Advances in Mathematical Physics

Special Issue on

Discrete Complex Systems and Applications

CALL FOR PAPERS

The availability of a huge amount of data in the most diverse areas of science naturally led to an increasing proportion of nonlinearities and complex patterns arising in such data. Particularly, a large number of techniques originally proposed to study complex systems in Physics and Mathematics have proven to be especially powerful in these problems. In fact, despite the success of analytical approaches to analysing complex systems, the direct application to discrete objects like images and signals is usually cumbersome or even infeasible. Based on this and considering the dissemination of computational tools, studies on methods whose domains are intrinsically discrete, like complex networks and cellular automata, have shown burgeoning interest and provided promising results in problems where analytical methods would not be practicable.

Examples of applications involve theoretical aspects in artificial intelligence, social and biological networks, image/signal analysis and processing, pattern recognition, and many others as well as direct applications to problems in Computer Sciences, Physics, Biology, Engineering, Social Sciences, and so on.

We invite investigators to contribute original research articles on both theoretical and applied studies of complex systems techniques applied to discrete problems.

Potential topics include, but are not limited to:

- Recent theoretical and applied developments on complex networks
- Studies on the modeling of discrete systems (images and signals) by discrete fractal geometry and multifractals
- Theoretical and applied studies on Cellular Automaton Models
- Studies on nonlinear dynamics, game theory, evolutionary computation, and other topics on complex systems modeled in a discrete domain

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