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Information technologies based on DNA. Nanobioelectronics

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DNA molecular is a clear example of data storage and biocomputing. Performing millions of operations simultaneously DNA –biocomputer allows the performance rate to increase exponentially. The limitation problem is that each stage of paralleled operations requires time measured hours or days. To overcome this problem can nanobioelectronics.

The central problem of nanobioelectronics is realization of effective charge transfer in biomacromolecules. The most promising molecule for this goal is DNA. Computer simulation of charge transfer can make up natural experiment in such complex object as DNA. Such processes of charge transport as Bloch oscillations, soliton evolution, polaron dynamics, breather creation and breather inspired charge transfer are modeled. The supercomputer simulation of charge dynamics at finite temperatures is presented. Different molecular devices based on DNA are considered.

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Summary

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