

Abstract Submitted
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Signals of KK graviton from extended warped extra dimensions at the LHC (I) MAJID EKHTERACHIAN, KAUSTUBH AGASHE, University of Maryland, College Park, DOOJIN KIM, Texas AM University, DEEPAK SATHYAN, University of Maryland, College Park — We analyze the signals arising from production and subsequent decay of Kaluza-Klein (KK) graviton in the extended warped extra dimensional models at the LHC. In these models, the extra dimensional bulk is divided into two regions: (i) from the UV brane to an $O(10)$ TeV middle brane, and (ii) from the middle brane to an $O(\text{TeV})$ IR brane. The standard model (SM) fermions only propagate in region (i), while SM gauge bosons and gravity propagate in all the bulk. This structure suppresses flavor violation, while keeping gravitons and KK gauge bosons accessible at the LHC. We find that the signals from KK graviton are significantly different than in the standard warped model, as the usually dominant decay modes of KK graviton are suppressed. In particular, we analyze the following two channels: (1) KK graviton decaying into a pair of radions and then each radion decaying into a pair of jets, giving an overall 4-jet signal with antler topology (2) KK graviton decaying into a KK gluon and a gluon jet followed by the KK gluon decaying into a radion and a jet, and finally the radion decaying into a pair of jets. This also results in a 4-jet signal, but with a different double-cascade topology. We find that the HL-LHC has sensitivity to KK graviton of (up to) ~ 4 TeV in both channels.

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