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DISCRETE DYNAMICS IN NATURE AND SOCIETY
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Aims and Scope:

The main objective of *Discrete Dynamics in Nature and Society* (DDNS) is to foster links between basic and applied research relating to discrete dynamics of complex systems encountered in the natural and social sciences.

Discrete dynamics reflects a new emerging tendency towards utilization of iterative mathematical models – systems of non-linear difference equations – to describe the behaviour of complex systems. It has become clear from the latest developments in discrete modelling that such models have a simpler structure and provide many more possibilities for generating and describing complex non-linear phenomena, including chaotic regimes and fractals.

However, further developments in such a discrete mathematical approach are restricted by the absence of general principles that could play the same role as the variational principles in physics. DDNS aims to elaborate such principles, which are expected to lead to a better understanding of the exact meaning of «discrete» time and space, and, to the creation of a new «calculus» for discrete complex dynamics.

The journal will provide a channel of communication between scientists and practitioners working in the field of complex systems analysis and will stimulate the development and use of a discrete dynamical approach.

Discrete Dynamics in Nature and Society will publish original, high quality, research papers. In addition there will be regular editorials, invited reviews, a letters section and a news section containing information on future events and book reviews.

World Wide Web Addresses

Additional information is also available through the Publisher's web home page site at <http://www.gbhap.com>. Full text on-line access and electronic author submissions may also be available.

Editorial enquiries by e-mail: <editlink@gbhap.com>

Editorial

Dear Colleagues and Friends,

Welcome to the first issue of *Discrete Dynamics in Nature and Society*. We are sure that you will find new and interesting information about discrete dynamics, and we invite you to contribute your own ideas to the fascinating field of Discrete Non-linear Dynamics.

Over the past decades, Discrete Non-linear Dynamics has emerged as an active area of research in both Natural and Social Sciences. Discrete dynamics of complex systems, which by its very nature include all kinds of bifurcations and chaotic behavior, is based on the application of iterative maps as the unifying framework and operational tool for analysis, mathematical modelling and computer simulation of non-linear phenomena.

The tendency to use iterations to describe evolutionary processes raises a number of fundamental questions. Are the iterations an appropriate and adequate instrument for presentation of the evolutionary changes? Or, are they just an approximation to differential equations? If the answer to the first question is yes, what kind of new, «first principles» can be formulated for discrete dynamics, analogous to the variational principles of classical physics? What type of operational tools or «calculus of iterations» can be devised? What is the meaning of «discrete» time and space and in what way is discrete dynamics connected with continuous space-time classical dynamics?

The Journal *Discrete Dynamics in Nature & Society* (DDNS) will focus on discussions of these problems with the ultimate aim of basing discrete dynamics on the same sound theoretical footing as that of dynamic theories based on differential equations or infinitesimal calculus. We want to foster applied research in the field of Discrete Non-linear Dynamics and to stimulate debate about the modern role of computer simulations in the mathematical modelling of complex systems, in particular, areas displaying chaotic regimes and applications of Discrete Non-linear Dynamics for the next generation of models, ideas and principles in artificial intelligence, neural nets, «artificial» life, catalytic chemistry, biology, laser physics, computer science, medicine, socio-spatial dynamics and the social sciences.

The discrete dynamics of chemical reactions exhibit mathematical similarity to the discrete dynamics of socio-spatial sciences. We intend to further explore this similarity and hope that new similarities will be found in the study of natural and social phenomena as a result of the application of a new «calculus of iterations».

We would like to encourage all contributors to this Journal to present their new ideas. Here they will find friends and enthusiasts who will appreciate their participation in discussing the «New Terra» of *Discrete Dynamics in Nature & Society*.

With best wishes and hopes,

Vladimir Gontar
Michael Sonis

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