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Prompt calibration automation at Belle II

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In March 2019 the Belle II detector began collecting data from e^+e^- collisions at the SuperKEKB electron-positron collider. Belle II aims to collect a data sample 50 times larger than the previous generation of B-Factories. For Belle II analyses to be competitive it is crucial that calibration constants for this data are calculated promptly prior to the main data reconstruction.

To accomplish this goal a Python plugin package has been developed based on the open-source Apache Airflow package; using Directed Acyclic Graphs (DAGs) to describe the ordering of processes and Flask to provide admin webpages. DAGs for calibration process submission, monitoring of incoming data files, and validation of calibration constants have all been created to help automate the calibration procedure. Connections to the DIRAC grid services are used to synchronize user accounts so that a secure single sign-on for Belle II collaborative services is maintained. A Flask plugin has also been developed to extend and complement the built-in Airflow admin and monitoring webpages. Including adding role-based access using the X.509 certificates and Virtual Organization Membership Service (VOMS) roles of Belle II users.

We will present the design of this software, and how this new software package is being used in the early stages of Belle II data taking.

Consider for promotion

No

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