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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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The aim of the dissertation is to propose a general model
which enables us to develop descriptive measures for distributi-
ons on various types of classifications with relations. The sim-
ple, ordered and quantitative classifications will be special ca-
ses of this model.

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

Chapter 2 gives properties of the distance of two distribu-
tions of the generalized categorical variable.

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

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

Chapter 5 gives first two moments for some of the characte-
ristics of the distribution.

Chapter 6 provides asymptotic distributions of the coeffi-
cients 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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In der Dissertation werden die Eigenschaften der u_0 -positi-
ven kompakten Operatoren, die einen gegebenen reellen Banachraum
in sich abbilden, untersucht. Es wird gezeigt, dass aus der mo-
notonen Abhängigkeit und Stetigkeit eines solchen Operators -
der Funktion $T=T(\gamma)$ bezüglich des Parameters $\gamma \in \langle 0, +\infty \rangle$ die Mo-
notonie und Stetigkeit der dominierenden positiven Eigenzahl
 $\lambda_0 = \lambda_0(\gamma)$ als der Funktion dieses Parameters folgt. Es ist mö-
glich, diese Ergebnisse für den Beweis der Existenz und der Ein-
deutigkeit des kritischen Parameters des Kernreaktors zu benutzen.