

Improving the automated calibration at Belle II

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The Belle II detector began collecting data from e^+e^- collisions at the SuperKEKB electron-positron collider in March 2019 and has already exceeded the Belle instantaneous luminosity. The result is an unprecedented amount of incoming raw data that must be calibrated promptly prior to data reconstruction. To fully automate the calibration process a Python plugin package, b2cal, had 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 administration and job submission web pages. This system was used in 2019 to help automate calibrations at the KEK Computing Center and has been upgraded to be capable of running at multiple calibration centers with successful operations at Brookhaven National Laboratory (BNL) and Deutsches Elektronen-Synchrotron Laboratory (DESY). The webserver hosting b2cal has been migrated from Melbourne to DESY where authentication using the internal DESY LDAP server has been added. DAGs have been updated to further automate the calibration as the job submission and validation of payloads occurs as soon as possible and without human intervention. The application has been dockerised so that it can be efficiently deployed on any machine.

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