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Upgrade of the QA system in the BM@N experiment at the NICA

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The BM@N (Baryonic Matter at the Nuclotron) is an experiment at the NICA (Nuclotron-based Ion Collider fAcility). The first physics runs were carried out with the collection of experimental data in 2018. For the physics analysis of events recorded by detectors of the BM@N the BmnRoot framework is used. It provides a powerful tools for detector performance studying, event simulation, data analysis and developing new algorithms that continually improve this environment [1, 2, 3].

The QA (Quality Assurance) system is used to evaluate the quality of the event reconstruction procedures and collected data. It displays the results of comparing the properties of the simulated events with the reconstructed ones. However, previous version of QA system was nonflexible because its output was just a set of PNG images. Result of QA system modernization by using JSROOT library is described in current report. After this upgrade histograms are displayed in web browser. User can zoom histograms, change scales, get value of bin by moving the cursor on it, etc. It also became possible to get sample mean and standard deviation for each histogram. Upgraded system is quite scalable, so it can easily be extended with new histograms.

At the moment, the modernized system is part of the BmnRoot framework. This work is supported by Russian Foundation for Basic Research grant 18-02-40104 mega. We are also grateful to the Physics Educational Center of the Research Park of the Saint-Petersburg State University for support of educational projects related to the subject of the present study.

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