

Enhancing Data Quality Monitoring at CMS: Granularity-Enhanced Visualization and Automated Reference Run Selection

Current data quality monitoring (DQM) tools at CMS offer granularity limited to per-run analysis. Consequently, issues manifesting at the per-lumisecion level can go unnoticed or, even if detectable, often lead to the classification of the whole run as bad, resulting in unnecessary data loss. Additionally, shifters have to evaluate a large set of monitoring elements during their long shifts, increasing the probability of human errors or overlooked problems. In this contribution, we present ongoing work on the development of tools that will provide shifters with an accessible, granularity-enhanced view of DQM data through interactive and dynamic visualizations. Furthermore, we introduce a reference run selection tool currently under development, which will automate the selection based on data-taking conditions and will offer a curated set of training data for machine learning models that will be used for the partial automation of the offline data certification process. These endeavors will be integrated into the DIALS website, enabling enhancements in data certification accuracy and improving the accessibility of DQM at CMS.

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