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DEPLOYMENT A WEB APPLICATION FOR FITTING EXPERIMENTAL DATA WITHIN THE JINR CLOUD INFRASTRUCTURE

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The widespread use of web technologies is a trend in software development at the present time. More powerful modern hybrid architectures computing resources become available to the user located at any geographical point connected by a network with a supercomputer. Since modern high energy physics experiments are characterized by the complexity of the latest detectors and a very large channels number for reading information, the amount of data to be analyzed becomes extremely large. Cloud technologies are successfully used to store and process such data.

Our work is devoted to the development of a web application for fitting experimental data and its deployment on the local cloud infrastructure of LIT JINR [1]. When implementing our application, the ROOT software package [2] was used, which is high energy physics standard and has a large set of tools for distributed data processing.

The web application for fitting experimental data is a continuation of the FITTER program [3], designed to fit the results of measurements of small-angle neutron scattering with a selected theoretical multi-parameter function. The user has the ability to edit the theoretical model program code, carry out fitting in a given range, select the minimization method and a specific algorithm for fitting, and also change a number of other parameters. When implementing the web interface, the component included in the ROOT distribution, FitPanel, was used. Web windows separate tabs are the ROOT Canvas, which displays the experimental data and the theoretical curve in a graphical form, and the console, which controls the fitting process. The result of fitting is saved as an image and text files containing fitting parameters and theoretical function values.

References

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Summary

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