Czechoslovak Mathematical Journal

Summaries of articles published in this issue

*Czechoslovak Mathematical Journal*, Vol. 19 (1969), No. 1, (192)–(193)

Persistent URL: http://dml.cz/dmlcz/100887

## SUMMARIES OF ARTICLES PUBLISHED IN THIS ISSUE

(Publication of these summaries is permitted)

VÍTĚZSLAV NOVÁK, Brno: *On the well dimension of ordered sets.* Czech. Math. J. *19* (*94*), (1969), 1—16. (Original paper.)

Let $G(\leqq)$ be an ordered set. A well extension of $G(\leqq)$ is a well ordering on $G$ which is an extension of $\leqq$. A well dimension of $G(\leqq)$ (wdim $G$) is the minimal cardinality of a system of well extensions of $G(\leqq)$ intersection of which is $\leqq$. A well pseudodimension of $G$ (wpdim $G$) is the minimal cardinality of a system of mappings $\{f_i \mid i \in I\}$ of $G$ into well ordered sets with the property: $x \leqq y \Leftrightarrow f_i(x) \leqq f_i(y)$ for every $i \in I$. Some properties of the characteristics wdim $G$, wdim $G$, wpdim $G$ are proved and values of these characteristics for some concrete ordered sets are determined.

MARKO ŠVEC, Bratislava: *Sur un problème aux limites.* Czech. Math. J. *19* (*94*), (1969), 17—26. (Mémoire scientifique original.)

Dans cet article nous allons nous occuper de l'existence d'une solution $y(x)$ de l'équation différentielle $y^{(n)} + B(x, y, y', \ldots, y^{(n-1)}) = 0$ remplissant les conditions $y^{(j)}(x_0) = c_j$, $j = 0, 1, \ldots, k-1$; $y^{(k)}(\infty) = c_k$, $y^{(j)}(\infty) = 0$, $j = k+1, \ldots, n-1$, où $0 \leqq k \leqq n-1$.

LADISLAV SKULA, Brno: *Systems of layers of an ordered set.* Czech. Math. J. *19* (*94*), (1969), 27—41. (Original paper.)

The author studies the system $\mathfrak{N}(G)$ of all subsets $N$ of an ordered set $G$ fulfilling the following axioms: (I $\mathfrak{N}$) for $x, y \in N$, $x \neq y$, there exists no $z \in G$ such that $z \leqq x$, $z \leqq y$; (II $\mathfrak{N}$) $N$ is maximal with respect to the property described in (I $\mathfrak{N}$). On the system $\mathfrak{N}(G)$ the ordering $\leqq$ is defined as follows: For $N_1, N_2 \in \mathfrak{N}(G)$ we have $N_1 \leqq N_2$ iff to any element $n_2 \in N_2$ there exists at least one element $n_1 \in N_1$ such that $n_1 \geqq n_2$. A particular case of the system $\mathfrak{N}(G)$ is the ordered system of all equivalences on the same set. Further the author gives sufficient and necessary conditions for $\mathfrak{N}(G)$ to be a distributive or modular lattice, under the assumption that $(\bullet) \oplus G$ is a distributive lattice.

LADISLAV SKULA, Brno: *Ordered set of classes of compactifications.* Czech. Math. J. *19* (*94*), (1969), 42—59. (Original paper.)

The author investigates the compactifications of topological spaces whose axioms can be obtained from axioms for Hausdorf spaces by omitting the axiom $\overline{\overline{M}} = \overline{M}$. On the set $\mathscr{K}(Q)$ of all compactifications of a space $Q$ a quasi-ordering $\lesssim$ is defined and necessary and sufficient conditions for the space $Q$ are given under which $\mathscr{K}(Q)$ is a distributive or modular lattice. Among all compactifications of the space $Q$ an important role is given to the $\mathfrak{h}$-compactification, which has similar properties as Čech-Stone compactification among all completely regular compactifications of a completely regular space.

ŠTEFAN SCHWARZ, Bratislava: *Prime ideals and maximal ideals in semigroups.* Czech. Math. J. *19* (*94*), (1969), 72—79. (Original paper.)

Let $M^*(Q^*)$ be the intersection of all maximal (all prime) ideals of a semigroup. The relation between $M^*$ and $Q^*$ is studied.

IZU VAISMAN, Iași: *К геометрии многообразий флагов в симплектическом пространстве*, II. Czech. Math. J. *19* (*94*), (1969), 60—66. (Оригинальная статья.)

В настоящей работе строится канонический репер $k$-параметрического многообразия флагов в симплектическом пространстве $Sp_{2n-1}$ ($1 \leqq k < 2n - 1$). Обобщается метод первой части этой статьи.

JOHN F. BERGLUND, Middletown: *Compact semitopological semigroups and affine semigroups.* Czech. Math. J. *19* (*94*), (1969), 67—71. (Preliminary report.)

In a topological semigroup the multiplication $x \,.\, y$ is a continuous function of two variables. In a semitopological semigroup the multiplication is continuous in $x$ (for fixed $y$) and in $y$ (for fixed $x$). The paper studies the problem if the known results of the theory of topological semigroups can be transferred onto the semitopological semigroups. The paper is a preliminary report on results which are to be published by the author and by H. K. Hoffmann in monographical form.

JIN BAI KIM, Morgantown: *Mutants in semigroups.* Czech. Math. J. *19* (*94*), (1969), 86—90. (Original paper.)

The first theorem of this paper concerns topological semigroups. In the second theorem there is proved that a semigroup $S$ cannot be decomposed into two or three mutants of $S$.

VALTER ŠEDA, Bratislava: *On some properties of a solution of the Schwarzian differential equation.* Czech. Math. J. *19* (*94*), (1969), 91—98. (Original paper.)

In this paper some properties of a solution $w(z)$ ($w(0) = 0$, $w'(0) = 1$, $w''(0) = 0$) of the Schwarzian differential equation $\{w, z\} = q(z)$, $\{w, z\} = (w''/2w')' - (w''/2w')^2$ are derived. Their proof is given on the basis of some comparison theorems in the real domain.

IVO VRKOČ, Praha: *The representation of Carathéodory operators.* Czech. Math. J. *19* (*94*), (1969), 99—109. (Original paper.)

Let $\mu$ be a regular measure on the line, $G$ be a region in an Euclidean space, $C$ be the Banach space of continuous vector functions defined on $\langle 0, 1\rangle$ with values in $G$ and $[S]$ be the $F$-space of classes of $\mu$-measurable vector functions defined on $\langle 0, 1\rangle$ with the quasi-norm $\|f\| = \int_0^1 \min(1, |f(t)|)\, d\mu$. A continuous transformation $T$: $C \to [S]$ is called Carathéodory operator if for every closed interval $J$ and for every couple of functions $f^{(1)}(t), f^{(2)}(t)$ of $C$ for which $f^{(1)}(t) = f^{(2)}(t)$ on $J$ we have $Tf^{(1)} = Tf^{(2)}$ on $J$. In the article is constructed a vector function $h(t, x)$ fulfilling Carathéodory's condition such that $Tf = [h(t, f(t))]$ where $T$ is Carathéodory operator.

BŘETISLAV NOVÁK, Praha: *Mittelwertsätze der Gitterpunktlehre.* Czech. Math. J. *19* (*94*), (1969), 154—180. (Originalartikel.)

In der Arbeit werden einige Mittelwertsätze der Gitterpunktlehre in mehrdimensionalen Ellipsoiden bewiesen. Manche Ergebnisse tragen im allgemeinen einen definitiven Charakter.