Summaries of articles published in this issue

Czechoslovak Mathematical Journal, Vol. 23 (1973), No. 4, (525c),(525d)

Persistent URL: http://dml.cz/dmlcz/101197

SUMMARIES OF ARTICLES PUBLISHED IN THIS ISSUE

(Publication of these summaries is permitted)

JAROSLAV KURZWEIL, Praha: *On multiplication of Perron-integrable functions.* Czech. Math. J. *23* (*98*), (1973), 542—566. (Original paper.)

Let K be a compact n-dimensional interval, $\zeta : K \to R$, $\varphi : K \to R$; it is proved that the product $\zeta\varphi$ is Perron-integrable, if it is Perron-integrable and if ζ is of strongly bounded variation (especially if φ is n-times continuously differentiable). This result is a particular case of a Theorem on General Perron Integral. A formula for integration by parts is obtained and an example is given to show that the assumptions on φ cannot be replaced by certain weaker assumptions.

B. M. SCHEIN, Saratov: *Completions, translational hulls and ideal extensions of inverse semigroups.* Czech. Math. J. *23* (*98*), (1973), 575—610. (Original paper.)

In this paper the author obtains some algebraic properties of inverse semigroups using essentially the order structure.

JAROLÍM BUREŠ, Praha: *Translation structures and group partitions.* Czech. Math. J. *23* (*98*), (1973), 611—614. (Original paper.)

Following the papers of V. Havel, the author presents in this article an example of a non-planar quasifield which describes a special translation structure in the sense of André.

VLASTIMIL PTÁK and PAVLA VRBOVÁ, Praha: *On the spectral function of a normal operator.* Czech. Math. J. *23* (*98*), (1973), 615—616. (Original paper.)

A simple characterization of a spectral function of a normal operator is given: Let H be a Hilbert space and let $B(H)$ be the algebra of all bounded linear operators on H. For each $W \in B(H)$, we denote by $\mathscr{R}(W)$ its range. If $T \in B(H)$ is normal, we denote by $E(.)$ its spectral measure. For each Borel set M in the complex plane let $H_T(M)$ be the range of the projection $E(M)$. Then, for each closed set F in the complex plane $H_T(F) = \bigcap_{\lambda \notin F} \mathscr{R}(\lambda - T)$.

DALIBOR KLUCKÝ and LIBUŠE MARKOVÁ, Olomouc: *Ternary rings with zero associated to translation planes.* Czech. Math. J. *23* (*98*), (1973), 617—628. (Original paper.)

In the article a necessary and sufficient condition that planar ternary rings with zero coordinatize the translation plane is proved. Further three non-trivial examples of such rings are introduced.

LUDĚK ZAJÍČEK, Praha: *On the intersection of the sets of the right and left internal approximate derivatives.* Czech. Math. J. *23* (*98*), (1973), 629—634. (Original paper.)

In the article the sets of the right and left internal approximate derivatives of a real function $\mathscr{D}^+_{ap} f(x)$, $\mathscr{D}^-_{ap} f(x)$ are defined in the natural way. Two theorems are proved which imply that the set $\{x : \mathscr{D}^+_{ap} f(x) \cap \mathscr{D}^-_{ap} f(x) = \emptyset\}$ is countable for any Lipschitzian function and, on the other hand, there exists a continuous function for which this set is uncountable.

IVAN STRAŠKRABA and OTTO VEJVODA, Praha: *Periodic solutions to abstract differential equations,* Czech. Math. J. *23* (*98*), (1973), 635—669. (Original paper.)

The authors investigate the existence of periodic solutions to linear and weakly nonlinear abstract differential equations of the first and second order which (in particular) involve the heat, Schrödinger, telegraph, wave and beam equations.

KAREL ČULÍK, Praha: *Algorithmic algebras of computers.* Czech. Math. J. *23* (*98*), (1973), 670—689. (Original paper.)

A pure mathematical description of computer and of its activity is given. The functional unit of the computer is represented by an algebra, the operation of which concerns the basic, i.e. not structured, objects only. The storage is represented by a set of functions (special sorts of storage are not distinguished). The concept of similarity of algorithms = programs formalizes the intuitive independency of computable functions on the input, output variables and labels, used in particular cases. The similarity of algorithms implies their functional equivalence. The width of an algorithm is introduced and the minimal width is determined as the chromatic number of a graph defined by the scopes of variables.