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ТҮРКІТІЛДЕС ЕЛДЕР МАТЕМАТИКАЛЫҚ ҚОҒАМЫ VI КОНГРЕСІНІҢ ТЕЗИСТЕР ЖИНАҒЫ

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Parallel technologies for solving problems in the field of petroleum geophysics

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At present, parallel technologies are used to solve problems associated with "big data". One of the such problem is the problems in the field of petroleum geophysics. To model the problem of oil production, it is necessary a large amount of computational time and resource. To obtain the good speedup, various parallel technologies are used, for example, CUDA, MPI, OpenMP, hybrid computing, computation on Intel's Xeon Phi and etc.

We have investigated a various of parallel technologies to solve problems in the field of petroleum geophysics. Parallel algorithms with MPI were studied to solve oil recovery problems [1]. Three-phase fluid flow numerical model was solved using the technology of fragmented programming of the LuNA system [2]. And high-performance computing have been implemented for EOR problem on mobile devices with Nvidia Tegra K1 processor [3]. The results of testing were obtained and compared with similar works. On the basis of investigations it may be stated that increase in computing resources is not enough to get a good speedup, the main thing is to use an efficient algorithm using various of parallel technologies.

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