

Summaries of articles published in this issue

Czechoslovak Mathematical Journal, Vol. 24 (1974), No. 3, (341c),(341d),(341e)

Persistent URL: <http://dml.cz/dmlcz/101246>

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SUMMARIES OF ARTICLES PUBLISHED IN THIS ISSUE

(Publication of these summaries is permitted)

HARI BALLABH MITTAL, Lucknow: *Some generating functions for polynomials.* Czech. Math. J. 24 (99), (1974), 341—348. (Original paper.)

Starting from two relations which were established by J. W. Brown for Laguerre polynomials, the author proves analogous results for generalized Laguerre, generalized Gould-Hopper, generalized Bessel and Jacobi polynomials.

MÁRIA BARNOVSKÁ, Bratislava: *О спектре несамосопряженного дифференциального оператора второго порядка с комплекснозначным переменным коэффициентом при старшей производной на полуоси.* Czech. Math. J. 24 (99), (1974), 349—358. (Оригинальная статья.)

Целью настоящей работы является исследование спектра и резольвенты дифференциального оператора $l(x) = (p(t) x'(t))'$ с краевым условием $p(0) x'(0) - \lambda x(0) = 0$.

JOJI KAJIWARA, Fukuoka: *On a holomorphic solution of a singular partial differential equation with many simple poles.* Czech. Math. J. 24 (99), (1974), 359—368. (Original paper.)

The aim of this paper is to give a singular partial differential equation of order $m + n$ with $m + n$ simple poles which has a unique global holomorphic solution in a domain of the space C^2 of two complex variables.

N. BURSSTEIN, J. SCHÖNHEIM, Tel Aviv: *On exactly covering systems of congruences having moduli occurring at most twice.* Czech. Math. J. 24 (99), (1974), 369—372. (Original paper.)

Some known unsolved questions on Covering Systems of Congruences are answered in the framework of Exactly Covering Systems of Congruences with moduli occurring at most twice.

JÍŘÍ ROSICKÝ, Brno: *Remarks on topologies uniquely determined by their continuous self maps.* Czech. Math. J. 24 (99), (1974), 373—377. (Original paper.)

In this note, some remarks to Warndorf's paper (Fund. Math. 1969) are given.

VLADIMÍR MÜLLER, JAN PELANT, Praha: *On strongly homogeneous tournaments.* Czech. Math. J. 24 (99), (1974), 378—391. (Original paper.)

In this paper the notion of strongly homogeneous tournaments is defined and characterized. Further, the connection between strongly homogeneous tournaments and Hadamard matrices is mentioned.

MIROSLAV FIEDLER, Praha: *Additive compound matrices and an inequality for eigenvalues of symmetric stochastic matrices.* Czech. Math. J. 24 (99), (1974), 392—402. (Original paper.)

Generalized compound matrices are introduced and applied to prove an inequality for eigenvalues of symmetric stochastic matrices.

DAVID J. HALLENBECK, Newark: *Some inequalities for convex, starlike, and close-to-convex mappings*. Czech. Math. J. 24 (99), (1974), 411—415. (Original paper.)

In this paper, the author first applies a simple geometric lemma to obtain some inequalities for functions which are starlike and convex of order α where $\alpha \geq \frac{1}{2}$. Further consideration deals with the class $K(\alpha, \beta)$ which is a subclass of the close-to-convex functions of order α and type β introduced by R. J. Libera. A final result deals with the class of convex mappings which are also K -fold symmetric.

BRANKO GRÜNBAUM, Seattle and ERNEST JUCOVIČ, Košice: *On non-inscribable polytopes*. Czech. Math. J. 24 (99), 424—429. (Original paper.)

Let $v(P)$ be the number of vertices of the 3-polytope P and let $s(P)$ be the largest integer s with the property: There exists a 3-polytope P' combinatorially isomorphic to P , and a 2-sphere S that encloses P' , such that s vertices of P' are on S . The main result: If P ranges over all types of simplicial 3-polytopes (i.e. all faces are triangles) then

$$\liminf (\log s(P)/\log v(P)) \leq \log 2/\log 3 .$$

Remarks, open problems and conjectures about types of non-inscribable 3-polytopes and related topics are also presented.

E. J. ALBRECHT, Kaiserslautern, F. - H. VASILESCU, Bucharest: *Non-analytic local spectral properties in several variables*. Czech. Math. J. 24 (99), (1974), 430—443. (Original paper.)

The purpose of the paper is to find a multidimensional version of the single-valued extension property of a single operator and to give a characterization of the algebraic structure of spectral maximal spaces of an n -tuple of commuting operators in a Banach space with a functional calculus of class C^m .

JOJI KAJIWARA, Fukuoka and YASUKO MORI, Naha: *On the existence of global holomorphic solutions of differential equations with complex parameters*. Czech. Math. J. 24 (99), (1974), 444—454. (Original paper.)

In this paper the authors deal with the existence of global holomorphic solutions of differential equations with complex parameters on a Stein manifold.

ŠTEFAN ZNÁM, Bratislava: *Vector-covering systems of arithmetic sequences*. Czech. Math. J. 24 (99), (1974), 455—461. (Original paper.)

In this article a generalization of well-known disjoint covering systems of arithmetic sequences is given. It is shown that the majority of results concerning disjoint covering systems can be extended to the case of the so called vector-covering systems of arithmetic sequences.

JIRÍ MOČKOR, Brno: *Families of almost finite character*. Czech. Math. J. 24 (99), (1974), 462—466. (Original paper.)

In this paper the author generalizes some results of the theory of Krull domains.

THÉRÈSE MERLIER, Paris: *Nildemi-groupes totalement ordonnés*. Czech. Math. J. 24 (99), (1974), 403–410. (Original paper.)

In this paper, the author gives a necessary and sufficient condition that a nilsemigroup admits a structure of totally ordered semigroup, thereby solving a problem posed by E. Ja. Gabovič. The nilsemigroups in which $ab = 0$ implies $a^2 = 0$ or $b^2 = 0$ have a great importance in this study.

SVATOPLUK FUČÍK, Praha: *Nonlinear equations with noninvertible linear part*. Czech. Math. J. 24 (99), (1974), 467–495. (Original paper.)

This paper deals with the solvability of the equations of the type $L(u) = N(u) - h$, where L is a linear operator densely defined in a Banach space X and with values in a Banach space Z , $N: X \rightarrow Z$ is a nonlinear perturbation and $h \in Z$. Main results are obtained in the case of nontrivial kernel of the mapping L . Sufficient and also necessary conditions under which the considered equation is solvable are proved. The abstract results are applied to the solvability of boundary value and periodic problems for nonlinear differential equations.

JINDŘICH NEČAS, Praha: *Application of Rothe's method to abstract parabolic equations*. Czech. Math. J. 24 (99), (1974), 496–500. (Original paper.)

The method of finite differences in time of Rothe is applied to the initial value problem for abstract parabolic equations. A generalization of results obtained by the theory of semigroups is received.

HARALD K. WIMMER, Graz: *Spektralradius und Spektralnorm*. Czech. Math. J. 24 (99), (1974), 501–502. (Originalartikel.)

In dieser Note gibt der Autor einen neuen Beweis für einen bekannten Satz von V. Pták.

VLASTIMIL PTÁK, Praha: *A quantitative refinement of the closed graph theorem*. Czech. Math. J. 24 (99), (1974), 503–506. (Original paper.)

The purpose of the remark is to clarify the relation between the induction theorem published by the author in a recent Comptes Rendus Note and the closed graph theorem. To this end the author formulates a strengthening of the classical closed graph theorem in such a manner that it becomes an immediate consequence of the induction theorem.