

# Aplikace matematiky

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## Summaries of Papers Appearing in this Issue

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## SUMMARIES OF PAPERS APPEARING IN THIS ISSUE

(These summaries may be reproduced)

MILAN HVOŽDARA, Bratislava: *Conformal mapping of the halfplane onto a strip with variable width*. Apl. mat. 15 (1970), 391—398. (Original paper.)

By using Schwarz-Christoffel theorem the author deduces the conformal mapping of a halfplane onto an infinitely long strip whose one boundary is a straight line while the other one is a polygonal line consisting of two half lines parallel to the first boundary and connected by a segment whose slope angle is a fractional multiple of  $\pi$ . This mapping is expressed by means of elementary functions distinguishing the cases when  $\pi$  is divided by odd or even integer; some important properties of this mapping are shown.

HANA KAMASOVÁ, Praha: *An algorithm for the inversion of partitioned matrices*. Apl. mat. 15 (1970). 399—406. (Original paper.)

In this paper an algorithm for calculating the inverse matrix of the matrix partitioned into  $r \times r$  blocks is presented. Transformation formulas are derived and the conditions are given under which these formulas may be used.

PETR LIEBL, MARKÉTA NOVÁKOVÁ, Praha: *A method for dealing with ill-conditioned symmetric linear systems*. Apl. mat. 15 (1970), 407—412. (Original paper.)

In [1], a method is suggested, in a rather implicit way, by which an ill-conditioned symmetric system of linear algebraic equations is “improved” by replacing a row of the coefficient matrix by an eigenvector. In this paper, this method is described and investigated, the best choices of parameters are recommended, and estimates of the improvement achieved are given.

IVO MAREK, Praha: *On a method of D. Marsal for equations with positive operators*. Apl. mat. 15 (1970), 413—417. (Original paper.)

In this paper is studied the equation (\*)  $x = Tx + f$  in a complex Banach space  $X$ , its ordering being given by a normal reproducing cone  $K$ . Under the assumption that (\*) has exactly one solution in  $K$  it is shown that a certain sequence  $(w_p)$  (given by iterations — which is an analogue of Marsal's method) converges to  $x^*$ . The paper is a generalization of Marsal's results.

BORO DÖRING, Darmstadt: *Einige Sätze über das Verfahren der tangierenden Hyperbeln in Banach-Räumen*. Apl. mat. 15 (1970), 418—464. (Original-artikel.)

Drei verschiedene Verallgemeinerungen des Satzes von Kantorovich über die Newtonsche Methode, welche das Verfahren der tangierenden Hyperbeln (Iterationsmethoden dritter Ordnung für approximative Lösung nichtlinearer Operatorgleichungen in Banachräumen) betrifft, werden bewiesen. Existenz und Eindeutigkeit einer Lösung, Konvergenz, Ordnung — und Fehlerabschätzungen sind bei einfachen und schwachen Bedingungen gesichert. Die erreichten Fehlerabschätzungen sind besser als die bekannten, insbesondere in Funktionenräumen. Die Ergebnisse sind an einigen Beispielen von Operatorgleichungen verschiedener Art illustriert.