ . The main purpose of this paper is the reduction of left amenability and extreme left amenability of the complicated spaces  $B(S)$  and  $CB(S)$  to simpler spaces. For this, we introduce the space  $CF(S)$  of continuous constant functions on components of  $S$  and some of its basic properties. We also show the relations among amenability and extreme amenability of  $B(S)$ ,  $CB(S)$  and  $CF(S)$ .

## EQUIVALENCE RELATIONS IN A SEMILINEAR SPACE

Sandro Rajola

Maria Scafati Tallini

**Abstract.** In a proper semilinear space, that is not linear, we define two equivalence relations linked to the geometric structure of the space. By means of them, we provide a new characterization for the affine planes and for the projective planes.

## THE ACTION OF THE UNITARY GROUP ASSOCIATED WITH A QUADRATIC EXTENSION OF FIELDS

Maria Alessandra Vaccaro

**Abstract.** Given a quadratic extension  $L/k$  of fields of characteristic  $\neq 2$  and a unitary space  $(V, f)$  of finite dimension over  $L$ , we give a representation, as simple as possible, of the form which  $f$  induces by restriction on a  $k$ -substructure of  $V$ . This, in turn, allows one to study the orbits of the unitary group  $\mathbf{U}(V, f)$  in the set of  $k$ -substructures of  $V$  of a given dimension.

## AUTOMORPHISMS AND $f$ -SIMPLICITY IN SKEW POLYNOMIAL RINGS

Michael G. Voskoglou

**Abstract.** Let  $R$  be a ring, let  $f$  be an automorphism and let  $d$  be a  $f$ -derivation of  $R$  commuting with  $f$ . We obtain necessary and sufficient conditions under which the skew polynomial ring  $R[x, f, d]$  is a  $f$ -simple ring. Similar conditions are also obtained for skew polynomial rings in finitely many indeterminates over  $R$ .

## ON THE PRIME, PRIMARY AND MAXIMAL SUBHYPERMODULES

M.M. Zahedi

R. Ameri

**Abstract.** In this note first we define the notions of prime, primary and maximal subhypermodules of a hypermodule and then we obtain some related results. Then we study the Jacobson radical and the prime radical of hypermodules. Finally we discuss on the minimal generating set of finitely generated hypermodules and also we give some results about free and cyclic hypermodules.

## CLASSIFICATIONS OF $HX$ GROUPS AND THEIR CHAINS OF NORMAL SUBGROUPS

**Zhang Zhen Liang**

**Abstract.** In the reference [1] the structures and the properties of  $HX$  group have been described, and their homomorphisms and isomorphisms have been considered. In this paper attempts are made to classify the  $HX$  groups by their identity elements, and the chains of subgroups and the chains of normal subgroups of each class will be considered systematically. Finally, their intersections and products will be dealt with.