



Data quality monitoring system in the JUNO experiment

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■ Motivation and Framework

➤ JUNO Experiment

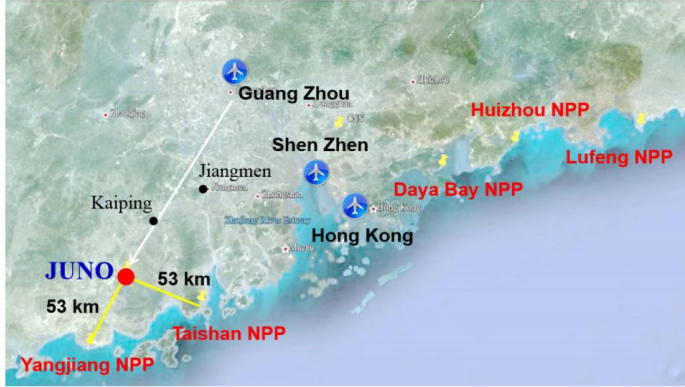


Fig. 1 The location of JUNO experiment site

- ◆ The Jiangmen Underground Neutrino Observatory (JUNO) is of enormous physical scale and produces extremely large data volumes during data taking.
- ◆ The main physics goals
 - Determine neutrino mass ordering.
 - Achieve precise measurements of neutrino oscillation parameters.
 - Observe and study supernova neutrinos, solar neutrinos, atmospheric neutrinos, geo-neutrinos, as well as conduct other cutting-edge scientific researches.

➤ Motivation

- Data quality monitoring (DQM) system is critical for **data taking**, **data quality control**, and **data analysis** in any high energy physics experiment.

➤ JUNO DQM Framework

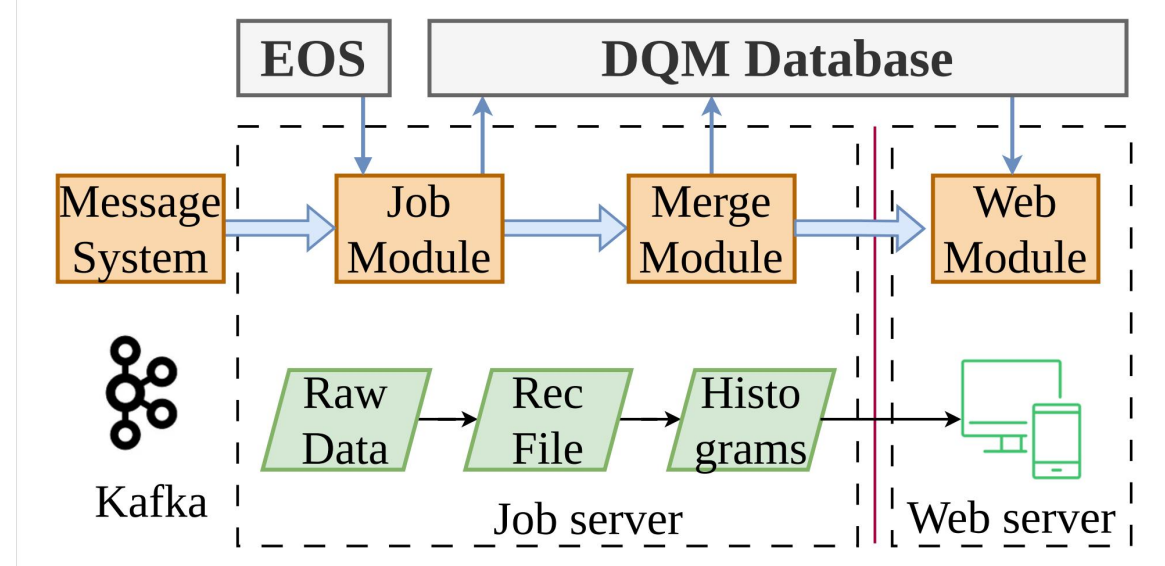


Fig. 2 JUNO DQM system framework

Job server:

- Message system.
- Job submission.
- Inside the firewall.

Web server:

- Web browsing.
- Accessible from the internet.
- Database.

