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(Publication of these summaries is permitted)

JAN STANISLAV LIPIŃSKI, Gdansk, and TIBOR ŠALÁT, Bratislava: *On the points of quasicontinuity and cliquishness of functions.* Czech. Math. J. *21* (*96*), (1971), 484—489. (Original paper.)

Authors denote by $Q_f(A_f)$ the set of all such points at which the function f defined on topological space X is quasicontinuous (cliquish). In the paper the structure of the sets Q_f, A_f is studied.

NADEŽDA KRYLOVÁ, OTTO VEJVODA, Praha: *A linear and weakly nonlinear equation of a beam: The boundary-value problem for free extremities and its periodic solutions.* Czech. Math. J. *21* (*96*), (1971), 535—566. (Original paper.)

First, the existence of a smooth solution to the mixed problem (1) $u_{tt} + u_{xxxx} = g(t, x) + \varepsilon f(t, x, u, u_x, u_{xx}, u_t, \varepsilon)$, (2) $u(t, 0) = u(t, \pi) = u_{xx}(t, 0) = u_{xx}(t, \pi) = 0$, (3) $u(0, x) = \varphi(x)$, $u_t(0, x) = \psi(x)$ is proved for sufficiently small ε. Further, the existence of ω-periodic solutions of (1), (2) is investigated, provided that g and f are ω-periodic in t. Three different cases are to be distinguished: (A) $\omega = 2\pi n$, (B) $\omega = 2\pi p/q$, (C) $\omega = 2\pi\alpha$, n, p, q being positive integers and α being an irrational number. For the linear problem ($\varepsilon = 0$) in cases (A), (B) the necessary and sufficient conditions and in case (C) sufficient ones for the existence of an ω-periodic solution are found. For the nonlinear problem in all three cases sufficient conditions are derived.

JAN KUČERA, Albuquerque: *On multipliers of temperare distributions.* Czech. Math. J. *21* (*96*), 610—618. (Original paper.)

In this paper author takes a sequence of Banach spaces $H^0 \subset H^{-1} \subset H^{-2} \subset \dots$ for which $\bigcup_{k \geq 0} H^{-k} = \mathscr{S}'$, where $\mathscr{S}'$ is the space of temperate distributions. For each pair p, q of non-negative integers author defines a normed space $\mathcal{O}_{p,q}$ of multiplication operators from H^{-q} into H^{-p}. Then it appears that $\bigcap_{q \geq 0} \bigcup_{p \geq 0} \mathcal{O}_{p,q}$ equals (as a vector space) to the Schwarz's space $\mathcal{O}_M$ of multiplication operators on $\mathscr{S}'$. We get multiplication as a continuous map either from $\mathcal{O}_{p,q} \times H^{-q}$ into H^{-p} or from $\bigcup_{p \geq 0} \mathcal{O}^{p,q} \times H^{-q}$ into $\mathscr{S}'$. Similar results are shown for the convolution.

BOHDAN ZELINKA, Liberec: *The group of autotopies of a digraph.* Czech. Math. J. *21* (*96*), (1971), 619—624. (Original paper.)

An isotopy of a digraph G_1 onto a digraph G_2 is a pair f_1, f_2 of one-to-one mappings of the vertex set of G_1 onto the vertex set of G_2 such that the existence of the edge $f_1(u) f_2(v)$ in G_2 is equivalent with the existence of the edge uv in G_1 for any two vertices u, v of G_1. An isotopy of digraph onto itself is called an autotopy. The autotopies of digraph form a group. In the paper this group is studied and the relations between autotopies and automorphisms are investigated.

Jaroslav Pechanec-Drahoš, Praha: *Modifications of closure collections.* Czech. Math. J. *21* (*96*), (1971), 577—589. (Original paper.)

Let $S = \{(S_U, \tau_U); \varrho_{UV}; X\}$ be a presheaf of closure spaces. If for every U and every open cover $\mathscr{V}$ of U the closure τ_U in S_U coincides with that generated by the maps ϱ_{UV}: $S_U \to (S_V, \tau_V)$, $V \in \mathscr{V}$ projectively, then the collection $\mu = \{\tau_U\}$ of closures is called projective. It is known that for every μ there is the finest projective μ' coarser than μ. In this paper we prove that if X is locally compact and μ finitely projective then $\mu' = \{\tau'_U\}$, where for every U, τ'_U is the closure generated projectively in S_U by the maps $\varrho_{UV} : S_U \to (S_V, \tau_V)$ with the property $\overline{V} \subset U$ is compact. From this we get a method of construction of μ' for an arbitrary μ and the characterization of projective collections. Then we show that for every presheaf $\mathscr{S}$ over a locally compact X with a projective μ there exists a natural cofiltration.

Jaroslav Pechanec-Drahoš, Praha: *Representations of presheaves of semi-uniformisable spaces, and representation of a presheaf by the presheaf of all continuous sections in its covering-space.* Czech. Math. J. *21* (*96*), (1971), 590—609. (Original paper.)

