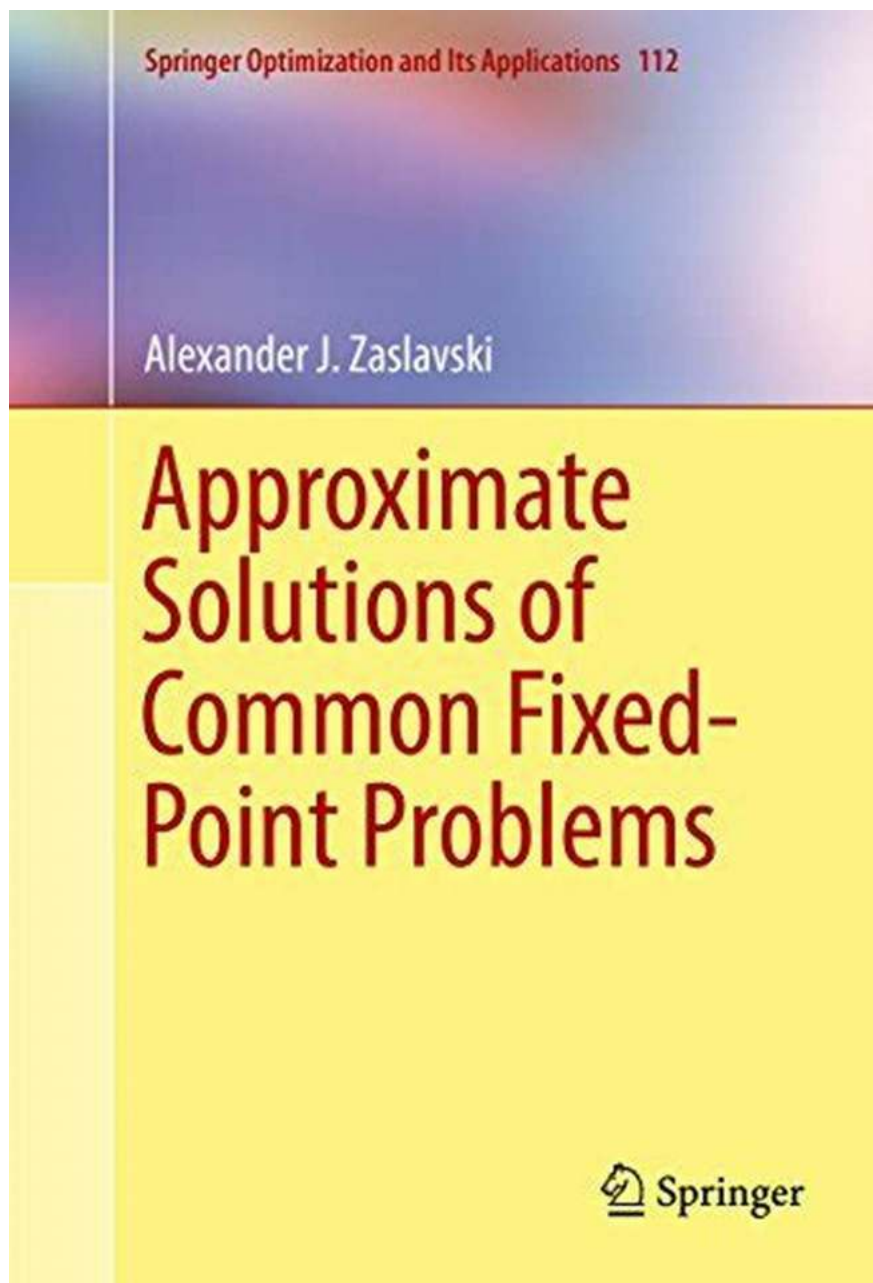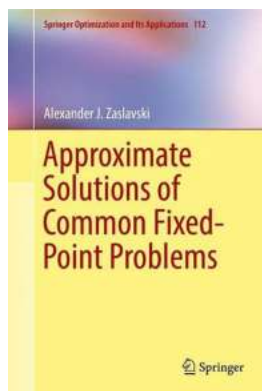# Discover the Fascinating World of Approximate Solutions to Common Fixed Point Problems with Springer Optimization And

Springer Optimization and Its Applications 112

Alexander J. Zaslavski

Approximate Solutions of Common Fixed-Point Problems

Springer

Springer Optimization And is an essential resource for researchers, professionals, and students interested in optimization theory and its applications. In this article, we will delve into the captivating realm of approximate solutions for common fixed point problems, exploring their significance, applications, and benefits within the Springer Optimization And framework.

