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Evolution of the Data Quality Monitoring and Prompt Processing System in the protoDUNE-SP experiment

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The DUNE Collaboration has successfully implemented and currently operates
an experimental program based at CERN which includes a beam test and an extended
cosmic ray run of two large-scale prototypes of the DUNE Far Detector. The volume of data already collected by the protoDUNE-SP (the single-phase Liquid Argon TPC prototype) amounts to approximately 3PB and the sustained rate of data sent to mass storage is of the order of O(100) MB/s. In addition to this data being committed to mass storage and processed in the Grid environment, a small fraction of it is captured by the protoDUNE Prompt Processing System (p3s). The p3s is optimized for continuous low-latency calculation of the vital detector metrics and parameters as well as the output rendered as event display images. This system is the platform for Data Quality Monitoring in protoDUNE-SP and has served a crucial role starting from the commissioning of the apparatus and throughout its operation in 2018-2019, which continues at the time of writing. We present our experience in operating the system in the CERN environment, along with work currently underway to make the system more scalable, resilient and to simplify system recovery procedures in preparation for the second beam run of protoDUNE-SP foreseen after the Long Shutdown 2 of the LHC.

Consider for promotion

No

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