



Special Issue Reprint

Fixed Point Theory and Fractals

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In recent decades, fractal theory has proven to be extremely useful for the modelling of a great quantity of natural and social phenomena. Its fields of application range from biotechnology to financial markets, for instance.

Fractal geometry builds a bridge between classical geometry and modern analysis. The static models of the old geometry are enriched with the dynamics of an infinite iterative process, where the outputs are not merely points but more sophisticated geometric objects and structures. A fractal set can be described in very different ways, but the current mathematical research tends to define a fractal as the fixed point of an operator on the space of compact subsets of a space of a metric type. Iterated function systems provide a way of constructing an operator of this kind, and a procedure for the approximation of its fixed points. Thus, the relationships between fractal and fixed-point theories are deep and increasingly intricate.

This Reprint is aimed at emphasizing the relationships between both fields, including their theoretical and their applied aspects.



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