Let $\mathscr{S} = \{(S_U, \eta_U); \varrho_{UV}; X\}$ be a presheaf of semiuniform spaces, P its covering space, t a closure in P, and $\varkappa$ a cofiltration for $\mathscr{S}$. Let A_U be the set of the sections over U corresponding naturally to the set S_U. We study two problems: 1. If $\mathscr{S}$ satisfies some assumptions, we can define a semiuniformity $n(t)$ of uniform convergence on $\varkappa$ in every A_U. We try to find a closure t in P such that $p_U : (S_U, \eta_U) \to (A_U, n(t))$ are isomorphisms. 2. Does there exist a closure t in P generating a representation i.e. for which the following is satisfied: (a) There exists a cofiltration $\varkappa$ such that if $k(t)$ is the closure of uniform convergence on $\varkappa$, then all the natural maps $p_U : (S_U, \tau_U) \to (A_U, k(t))$ are homeomorphisms. (b) If for U, $\Gamma(U, t)$ is the set of all continuous sections over U, then $A_U = \Gamma(U, t)$, for all U.

R. N. Bhaumik, D. N. Misra, Sagar: *A generalization of K-compact spaces.* Czech. Math. J. *21* (*96*), (1971), 625—632. (Original paper.)

A few results on K-compact spaces are presented at the beginning of the paper. Then almost K-compact spaces are introduced and studied.

M. Satyanarayana, Bowling Green: *A class of commutative semigroups in which the idempotents are linearly ordered.* Czech. Math. J. *21* (*96*), (1971), 633—637. (Original paper.)

Necessary and sufficient conditions are found when a commutative semigroup in which prime ideals are maximal can have its idempotents linearly ordered and conversely. An example is constructed to show even the commutative semigroup which has only one idempotent (hence idempotents are linearly ordered) and has only one prime and maximal ideal (hence prime ideals are maximal) need not be primary. Theorem 1.5 asserts that the only primary semigroups in which prime ideals are maximal are Archimedian. In Section 2 all semigroups in which every ideal is prime are characterized.

R. K. SINGH, Durham: *Eberlein integral and polynomial interpolation.* Czech. Math. J. *21 (96)*, (1971), 638—643. (Original paper.)

An important and pertinent problem in connection with $N+1$-point Lagrangian Interpolation for a continuous real valued function defined on, say, the interval $[-1, 1]$ is the choice of a set of points where we require the interpolating polynomial to coincide with the function. The set of zeros of Tchebychev polynomial $T_{N+1}(x)$ is the classical solution of the problem. However, this is inapplicable in interpolation for a function of more variables, because there is no adequate generalization of these polynomials to cover the case of more than one variable. In the present paper a method not depending on orthogonal polynomials is outlined for choosing the best points for Lagrangian Interpolation for functions of one variable.

ALBRECHT PIETSCH, Jena: *Interpolationsfunktoren, Folgenideale und Operatorenideale.* Czech. Math. J. *21 (96)*, (1971), 644—652. (Originalartikel.)

Bekanntlich besteht eine eineindeutige Zuordnung zwischen den Idealen im Operatorenring des unendlichdimensionalen separablen Hilbertraumes und den Idealen im Ring aller beschränkten Zahlenfolgen. In der vorliegenden Arbeit wird gezeigt, dass man diese Zuordnung für eine grosse Klasse von vollständigen normierten Operatoren- bzw. Folgenidealen besonders elegant und einfach durch die Verwendung von Interpolationsfunktoren beschreiben kann.

BOHDAN ZELINKA, Liberec: *Groups and homogeneous graphs.* Czech. Math. J. *21 (96)*, (1971), 653—660. (Original paper.)

An undirected graph is called homogeneous, if and only if to any two vertices u, v of it an automorphism exists which maps u onto v and to any vertex w of it and to any permutation of the set of edges incident with w an automorphism exists which leaves w fixed and induces this permutation. Analogously homogeneous digraphs are defined. In the paper some algebraic properties of these graphs are studied, specially the graphs assigned to groups by a certain way.

THOMAS G. HALLAM, Tallahassee: *Asymptotic integration of a nonhomogeneous differential equation with integrable coefficients.* Czech. Math. J. *21 (96)*, (1971), 661—671. (Original paper.)

In this article the asymptotic behavior of the solutions of the nth order nonhomogeneous linear system of differential equations (i) $x^{(n)} = A_0(t)\, x + h(t)$ where $n \geqq 2$ is determined by exhibiting the asmyptotic expansions of the solutions. In equation (i), x denotes a d-dimensional vector; $A_0(t)$ is a $d \times d$ complex-valued matrix which is continuous on the interval $J = [t_0, \infty)$; and $h(t)$ is a continuous complex-valued d-vector defined on J.

ROBERT L. HEMMINGER, Nashville: *Isomorphism-induced line isomorphisms on pseudographs.* Czech. Math. J. *21 (96)*, (1971), 672—679. (Original paper.)

In this paper the line isomorphisms on pseudographs that are induced by isomorphisms are characterized. This generalization is obtained by a method similar to that used by Jung in the infinite graph case.