

Summaries of articles published in this issue

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SUMMARIES OF ARTICLES PUBLISHED IN THIS ISSUE

(Publication of these summaries is permit ed)

PAVOL BRUNOVSKÝ, Bratislava: *Generic properties of the rotation number of one-parameter diffeomorphisms of the circle*. Czech. Math. J. 24 (99), (1974), 74—90. (Original paper.)

The behavior of the rotation number of one-parameter diffeomorphisms of the circle in the generic case and the stability of this behavior under small changes of the diffeomorphism are studied. The results are applied to obtain some information about the generic nature of the loci of periodic points.

JÁN JAKUBÍK, Košice: *Normal prime filters of a lattice ordered group*. Czech. Math. J. 24 (99), (1974), 91—96. (Original paper.)

In this paper a solution to a problem proposed by Banaschewski on the representation of lattice ordered groups as subdirect products of linearly ordered groups is given.

KENNETH M. KAPP, Milwaukee: *On n° -regular semigroups*. Czech. Math. J. 24 (99), (1974), 171—175. (Original paper.)

The purpose of this paper is an investigation of the class of n° -regular semigroups. In particular the author shows that for 0-simple semigroups the classes of n° -regular ($n \geq 2$) and 2° -regular semigroups coincide. Indeed 0-simple n° -regular semigroups are completely 0-simple. It is then shown that each non-null principal factor of an n° -regular semigroup is also completely 0-simple. It follows that when $S = S^\circ$ is n° -regular then S is regular if and only if S is 0-semisimple.

LADISLAV BÍCAN, Praha: *Completely decomposable abelian groups any pure subgroup of which is completely decomposable*. Czech. Math. J. 24 (99), (1974), 176—191. (Original paper.)

For the completely decomposable torsion free abelian group $G = \sum_{\alpha \in A} J_\alpha$ the set of the types of all direct summands J_α is denoted by $T(G)$. For a type $\hat{\tau}$, $G(\hat{\tau})$ is the subgroup of G consisting of all the elements of G having the types $\geq \hat{\tau}$. The paper is devoted to the study of the class of completely decomposable groups any pure subgroup of which is again completely decomposable. Concerning the groups the type set of which satisfies the maximum condition a full description is obtained. In the general case it suffices to know the class \mathfrak{M} of all such groups the type set of which contains an infinite sequence $\hat{\tau}_1 < \hat{\tau}_2 < \dots$ such that for every $\hat{\tau} \in \hat{\tau}(G)$ it is $\hat{\tau} \leq \hat{\tau}_n$ for some n and the set $\{\hat{\tau}, \hat{\tau} \in \hat{\tau}(G), \hat{\tau} \leq \hat{\tau}_n\}$ is inversely well-ordered for every n .

OLDŘICH KOPEČEK nad MIROSLAV NOVOTNÝ, Brno: *On some invariants of unary algebras*. Czech. Math. J. 24 (99), (1974), 219—246. (Original paper.)

To every connected unary algebra with one operation, a (finite or transfinite) sequence of cardinals can be assigned in a natural way, these cardinals being invariants of the algebra. Necessary and sufficient conditions are given for a sequence of cardinals to be the sequence of invariants for some connected unary algebra with one operation.

PAUL CONRAD, Lawrence: *Epi-archimedean groups*. Czech. Math. J. 24 (99), (1974), 192–218. (Original paper.)

The paper is a systematic study of the class E of all lattice-ordered groups whose every epimorphic image is an archimedean lattice-ordered group. Several necessary and sufficient conditions are found for a lattice-ordered group to belong to the class E . Further, some subclasses of E characterized by means of subdirect decompositions of a certain type are investigated. The results obtained are partially transferred also to lattice-ordered rings.

KIM KI-HANG BUTLER and JAMES RICHARD KRABILL, Pembroke: *Circulant Boolean relation matrices*. Czech. Math. J. 24 (99), (1974), 247–251. (Original paper.)