Understanding Fixed Point Problems

Fixed point problems are fundamental in mathematical analysis, and they have extensive applications across various disciplines. These problems involve finding a point within a certain set that remains unchanged under a given mapping function. In other words, for a function f, we seek a point x such that f(x) = x.

Approximate Solutions of Common Fixed-Point Problems (Springer Optimization and Its Applications Book 112)

by Alexander J. Zaslavski (1st ed. 2016 Edition, Kindle Edition)

★★★★☆ 4.4 out of 5

Language   : English
File size   : 5638 KB
Print length   : 463 pages
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Fixed point problems have numerous real-world interpretations and applications. For instance, they are utilized in economics to model the equilibrium condition between supply and demand, and in computer science for solving optimization, graph theory, and artificial intelligence problems.

The Power of Approximate Solutions

Exact solutions to fixed point problems are often difficult, if not impossible, to find analytically. However, approximate solutions offer a valuable alternative that allows us to obtain an approximation of the desired fixed point within a pre-defined error tolerance.

Approximate solutions provide practical benefits in terms of simplicity, feasibility, and computational efficiency. They enable researchers, practitioners, and decision-makers to overcome the challenges of finding precise solutions, which may be hindered by complexity, computational limitations, or lack of information.

Springer Optimization And recognizes the significance of approximate solutions in addressing real-world problems and offers cutting-edge research and practical methodologies to explore and apply them effectively.

Applications of Approximate Solutions

The applications of approximate solutions to fixed point problems span across various fields, including:

- **Economics and Game Theory:** Approximate solutions enable economists to model market equilibrium scenarios and predict consumer behavior with reasonable accuracy, even in highly complex systems.

- **Computer Science:** Approximation techniques play a crucial role in solving intricate optimization problems, clustering data, and simulating complex networks.

- **Engineering:** Approximate solutions are instrumental in system control, signal processing, robotics, and image recognition, where practical constraints often make exact solutions unfeasible.

- **Operations Research:** Approximation methods assist in decision-making models, scheduling, transportation, and logistics, allowing for realistic and efficient solutions in large-scale problems.
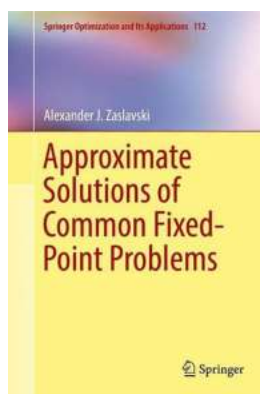
The Springer Optimization And Advantage

Springer Optimization And offers a comprehensive collection of books, articles, and research papers, providing an in-depth exploration of approximate solutions for fixed point problems. Whether you are a researcher, a student, or a professional seeking practical insights, you can benefit from the vast resources available.

By accessing Springer Optimization And, you gain:

- **Authoritative Knowledge:** Springer Optimization And brings together expert authors and researchers who are at the forefront of optimization theory, ensuring that you receive up-to-date and reliable information.

- **Diverse Range of Topics:** The platform covers a wide range of topics related to optimization, including approximate solutions to fixed point problems, enabling you to explore different areas of interest.

- **Practical Applications:** Springer Optimization And emphasizes practical applications, bridging the gap between theory and real-world problem-solving. You will find case studies, numerical examples, and recommendations for implementation.

- **Networking Opportunities:** As a member of Springer Optimization And, you can connect with fellow researchers and professionals in the field, fostering collaborations and knowledge exchange.

