<<不动点理论导论>>

图书基本信息

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作者：伊斯特拉泰斯库

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前言

This book is intended as an introduction to fixed point theory and itsapplications. The topics treated range from fairly standard results （such asthe Principle of Contraction Mapping， Brouwers and Schauders fixedpoint theorems） to the frontier of what is known， but we have not tried toachieve maximal generality in all possible directions. We hope that thereferences quoted may be useful for this purpose. The point of view adopted in this book is that of functional analysis; forthe readers more interested in the algebraic topological point of view wehave added some references at the end of the book. A knowledge offunctional analysis is not a prerequisite, although a knowledge of anintroductory course in functional analysis would be profitable. However， the book contains two introductory chapters， one on general topology andanother on Banach and Hilbert spaces. As a special feature of these chapterswe note the study of measures of noncompactness; first in the case of metricspaces ， and second in the case of Banach spaces. Chapter 3 contains a detailed account of the Contraction Principle， perhaps the best known fixed point theorem. Many generalizations of theContraction Principle are also included. We note here the connectionbetween ideas from projective geometry and contractive mappings. Afterpresenting some ways to compute the fixed points for contractivemappings， we discuss several applications in various areas. Chapter 4 presents Brouwers fixed point theorem， perhaps the mostimportant fixed point theorem. After some historical notes concerningopinions about Brouwers proof- which have been influential for the futureof the fixed point theory （Alexander and Birkhoff and Kellogg）-wepresent many proofs of this theorem of Brouwer， of interest to differentcategories of readers. Thus we present an elementary one， which requiresonly elementary properties of polynomials and continuous functions;another uses differential forms; still another uses differential topology; andone relies on combinatorial topology. These different proofs may be used indifferent ways to compute the fixed points for mappings. In this connection， some algorithms for the computation of fixed points are given.

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内容概要

This book is intended as an introduction to fixed point theory and itsapplications. The topics treated range from fairly standard results （such asthe Principle of Contraction Mapping， Brouwers and Schauders fixedpoint theorems） to the frontier of what is known， but we have not tried toachieve maximal generality in all possible directions. We hope that thereferences quoted may be useful for this purpose. The point of view adopted in this book is that of functional analysis; forthe readers more interested in the algebraic topological point of view wehave added some references at the end of the book. A knowledge offunctional analysis is not a prerequisite, although a knowledge of anintroductory course in functional analysis would be profitable. However， the book contains two introductory chapters， one on general topology andanother on Banach and Hilbert spaces.

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