

Emergence of Collective Behavior of Coupled Stochastic Brusselators

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Abstract

Mathematical models have been wide useful in the study of nonlinear coupled oscillators. From the interaction of coupled nonlinear biological system and intrinsic noise, new phenomena have emerged and generated advances in the understanding of biological systems. In this work a novel algorithm of the synchronization in a noisy environment is presented taking in count an array of stochastic Brusselators with different strength of the interaction and varying the topology of the network. The stochastic dynamics systems have been simulated by the well know Gillespie algorithm. The synchronization among oscillators is analyzed using standard measure such as the order parameter R . Finally, we wish to point out that our findings can contribute to enhance the understanding of one of the most fascinating problems in the biology, namely, the emergence of collective behaviors induced by coupling in the presence of internal stochasticity.

References

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