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JUNO DAQ Design and Status

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The Jiangmen Underground Neutrino Observatory (JUNO) is a multi-purpose underground neutrino experiment currently under construction in southern China. JUNO is equipped with 17612 large 20-inch photomultipliers (LPMTs) in the Central Detector, which is designed to detect photons using a high-speed, high-resolution waveform digitization technique. To augment the detection capabilities, 25600 small 3-inch PMTs (SPMTs) are strategically placed in the gaps of the LPMT array. Additionally, 2400 LPMTs are utilized in a surrounding Water Cherenkov detector whose main goal is to identify cosmic ray muons and reduce associated backgrounds. The JUNO Data Acquisition (DAQ) system is designed to manage the massive influx of raw data, which is about 40 GB/s from all the sub-detectors. The JUNO DAQ system is accountable for processing data streams in real-time, including performing online data assembly and event classification, ultimately reducing the data throughput to less than 100 Mbps. This presentation will outline the architectural design and technical implementation of the JUNO DAQ system, along with updates on the ongoing software development and hardware deployment.

Minioral

Yes

IEEE Member

No

Are you a student?

No

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Track Classification: Data Acquisition and Trigger Architectures