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Keep-up Production in JUNO's Offline Data Processing

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On behalf of JUNO collaboration.

The Jiangmen Underground Neutrino Observatory (JUNO), located in Southern China, is a neutrino experiment aiming to determine the neutrino mass ordering (NMO) and precisely measure neutrino oscillation parameters. JUNO is expected to operate over 20-30 years, generating approximately 2PB of raw data annually. Offline Data Processing Workflow involves data transfer, reconstruction, grid computing, and long-term data preservation. Keep Up Production (KUP) pipeline addresses the need for a pipeline-driven approach to handle the intricate and interdependent steps of raw data processing without human intervention. The message-driven architecture decouples subsystems of pipeline and allows subsystems to process data in an asynchronous manner, which means that each processing step can be performed independently. KUP will automatically create and submit the reconstruction job. It uses YMAL files as job templates, which provides flexibility, allowing for easy modification and adjustment of the template without the need to modify the system's code. KUP also provides the real-time tracking and monitoring feature of job running status. It enhances job stability and reliability, minimizing the impact of job failures.

Primary author: YINWQ, 尹维卿

Presenter: YINWQ, 尹维卿

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