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LbMCSubmit: Streamlined production and submission of LHCb MC requests

The LHCb experiment requires a wide variety of Monte Carlo simulated samples to support its physics programme. LHCb's centralised production system operates on the DIRAC backend of the WLCG; users interact with it via the DIRAC web application to request and produce samples.

To simplify this procedure, LbMCSubmit was introduced, automating the generation of request configurations from a basic parameterisation of the desired samples, eliminating the need for defining hundreds of static models as was done in the past. However, this submission process is still clunky, time-consuming, and lacks a conducive platform for discussion.

We present a more streamlined approach to testing and submitting requests via a GitLab repository. This involves creating a simulation request by opening a GitLab merge request, which is then processed via LbMCSubmit to generate the necessary configuration, and then automatically tested using Continuous Integration on a few events. Upon approval, productions are automatically submitted and run on the WLCG via DIRAC, with samples accessible in the bookkeeping.

This approach is faster and simpler for users, ensuring efficient resource utilisation through testing. Using GitLab has the added benefits of collating discussion and reviewing requests, and leveraging GitLab's powerful approval feature with the custom API to enforce approvals by certain experts in requests where necessary.

Introduced in spring 2023 alongside LbMCSubmit and continually updated since, this system has become the standard procedure for simulation requests within LHCb, processing nearly five hundred requests to date.

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