HybriLIT Platform: Services and Environment for HPC Calculations, Mathematical Modeling, Data Storage and Analysis

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HybriLIT heterogeneous computing platform is a powerful computing component of the Multifunctional Information and Computing Complex of JINR, which was created and is being developed to provide resource-intensive and massively parallel calculations and data analysis for JINR tasks related to theoretical and experimental research. The platform consists of the GOVORUN supercomputer, education and testing polygon that includes ML/DL/HPC ecosystem, and a testing polygon for quantum computing. The development of the Platform is associated both with the general development of computing architectures and data storage systems, providing users with the latest solutions, and with active development of information technologies, the emergence of new tools for solving a wide range of applied problems and for creating scientific services.

The report will present a multi-level software and information environment of the Platform which includes a system, software and information level. This provides users with convenient tools for carrying out calculations using parallel programming technologies, machine and deep learning; it also provides opportunities for developing quantum algorithms using quantum simulators, as well as examples of developed scientific services.