

Fractal-based Methods In Analysis

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The idea of modeling the behavior of phenomena at multiple scales has become a useful tool in both pure and applied mathematics. Fractal-based techniques lie at the heart of this area, as fractals are inherently multiscale objects; they very often describe nonlinear phenomena better than traditional mathematical models. In many cases they have been used for solving inverse problems arising in models described by systems of differential equations and dynamical systems. "Fractal-Based Methods in Analysis" draws together, for the first time in book form, methods and results from almost twenty years of research in this topic, including new viewpoints and results in many of the chapters. For each topic the theoretical framework is carefully explained using examples and applications. The second chapter on basic iterated function systems theory is designed to be used as the basis for a course and includes many exercises. This chapter, along with the three background appendices on topological and metric spaces, measure theory, and basic results from set-valued analysis, make the book suitable for self-study or as a source book for a graduate course. The other chapters illustrate many extensions and applications of fractal-based methods to different areas. This book is intended for graduate students and researchers in applied mathematics, engineering and social sciences. Herb Kunze is a Professor in the Department of Mathematics and Statistics, University of Guelph. Davide La Torre is an Associate Professor in the Department of Economics, Business and Statistics, University of Milan. Franklin Mendivil is a Professor in the Department of Mathematics and Statistics, Acadia University. Edward R. Vrscay is a Professor in the Department of Applied Mathematics, Faculty of Mathematics, University of Waterloo. A major focus of their research is fractals and their applications. EAN/ISBN : 9781461418917 Publisher(s): Springer, Berlin, Springer US Discussed keywords: Fraktale Format: ePub/PDF Author(s): Kunze, Herb - La Torre, Davide - Mendivil, Franklin

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