Contribution ID: **212** Type: **Oral talk (15 min + 5 min questions)**

High-performance optimization of the software for experimental data decoding in BM@N NICA experiment

Thursday, 14 July 2022 17:50 (20 minutes)

In the BM@N (Baryon Matter at Nuclotron) experiment at NICA accelerator complex in Joint institute for Nuclear Research (Dubna, Russia) study of collisions of isospin symmetric nuclei with fixed targets is performed [1]. Efficient software environment plays key role in the BM@N experimental program. The BmnRoot software package is used for both simulation and event reconstruction of simulated and experimental data. Special attention is to the BmnRoot performance optimization [2]. The present report is devoted to performance optimization of the experimental data decoding module of the BmnRoot software package. Most time-consuming hotspots of the decoder have been localized. Vectorization of these hotspots improved performance of most time-consuming decoder functions by 1.25-2 times. As a consequence, total time of execution is improved by 15-20%. Quality assurance demonstrated correctness of optimization.

1. D. Baranov, M. Kapishin, T. Mamontova, G. Pokatashkin, I. Rufanov, V. Vasendina, and A. Zinchenko, "The BM@N experiment at JINR: Status and physics program" in Proceedings of the 3rd International Conference on Particle Physics and Astrophysics (ICPPA), Moscow, Russia, 2017, Ed. by P. Zarubin, I. Selyuzhenkov, and A. Taranenko (Moscow, 2018), pp. 291—296.
2. A.V.Driuk, A.A.Iufriakova, N.E.Kakhanovskaya, K.I.Mashitsin, S.P.Merts, S.A.Nemnyugin, V.A.Roudnev. Development and Software Implementation of Optimal Algorithms for Event Reconstruction, Evaluation of the Quality of Event Reconstruction and Simulation of Detector Components in the BM@N Experiment. Physics of Particles and Nuclei, 2021, v. 52. Iss. 4, pp. 808–816.

The speaker is a student or young scientist

No

Section

1. Intermediate and high energies, heavy ion collisions

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