# Commentationes Mathematicae Universitatis Carolinae

Nguyen Xuang Dung

On decidability of skeletal sets [Abstract of thesis]

## Terms of use:

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

## MATHEMATICAL AND COMPUTER MODELLING OF MECHANISMS REGULATING BLOOD FLOW AT THE MICROCIRCULATION LEVEL
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(27.2.1989, supervisor M.Malík)

Known mathematical models of blood flow are based on continuous approaches to the description of the flow characteristics and are constructed by the means of differential equations. This thesis introduces a completely new theoretical method. It presents a discrete mathematical theory of the mechanisms of regulating microcirculation. In this theory, the relevant physical laws and relations are introduced in the form of formal axioms.

The created mathematical abstraction has been employed to build computer models of regulating microcirculation. The program implementation is based on asynchronous simulation with event planning.

The results of computer simulation experiments are comparable with the results of direct laboratory measurements. This proves that the created models demonstrate an acceptable degree of equality with the real world.

## ON DECIDABILITY OF SKELETAL SETS
NGUYEN XUANG DUNG, Department of cybernetics, University of Hanoi, Hanoi, Vietnam
(27.2.1989, supervisor M.Chytil)

The method of error recovery for parsers of context–free languages introduced by M. Chytil and J. Demner is based on the concept of skeletal set. The quality of recovery depends on the quality of the skeletal set available for given context–free language.

The key problem studied in the dissertation is the question whether a given set of terminal symbols is a skeletal set for the given language. The problem is known to be algorithmically undecidable for general context–free languages. The dissertation deals with important special cases of context–free languages, e.g. regular, linear, and deterministic languages.

## ADAPTIVE METHODS OF NUMERICAL QUADRATURE
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(11.4.1989, supervisor I.Marek)

Based on the trapezoidal rule, an adaptive method of construction of a hierarchy of meshes of numerical quadrature is proposed and studied. The purpose