

Searches for QCD instantons with forward proton tagging

Thursday 3 October 2024 11:00 (30 minutes)

We study the possibility to observe heavy ($\sqrt{s} > 60$ GeV) QCD instantons at the LHC in events with one or two tagged leading protons including fast simulation of detector and pile-up effects. We show that the expected instanton signal in a single-tagged configuration is strongly affected by central detector and pile-up effects. For double-tagged approach, where larger integrated luminosities and hence larger pile-up contaminations need to be considered, the combinatorial background overwhelms the expected signal. We suggest that additional time information about tracks at central and forward rapidities would be crucial for potential improvements.

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