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Section:

16. Applications

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Self-organized model for the genetic code
We formulate a mathematical model in which information carrier polymers and functional polymers are composed by letters from two different alphabets and a kind of pre-biotic genetic code is seen as a set of one-to-one assignments between the two alphabets. Computer simulation and deterministic differential equations are employed to study the time evolution of a set of coupled molecular biological stochastic processes (translation, replication and aging) according to the particular embedding of the reaction catalysts in the sequence space of strings of letters from the first alphabet. We verify that there are embeddings that allow self-organization of the genetic code, that is fixation of assignments, starting from totally chaotic conditions.