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Mathematics as an engine for computational sciences

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Recently, the branch of mathematics associated with functional integration has been rapidly developing. For a long time it was a means of constructing perturbation theory and solving applied problems. However, recently it has become clear that this can be a very effective tool for high-performance algorithms creation. Moreover, it may be the only tool for developing algorithms for quantum computing emulators. The report discusses in detail solutions of partial differential equations with particular emphasis on representation at the so-called "intermediate point". It turns out that this kind of representation opens the way for absolutely parallel algorithms. The analysis of intermediate results based on the "catastrophe theory" makes it possible to analyze the results obtained in the spirit of the "qualitative theory of differential equations".

Summary

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