Let \mathcal{B}_n be the semigroup of all binary relations on a set of n elements. Let \mathcal{C}_n be the subset of \mathcal{B}_n consisting of all circulants. Then \mathcal{C}_n is shown to be a maximal abelian subsemigroup of \mathcal{B}_n and for $C \in \mathcal{C}_n$, necessary and sufficient conditions are obtained for the existence of a positive integer p such that $C^p = J_n$, all of whose entries are 1.

ŠTEFAN SCHWARZ, Bratislava: *Circulant Boolean relation matrices*. Czech. Math. J. 24 (99), (1974), 252–253. (Original paper.)

The purpose of this note is to give a new proof of Theorem 2 of the foregoing paper by K. K. Hang Butler and J. R. Krabill and to modify its statement in a way which seems to be more adequate.

F. PEDERSEN, Carbondale: *Spitz in l -groups*. Czech. Math. J. 24 (99), (1974), 254–256. (Original paper.)

In the main theorem of this paper complete l -groups whose Stone topology is locally connected are characterized.

JÁN JAKUBÍK: *Splitting property of lattice ordered groups*. Czech. Math. J. 24 (99) (1974), 257–269. (Original paper.)

An archimedean lattice ordered group G is said to have the splitting property if it is a direct factor of each archimedean lattice ordered group containing G as an l -ideal. In this paper it is proved that a complete l -group has the splitting property if and only if it is laterally complete.

JIŘÍ KADLEČEK, Praha: *Construction of a net without transversals over a non-planar near-field*. Czech. Math. J. 24 (99), (1974), 301–310. (Original paper.)

In the paper one type of examples of nets is presented. These are examples of infinite nets without transversals which are not affine planes. Their construction comes out from the geometrical structure over non-planar near-field. The proof showing that the net constructed here has no transversal is a little more general than it is needed.

C. FOIAȘ and F. - H. VASILESCU, Bucarest: *Non-analytic local functional calculus*. Czech. Math. J. 24 (99), (1974), 270—283. (Original paper.)

Let $\mathcal{L}(X)$ be the algebra of all bounded linear operators from a Banach space X into X . Let $T \in \mathcal{L}(X)$ be an operator with functional calculus of class C^∞ , i.e. with a multiplicative $\mathcal{L}(X)$ -valued distribution such that $U(z \rightarrow z) = T$. T is called a generalized scalar operator. The purpose of the paper is to generalize the single-valued extension property and to give an improvement of the structure theorem on maximal spectral spaces of generalized scalar operators given by P. Vrbová.

The following main results are proved: Let $T \in \mathcal{L}(X)$ be a generalized scalar operator with spectral distribution of order m . The only m -times continuously differentiable X -valued solution of the equation $(\lambda - T)f(\lambda) \equiv 0$ in an open subset of the complex plane ω is the function $f \equiv 0$ in ω .

For every closed subset F of the complex plane we have $X_T(F) = \bigcap_{\lambda \notin F} (\lambda - T)^{m+3} X$ where $X_T(F)$ are spectral maximal spaces of T . The index $m + 3$ can be improved in several special cases.

PAVOL MARUŠIAK, Žilina: *Oscillation of solutions of delay differential equations*. Czech. Math. J. 24 (99), (1974), 284—291. (Original paper.)

In this article a necessary and sufficient condition is given for all solutions of certain nonlinear delay differential equations to be oscillatory if the order n is even and to be either oscillatory or tend monotonically to zero as $t \rightarrow \infty$ together with their first $n - 1$ derivatives if n is odd.

JÁN PLESNÍK, Bratislava: *Remarks on regular factors of regular graphs*. Czech. Math. J. 24 (99), (1974), 292—300. (Original paper.)

Sufficient conditions for the existence of regular factors not containing several arbitrarily prescribed lines of a regular graph with certain line-connectivity are given.

IVAN KOLÁŘ, Brno: *Some higher order operations with connections*. Czech. Math. J. 24 (99), (1974), 311—330. (Original paper.)

Some natural relations between first order connections on higher order prolongations of a Lie groupoid Φ and higher order connections on Φ itself are established. A special attention is paid to absolute differentiation with respect to the connections in question. A comparison with some special methods developed previously for vector bundles is also given.