Summaries of articles published in this issue

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(Publication of these summaries is permitted)

LADISLAV BICAN, Praha: *A remark on projectively closed purities.* Czech. Math. J. *24 (99)*, (1974), 1—4. (Original paper.)

The purpose of this paper is to show that the class of projectively closed purities coincides with the class of Γ-purities. The solution of one part of problem 7 from the book by A. P. Mishina and L. A. Skorniakov is obtained as a consequence.

PL. KANNAPPAN and P. N. RATHIE, Waterloo: *On a generalized directed-divergence function.* Czech. Math. J. *24 (99)*, (1974), 5—14. (Original paper.)

In an earlier paper the authors defined for three finite discrete probability distributions $P = (p_1, p_2, \ldots, p_n)$, $p_i \geqq 0$, $\sum_{i=1}^{n} p_i = 1$; $Q = (q_1, q_2, \ldots, q_n)$, $q_i \geqq 0$, $\sum_{i=1}^{n} q_i = 1$; $R = (r_1, ry, \ldots, r_n)$, $r_i \geqq 0$, $\sum_{i=1}^{n} r_i = 1$ the generalized directed-divergence of type β. The object of this paper is to generalize further this quantities by introducing the concept of generalized directed-divergence and to characterize this by means of a functional equation.

GERHARD GRIMEISEN, Stuttgart: *The hyperspace of lower semicontinuity and the first power of a topological space.* Czech. Math. J. *24 (99)*, (1974), 15—25. (Original paper.)

The hyperspace $H_-(E, \tau)$ of lower semicontinuity of a topological space (E, τ) introduced by Z. Frolík and M. Katětov is a subspace of the first power $(\mathfrak{P}E, \mathfrak{P}\tau)$ of topological space (E, τ) introduced by the author. In Section 2 of this paper this fact is presented within a framework of "finitely additive quasitopologies". Having available the terminology introduced in Section 1, the author also makes some remarks on the product of finitely additive quasitopologies.

FRANTIŠEK MACHALA, Olomouc: *Projektive Abbildung von Moduln.* Czech. Math. J. *24 (99)*, (1974), 26—39. (Originalartikel.)

Zu klassischen Ergebnissen der projektiven Geometrie gehört der soge-nannte Fundamentalsatz der projektiven Geometrie: Jeder Isomorphismus von Verbänden, die von den Unterräumen zweier Vektorräume erzeugt sind, wird durch die halblineare Abbildung dieser Räume induziert. L. A. Skorn-jakov verallgemeinerte diesen Satz für die Kategorie von Moduln. Der vorliegende Artikel verallgemeinert diesen Satz noch weiter. Durch die Definition 7 werden die relativ-zulässigen Moduln eingeführt. Das resultie-rende Theorem lautet dann: Jede projektive Abbildung vom relativ-zulässi-gen Modul (R, M) auf den Modul (Q, N) wird durch eine halblineare Ab-bildung von zu (R, M), (Q, N) zugeordneten Moduln induziert.

JAROSLAV LUKEŠ, Praha: *Théorème de Keldych dans la théorie axiomatique de Bauer des fonctions harmoniques.* Czech. Math. J. *24 (99)*, (1974), 114—125. (Mémoire scientifique original.)

Dans cette note étudie le prolongement fonctionnel de la solution du problème de Dirichlet et son unicité dans la théorie axiomatique de Bauer des fonctions harmoniques. On construit une certaine ,,solution généralisée'' du problème de Dirichlet, qui est cependant en général différente de la solution obteune par la méthode de Perron. On donne aussi les conditions pour l'unicité de la solution généralisée du problème de Dirichlet.

V. CRUCEANU, Jassy: *Connexions compatibles avec certaines structures sur un fibré vectoriel banachique.* Czech. Math. J. *23 (98)*, 126—142. (Mémoire scientifique original.)

Nous déterminons toutes les connexion et les couples des connexions sur un fibré vectoriel banachique qui sont compatibles avec l'une des structures: presque-produit, presque-complexe, presque-métrique, presque-symplectique ou avec certaines combinaisons de ces structures. Un rôle essentiel est joue par le fait que l'ensemble des connexions sur un fibré vectoriel banachique admet une structure de module affine.

