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Implementation of a Remote Monitoring System for the JUNO experiment

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The Jiangmen Underground Neutrino Observatory (JUNO) is an important particle physics experiment. The Detector Control System (DCS) in the experiment needs to monitor a lot of indicators, including environmental temperature, humidity and the operational status of electronics hardware devices. This presentation outlines a remote monitoring system, part of DCS, which is based on Experimental Physics and Industrial Control System (EPICS). The system collects environmental data through a Programmable Logic Controller (PLC), and collects the data of front-end hardware devices through a server. The Input/Output Controller (IOC) development of the front-end hardware devices based on Modbus protocol and other non-standard protocols is realized on the EPICS platform, which will be communicating between the front-end hardware device and the server and will be archiving the data through the PyEPICS interface. The remote monitoring system includes the functions of data acquisition, data archiving, data monitoring and alarming. It can monitor the temperature, humidity in the laboratory and the operating parameters of the front-end hardware devices in real-time. Moreover, it plays an important role in the electronics system coordination and Photo-Mutiplier Tube (PMT) light-off test in JUNO. The application of this system in JUNO verified its effectiveness and stability, and also provided a useful experience for the design of monitoring systems for similar experiments.

Minioral

Yes

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No

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Author: LIU, Shenghui (中国科学院高能物理研究所（IHEP）)

Co-author: YE, Mei (IHEP)

Presenter: LIU, Shenghui (中国科学院高能物理研究所（IHEP）)

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