Approximate solutions to common fixed point problems offer a powerful tool for addressing complex real-world challenges where exact solutions may be elusive. Springer Optimization And provides an exceptional platform for understanding, exploring, and implementing such approximate solutions efficiently.

Join Springer Optimization And now to unlock a world of possibilities in optimization theory and gain invaluable insights into approximate solutions for common fixed point problems.

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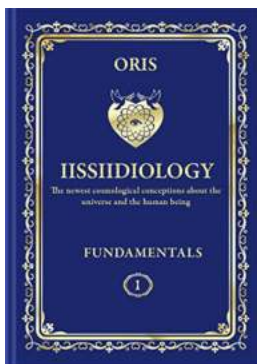Screen Reader : Supported

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This book presents results on the convergence behavior of algorithms which are known as vital tools for solving convex feasibility problems and common fixed point problems. The main goal for us in dealing with a known computational error is to find what approximate solution can be obtained and how many iterates one needs to find it. According to know results, these algorithms should converge to a solution. In this exposition, these algorithms are studied, taking into account computational errors which remain consistent in practice. In this case the convergence to a solution does not take place. We show that our algorithms

generate a good approximate solution if computational errors are bounded from above by a small positive constant.

Beginning with an , this monograph moves on to study:

· dynamic string-averaging methods for common fixed point problems in a Hilbert space

· dynamic string methods for common fixed point problems in a metric space<

· dynamic string-averaging version of the proximal algorithm

· common fixed point problems in metric spaces

· common fixed point problems in the spaces with distances of the Bregman type

· a proximal algorithm for finding a common zero of a family of maximal monotone operators

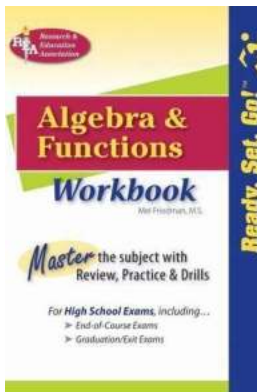· subgradient projections algorithms for convex feasibility problems in Hilbert spaces
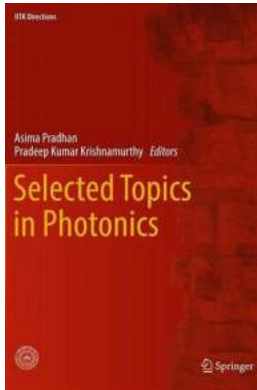
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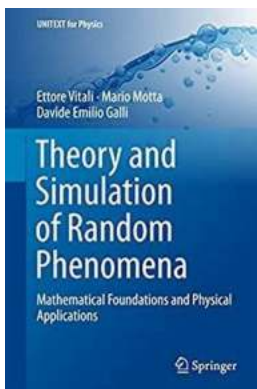
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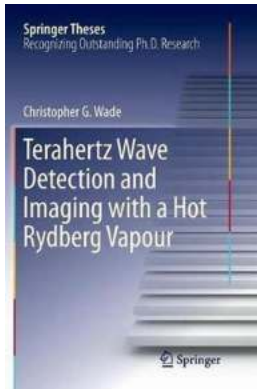
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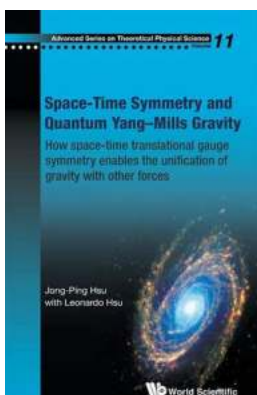
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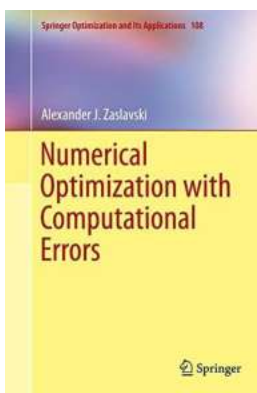
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