ALOIS ŠVEC, Praha: *On mappings of a manifold into a Lie group.* Czech. Math. J. *24 (99)*, (1974), 143—149. (Original paper.)

The formal algebraic aspetcs of the following problem are treated: Let G be a Lie group, g its Lie algebra, M a manifold and φ a g-valued 1-form over M; under what conditions is there a mapping $\Phi : M \to G$ such that $\varphi = \Phi_* \omega$, ω being the Maurer-Cartan form of G?

ALOIS ŠVEC, Praha: *On infinitesimal isometries of a hypersurface.* Czech. Math. J. *24 (99)*, (1974), 150—163. (Original paper.)

The formal algebraic aspects of the following problem are treated: Let $M \subset E^n$ be a hypersurface in the Euclidean n-space, and let $M + tv_1$ be its infinitesimal isometry, i.e., $dM \cdot dv_1 = 0$; under what conditions is there, to each infinitesimal isometry, an extension $M_t = M + tv_1 + t^2 v_2 + \ldots$ such that $dM_t \cdot dM_t = dM \cdot dM$?

DARRELL W. HAJEK, Mayaguez: *Functions with continuous Wallman extensions.* Czech. Math. J. *24 (99)*, (1974), 40—43. (Original paper.)

In this paper the author constructs a category T_1 spaces which contains the category of T_1 spaces and WO functions as a proper subcategory and each function in which has a unique Wallman extension which is again in the category.

MARKO ŠVEC, Bratislava: *Asymptotic relationship between solutions of two systems of differential equations.* Czech. Math. J. *24 (99)*, (1974), 44—58. (Original paper.)

In this paper the author deals with the problem of the asymptotic equivalence and restricted asymptotic equivalence of two systems of differential equations (i) $y' = Ax + f(t, x)$ and (ii) $y' = Ay$. The two systems (i) and (ii) are asymptotically equivalent if and only if to each solution $x(t)$ of (i) there exists a solution $y(t)$ of (ii) such that (iii) $\lim_{t \to \infty} |x(t) - y(t)| = 0$, and conversely, to each solution $y(t)$ of (ii) there exists a solution $x(t)$ of (i) such that (iii) holds. If the relation (iii) is satisfied only between some subsets of solutions (i) and (ii) then the equations (i) and (ii) are restricted asymptotically equivalent.

IVAN NETUKA, Praha: *Double layer potentials and the Dirichlet problem.* Czech. Math. J. *24 (99)*, (1974), 59—73. (Original paper.)

Integral representability and boundary behaviour of solutions of the generalized Dirichlet problem for the Laplace equation is investigated for discontinuous boundary conditions. For a class of open subsets of Euclidean space, a representation in terms of the generalized double layer potential is given for any bounded function measurable with respect to the area measure on the boundary. Results on nontangential limits of the solution and on the relationship of the harmonic measure and the area measure are also included.

ALOIS ŠVEC, Praha: *On a group of holomorphic transformations in $\mathscr{C}^2$.* Czech. Math. J. *24 (99)*, (1974), 97—106. (Original paper.)

The paper contains the proof of the following theorem: Let V be a layer of real hypersurfaces in $\mathscr{C}^2$ such that each hypersurface of V has a non-degenerate Levi form. Let G be a Lie group of biholomorphic transformations of $\mathscr{C}^2$ which is transitive on $\mathscr{C}^2$ and preserves the layer V. Then $4 \le \dim G \le 6$. In the case $\dim G = 6$ there are, in $\mathscr{C}^2$, holomorphic coordinates (x, y) such that G is given by

$$X = \alpha x + \beta, \quad Y = 2i\alpha(\varphi - \bar{\beta}) x + i\alpha(\alpha - \bar{\alpha}) x^2 + \alpha\bar{\alpha}y + \gamma; \quad \alpha, \beta, \gamma \in \mathscr{C};$$

and V by

$$i(y - \bar{y}) + (x - \bar{x})^2 = r, \ r \in \mathscr{R}.$$

ALOIS ŠVEC, Praha: *On a partial product structure.* Czech. Math. J. *24 (99)*, (1974), 107—113. (Original paper.)

The purpose of the paper is to study the equivalence problem for a 3-dimensional differentiable manifold endowed with a structure consisting of the choice of two tangent directions at each of its points, this being equivalent to the equivalence problem for real hypersurfaces in $\mathscr{C}^2$.