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ANDREJ KYSELOVIČ, Košice: *Bemerkungen zu Gomorys Algorithmus.* Apl. mat. 16 (1971), 164—167. (Originalartikel.)

Die ganzvielfache Lösung der Aufgabe der linearen Programmierung ist so eine Lösung $x_1, \ldots, x_n$, für welche jede Komponente durch d_i, $i = 1, \ldots, r$ teilbar ist. Für die Existenz einer ganzvielfachen Lösung ist notwendig und hinreichend, dass nach der Substitution $x_i = ky_i$, $i = 1, \ldots, n$ die entsprechende Aufgabe eine ganzzahlige Lösung hat, wobei: 1. wenn d_i, $i = 1, \ldots, r$ positive ganze Zahlen sind, dann ist k deren kleinstes gemeinsames Vielfaches, 2. wenn $d_i = p_i/q_i = p'_i/q$, $i = 1, \ldots, r$, $q > 0$, wo q das kleinste gemeinsame Vielfache der Zahlen q_i ist, dann ist k das kleinste gemeinsame Vielfache der Zahlen $p'_1, \ldots, p'_r$.

VLADIMÍR LELEK, JAN WIESNER, Praha: *The form of discrete spectrum in the case of high singular potential.* Apl. mat. 16 (1971), 168—171. (Original paper.)

In the present paper the form of discrete spectrum for high-singular potentials when solving the inverse problem of scattering is discussed on the basis of the results by Agronovich and Marchenko. It is proved that the number of discrete spectrum points for potentials which are positive in the neighbourhood of the origin is finite.

JIŘÍ ANDĚL, Praha: *On multiple normal probabilities of rectangles.* Apl. mat. 16 (1971), 172—181. (Original paper.)

Denote A a symmetric interval in the n-dimensional Euclidean space. Let the random vector $\mathbf{X}$ have n-dimensional normal distribution with vanishing expectation and regular covariance matrix. A method for the numerical evaluation of the probability $P(A) = P(\mathbf{X} \in A)$ is suggested in the paper. $P(A)$ is expressed as the sum of an infinite series. The bounds for the remainder term are given. The rate of convergence is analysed in detail in the twodimensional case. Two numerical examples are given to compare derived results with other methods.

ZBYNĚK ŠIDÁK, Praha: *Remarks on Anděl's paper "On multiple normal probabilities of rectangles".* Apl. mat. 16 (1971), 182—187. (Original paper.)

The paper contains come brief remarks on the preceding paper by J. Anděl. First, it discusses some simplifications in the bound for the remainder of Anděl's series. Second, it deals with a special case of covariance matrices for which this series has only non-negative terms.

KAREL ČULÍK, Praha: *Combinatorial problems in the theory of complexity of algorithmic nets without cycles for simple computers.* Apl. mat. 16 (1971), 188–202. (Original paper.)

Algorithmic nets (or flow diagrams) are a generalization of logical nets. They are finite, oriented and acyclic graphs or multigraphs with labelled vertices and edges. Certain total orderings of their vertices are called courses (or programs). The following measures of complexity of a course (together with certain chromatic decomposition of certain interval graph) are introduced: its length is the number of its vertices; its width is the maximal degree of a complete subgraph in the interval graph; its capacity of storage is the number of elements of the decomposition and the non-efficiencies of its scopes or of its addresses.

VLADIMÍR PANC, Praha: *Die allgemeine Lösung einer zylindrischen Differentialgleichung vierter Ordnung nullten Parameterwertes.* (The general solutions of a cylindrical 4-th order differential equation of zero index.) Apl. mat. 16 (1971), 203–214. (Original paper.)

The paper gives a comprehensive review of general solutions of the ordinary linear differential equation

$$(1) \qquad \Delta^2 w + 2\varepsilon\, \Delta w + w = 0\,, \quad \Delta = \mathrm{d}^2/\mathrm{d}\varrho^2 + (1/\varrho)\,(\mathrm{d}/\mathrm{d}\varrho)\,,$$

the particular solution of which is represented by the Bessel function $w = Z_0(\varrho\,\sqrt{\lambda})$ of zero index with a real, imaginary or complex argument, respectively.

In the cases $\varepsilon = \pm 1$ the corresponding characteristic equation $\lambda^2 - 2\varepsilon\lambda + 1 = 0$ evidently yields one double root $\lambda = \pm 1$; then another independent particular solution of Eq. (1) is represented by the function $w = \varrho\, Z_1(\varrho\,\sqrt{\pm 1})$.

Generally it is proved that the general solution of a double Bessel equation of the ν-th index (2) $[\Delta + \lambda - (\nu/\varrho)^2]^2\, w = 0$ can be written in the form

$$w = A_1\, J_\nu(\varrho\,\sqrt{\lambda}) + A_2 \varrho\, J_{\nu+1}(\varrho\,\sqrt{\lambda}) + A_3\, Y_\nu(\varrho\,\sqrt{\lambda}) + A_4 \varrho\, Y_{\nu+1}(\varrho\,\sqrt{\lambda})\,,$$

where A_1 to A_4 denote the constants of integration and $J_\nu(\varrho\,\sqrt{\lambda})$, $Y_\nu(\varrho\,\sqrt{\lambda})$ are the Bessel functions of the ν-th index of the first and second kinds, respectively.

KAREL MIŠOŇ, Praha: *Explicit expressions for the coordinates of foci and vertices of a quadric in dependence on the coefficients of its Cartesian equation.* Apl. mat. 16 (1971), 215–219. (Original paper.)

Explicit expressions are given for the coordinates of foci and vertices of quadrics in terms of the coefficients of their equations in Cartesian coordinates. Given expressions are restricted on the case of quadrics whose axes are not parallel to the coordinate axes ($a_{12} \neq 0$). For $a_{12} = 0$, some of the expressions require a limiting process.

JIŘÍ ANDĚL, Praha: *The Bayes approach in multiple autoregressive series.* Apl. mat. 16 (1971), 220—228. (Original paper.)

Let $\mathbf{X}_1, \ldots, \mathbf{X}_N$ be a finite part of the normal p-dimensional autoregressive series generated by

$$\sum_{k=0}^{n} \mathbf{A}_k \mathbf{X}_{t-k} = \xi_t$$

where random vectors ξ_t are uncorrelated and each of them has the unit covariance matrix. The Bayes approach is applied to the problem of estimating the autoregressive parameters under condition that the matrix $\mathbf{A}_0$ is diagonal. The "vague" prior distribution is supposed. It is proved that the point estimates coincide with the least squares estimates. The posterior distribution of these parameters is given in a simple form. The results are derived without the assumption that $\{\mathbf{X}_t\}$ is the stationary series.

ZBYNĚK NÁDENÍK, Praha: *Über Reduktion der sphärischen Dreiecke.* Apl. mat. 16 (1971), 229—231. (Originalartikel.)

Der Sinussatz und die Sätze von Legendre und Grunert sind als Spezialfälle eines allgemeineren Theorems hergeleitet.