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JUNO DAQ Readout and Event Building Research

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Abstract : The Jiangmen neutrino experiment(JUNO) will design, develop and operate an internationally leading neutrino experimental station to measure the order of neutrino mass, accurately measure neutrino mixing parameters, and carry out many other scientific frontier studies. The entire experimental system includes a detector system, an electronics system, and a data acquisition (DAQ) system. Data flow is the core of JUNO DAQ system. Readout and Event Building (EB) are two key aspects of data flow. Based on the requirement analysis of JUNO DAQ, this thesis proposes a data flow schema of distributed network readout and second-level event building. Focusing on the design performance index of JUNO DAQ, the performance of the readout module and event building module, the number of readout processes and event building processes deployed on each node, the ratio of readout nodes and event building nodes and scalability of the two modules are discussed in detail. The results of the research provide a reference for further optimization of the JUNO DAQ data flow framework.

Keywords : JUNO DAQ; readout ; event building ; data flow ; performance ; deployment

Minioral

Yes

Description

system

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