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<<用于边界值问题的拓扑不动点原理>>

图书基本信息

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内容概要

安德里斯编著的《用于边界值问题的拓扑不动点原理》旨在系统介绍凸空间上的单值和多值映射的拓扑不动点理论。
内容包括常微分方程的边界值问题和在动力系统中的应用，是第一本用非度量空间讲述拓扑不动点理论的专著。
尽管理论上的讲述和书中精选的应用实例相结合，但本身具有很强的独立性。
本书利用不动点理论求微分方程的解，独具特色。
目次：理论背景；一般原理；在微分方程中的应用。

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章节摘录

版权页： 插图： Our book is devoted to the topological fixed point theory both for single—valued and multivalued mappings in locally convex spaces, including its application to boundary value problems for ordinary differential equations (inclusions) and to (multivalued) dynamical systems. It is the first monograph dealing with the topological fixed point theory in non—metric spaces. Although the theoretical material was tendentially selected with respect to applications, we wished to have a self—consistent text (see the scheme below). Therefore, we supplied three appendices concerning almost—periodic and derivo—periodic single—valued (multivalued) functions and (multivalued) fractals. The last topic which is quite new can be also regarded as a contribution to the fixed point theory in hyperspaces. Nevertheless, the reader is assumed to be at least partly familiar in some related sections with the notions like the Bochner integral, the Aumann multivalued integral, the Arzela—Ascoli lemma, the Gronwall inequality, the Brouwer degree, the Leray—Schauder degree, the topological (covering) dimension, the elemens of homological algebra, . . . Otherwise, one can use the recommended literature. Hence, in Chapter I, the topological and analytical background is built. Then, in Chapter II (and partly already in Chapter I), topological principles necessary for applications are developed, namely: —the fixed point index theory (resp. the topological degree theory), —the Lefschetz and the Nielsen theories both in absolute and relative cases, —periodic point theorems, —topological essentiality, —continuation—type theorems. All the above topics are related to various classes of mappings including compact absorbing contractions and condensing maps. Besides the (more powerful) homological approach, the approximation techniques are alternatively employed as well.

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