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Event Metadata System for the BM@N experiment: design and implementation of the core functionality

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Event Metadata System (EMS) of the BM@N experiment, the first experiment of the NICA project is an important part of the BM@N software ecosystem. Its latest version containing core necessary functions has been recently deployed in the JINR infrastructure. The Event Catalogue of the EMS has been filled with nearly 700M events collected by BM@N during its first physics run completed in February 2023, making it possible for collaboration members to search for required experimental events based on provided criteria, using both Web user interface and Application programming interface. The focus of the report is on recent improvements of the EMS, its usefulness for experiment data processing, and its integration with other software, including the BmnRoot software package, event visualization tool, and automatic deployment system.

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