Summaries of Papers Appearing in this Issue

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(These summaries may be reproduced)

A. K. GOVIL, New Delhi and SANTOSH KUMAR, Melbourne: *On the behaviour of an intermittently working system with three types of components.* Apl. mat. 16 (1971), 1—9. (Original paper.)

The behaviour of an intermittently working system having three types of components has been investigated, incorporating the concepts of stand-by redundancy and reduced efficiency. A mathematical model has been formulated for exponential distributions considering failure, waiting and repair times. The Laplace Transforms of probabilities corresponding to different states of the system have been obtained. Some particular cases have been discussed. In the end, a numerical example has been added to illustrate the method.

MIROSLAV ŠISLER, Praha: *Über die Konvergenz von Iterationsverfahren.* Apl. mat. 16 (1971), 10—23. (Originalartikel.)

Die Arbeit befasst sich mit der Konvergenz der Iterationsverfahren für die Lösung eines linearen Gleichungssystems $\mathbf{A}\mathbf{x} = \mathbf{b}$. Es handelt sich um das, der Zerlegung $\mathbf{A} = \mathbf{P}_1 - \mathbf{Q}_1$ entsprechende, Iterationsverfahren. Wenn man in die Matrizen $\mathbf{P}_1$, $\mathbf{Q}_1$ ein, in gewisser (in der Arbeit beschriebener) Art, komplexe Parameter k eingeführt, entsteht eine neue Zerlegung $\mathbf{A} = \mathbf{P}_k - \mathbf{Q}_k$ der Matrix $\mathbf{A}$. Die ursprüngliche Zerlegung der Matrix $\mathbf{A}$ ist dabei ein Spezialfall für $k = 1$. In der Arbeit werden Bedingungen untersucht, die für die Konvergenz irgendeines, der Zerlegung $\mathbf{A} = \mathbf{P}_\kappa - \mathbf{Q}_k$ entsprechenden, Iterationsverfahrens notwendig und hinreichend sind. In der Arbeit wird das Gebiet von der Parameter k beschrieben, für die das Iterationsverfahren konvergiert, in der Abhängigkeit von der Lage der Eigenwerte der Matrix $\mathbf{P}_1^{-1}\mathbf{Q}_1$. Es wird auch das Problem der Lage des optimalen komplexen Parameters k behandelt.

DANIEL MAYER, Plzeň: *Electric network analysis by the generalized cut-set matrix method.* Apl. mat. 16 (1971), 24—45. (Original paper.)

The article formulates a generalized cut-set method which may be used for the analysis of linear networks containing ideal voltage sources together with ideal current sources; there may also be magnetic couplings between the branches of the network. It appears that this method is a very useful tool for the network analysis. Its application is demonstrated on four examples.

IVAN HLAVÁČEK, Praha: *Variational formulation of the Cauchy problem for equations with operator coefficients.* Apl. mat. 16 (1971), 46–63. (Original paper.)

Several variational principles are suggested, which are equivalent to initial-value (Cauchy) problems for equations of the first and second order in time coordinate. Their coefficients are linear operators, acting in the space $L_2(I, H)$ of square-integrable mappings of a time interval I into a Hilbert space H. In particular, the theory includes some classes of partial differential equations and of integro-differential equations. Some kinds of symmetry in the sense of convolutions are required for the operator coefficients.

In the following two papers, the variational principles were employed for the definitions of weak solutions for particular classes of integro-differential equations.

IVAN HLAVÁČEK, Praha: *On the existence and uniqueness of solution of the Cauchy problem for linear integro-differential equations with operator coefficients.* Apl. mat. 16 (1971), 64–80. (Original paper.)

In the theory of neutron fields some problems arise, which may be described by means of integro-differential equations with initial conditions. The aim of the paper is to state a class of problems covering this physical example and to prove the existence, uniqueness and continuous dependence of their solutions on the given data. A variational approach, presented in a previous author's article, is used to establish the definition of generalized (weak) solutions of the Cauchy problem, which is an extension of the concept of generalized solutions in case of differential equations.