

Online analysis in an express data stream at STAR HLT

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The fast reconstruction algorithms of the FLES (First-Level Event Selection) package developed for the CBM experiment (FAIR/GSI, Germany) were successfully adapted within the FAIR Phase-0 program for online and offline data processing in the STAR experiment (BNL, USA).

This made it possible to significantly extend the functionality of the High Level Trigger of the STAR experiment and create an online express data processing chain based on the HLT computer farm. The importance of the express processing is that it allowed complete processing in real time, including calibration, reconstruction, and analysis of the data immediately after acquisition. This not only enabled the monitoring of detector systems' performance, but also allowed the evaluation of data quality immediately on the basis of the obtained physics results.

The high quality of the express processing of data on the HLT farm with the help of algorithms of the FLES package has led to the fact that they have gained the preliminary status.

In this report, the framework of the express data processing stream will be presented and discussed in detail. The results of the online reconstruction of mesons, hyperons, and hypernuclei up to L5He, collected in 2021 with the Beam Energy Scan II program in the express data stream at the STAR HLT computer farm, will also be presented.