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Strategies for btagging calibration using data at CMS

The CMS Collaboration is studying several algorithms to discriminate
jets coming from the hadronization of b quarks from the lighter
background. These will be used to identify top quarks and in searches
of the Higgs boson and non-Standard Model processes. A reliable
estimate of the performance of these algorithms is therefore crucial,
and methods to estimate efficiencies and mistag rates directly on data
are needed. While on simulated data it was shown the btagging
algorithms reach adequate performance for 'standard model
and beyond' analyses, when searching for the better b efficiency /
light rejection, it is definitely not trivial to extract and validate
these figures on real data. The CMS Monte Carlo simulation, even if
tuned for more than 10 years, is in fact not expected to be reliable
on the first data, and large discrepancies can also come from the
experimental inputs on the production of heavy flavours. The CMS
b-tagging group has prepared several strategies to extract efficiencies
and rejection rates from data, which should work even on the first
data expected during the 2008 running period (10 pb-1). Three methods
are described that take into account startup conditions expected from both
the LHC machine (luminosity) and the CMS detector (alignment/calibration).

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