



Mathematical Modeling of Symmetry in Collective Biological Dynamics

Guest Editor:

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Message from the Guest Editor

Dear Colleagues,

The emergence of collective behavior within biological systems, from the synchronized movements of fish schools to intricate human social interactions, epitomizes the inherent complexity and symmetry in nature. This phenomenon, where simple individual-level rules manifest into complex and often symmetrical group dynamics, is the focus of our Special Issue. Herein, we delve into the mathematical foundations that elucidate the principles driving the emergence of collective behavior, emphasizing the transformative power of mathematical models in uncovering these principles, with a particular focus on symmetry analysis across various scales and contexts within biology.

We invite submissions of original research articles that employ mathematical modeling techniques, including symmetry analysis, to dissect the mechanisms underlying the emergence of collective behavior. Appropriate submission materials may belong to biomathematics, including, but not limited to, infectious disease dynamics and the emergence mechanism of collective cooperation. Our primary interest lies in models that clarify how local interactions among individuals culminate in the formation...





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Message from the Editor-in-Chief

Symmetry is ultimately the most important concept in natural sciences. It is not surprising then that very basic and fundamental research achievements are related to symmetry. For instance, the Nobel Prize in Physics 1979 (Glashow, Salam, Weinberg) was received for a unified symmetry description of electromagnetic and weak interactions, while the Nobel Prize in Physics 2008 (Nambu, Kobayashi, Maskawa) was received for the discovery of the mechanism of spontaneous breaking of symmetry, including CP symmetry. Our journal is named *Symmetry* and it manifests its fundamental role in nature.

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