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g to bb Rejection for the b-jet Triggers at ATLAS Poster Abstract

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In this poster, we present a study of the rejection of jets containing more than one b-hadron in the ATLAS “online” b-taggers, aiming to significantly reduce the readout rates of the ATLAS b-jet trigger system. It is important to be able to efficiently select events containing b-jets at the trigger level for analyses that involve many b-quarks in the final states, such as the search for HH to 4b production. However, in Run 2 the ATLAS b-tagger did not distinguish between jets containing a single b-hadron (b-jets) and jets containing 2 b-hadrons (bbjets). Collision events involving small-angle g to bb splitting, resulting in bb-jets are common in the LHC. Rejecting them in real-time would significantly reduce the readout rates of multi-b-jet triggers and ensure efficient signal extraction, which is particularly important for analyses that use multi-b-jet trigger chains. The proposed poster shows an approach to reject bb-jets in the ATLAS online btaggers, its impact on relevant trigger rates, and the implications for the ATLAS Run 3 physics program.

In-person participation

Yes

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