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On estimating the diffusion coefficient [Abstract of thesis]

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ABSTRACTS OF CSc. (Candidatus Scientiarum) THESES IN MATHEMATICS
defended recently at Charles University, Prague

ON ESTIMATING THE DIFFUSION COEFFICIENT

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(6.1. 1986, supervisor P. Mandl)

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MODEL AND METHOD FOR ANALYSIS OF CATEGORICAL DATA WITH RELATIONS

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(13.2. 1986, supervisor F. Fabian)

The aim of the dissertation is to propose a general model which enables us to develop descriptive measures for distributions on various types of classifications with relations. The simple, ordered and quantitative classifications will be special cases of this model.

Chapter 1 introduces a generalized categorical variable, basic characteristics of its distribution, their properties and a distance of two distributions.

Chapter 2 gives properties of the distance of two distributions of the generalized categorical variable.

Chapter 3 provides a decomposition of the generalized variance, introduces measures of the explanatory and predictive power of decomposition and their properties.

Chapter 4 specifies the preceding results for nominal, ordinal and cardinal variables and provides two more special types of the generalized categorical variable.

Chapter 5 gives first two moments for some of the characteristics of the distribution.

Chapter 6 provides asymptotic distributions of the coefficients of the explanatory power and partial association.

Chapter 7 deals with testing hypotheses of goodness-of-fit and homogeneity of independent samples.

As the whole, the theory provides a tool for analyses of frequency distributions in which one wants to take into account the numerically expressed relations among categories.

DIE OPTIMALISATION UND DIE NUMERISCHE ANALYSE DER REAKTORSYSTEME

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(8.4. 1986, supervisor I. Marek)

In der Dissertation werden die Eigenschaften der u_0 -positiven kompakten Operatoren, die einen gegebenen reellen Banachraum in sich abbilden, untersucht. Es wird gezeigt, dass aus der monotonen Abhängigkeit und Stetigkeit eines solchen Operators - der Funktion $T = T(\gamma)$ bezüglich des Parameters $\gamma \in \langle 0, +\infty \rangle$ die Monotonie und Stetigkeit der dominierenden positiven Eigenzahl $\lambda_0 = \lambda_0(\gamma)$ als der Funktion dieses Parameters folgt. Es ist möglich, diese Ergebnisse für den Beweis der Existenz und der Eindeutigkeit des kritischen Parameters des Kernreaktors zu benutzen.