DQM Webpage

➤ Home page

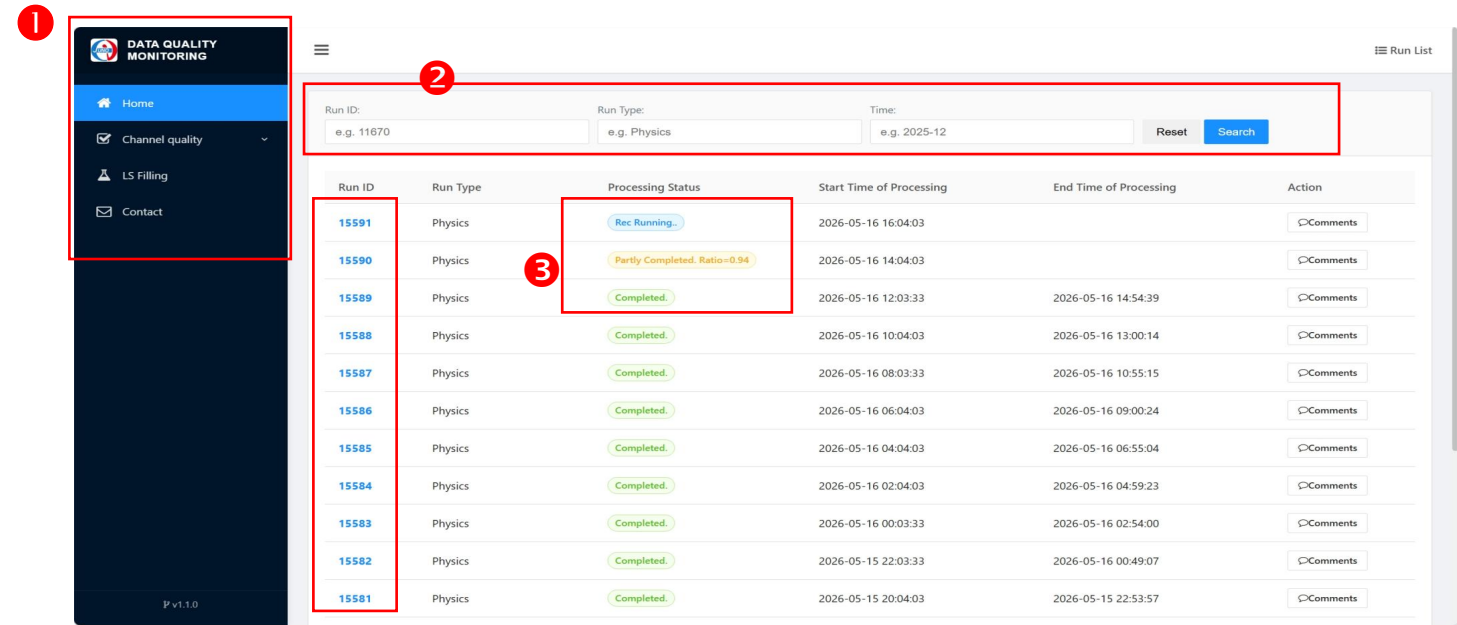


Fig. 3 Home page

1 Menu bar

Home
Channel quality
CD LPMT
CD SPMT
WP LPMT
LS Filling

2 Search bar

- Run ID
- Run time
- Run type
....

3 Color mark

Green → Completed
Orange → Partly completed
Blue → Start rec
Red → Rec failed

4 Run ID

Reconstruction
PMT Info
Basic Info

➤ Monitoring plots

- Run level monitoring: Reconstruction information and pmt information.
- Long time monitoring: pmts' dark count rate (DCR), high voltage (HV) and so on.

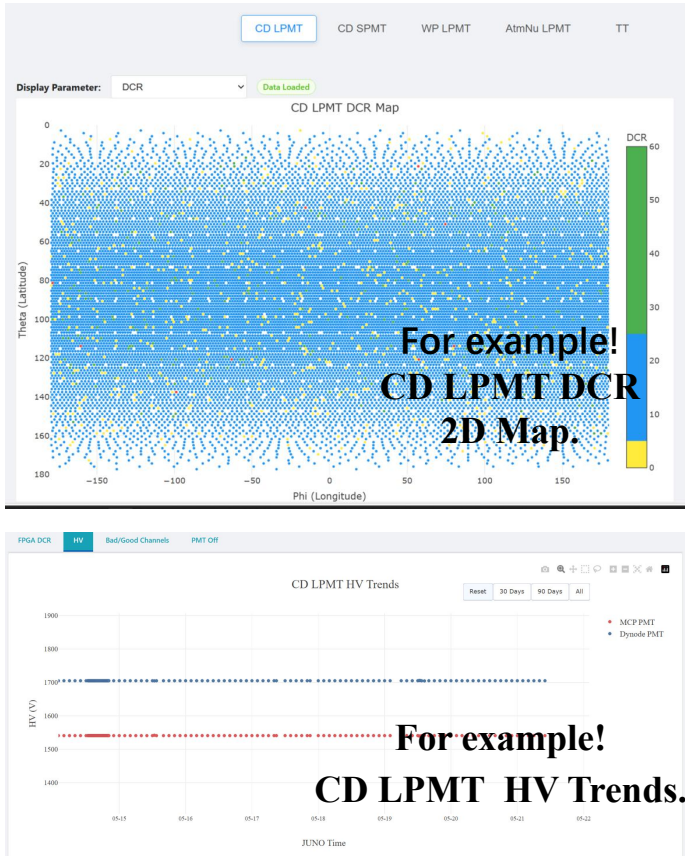


Fig. 4 PMT monitoring plots