

PAUL SCHERRER INSTITUT



Particle Theory Seminar

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ETHZ

“Testing Warped Extra Dimensions in Higgs Production at the LHC”

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Abstract:

Measurements of the Higgs-boson production cross section at the LHC are an important tool for studying electroweak symmetry breaking at the quantum level, since the main production mechanism $gg \rightarrow h$ is loop-suppressed in the Standard Model. Higgs production in extra-dimensional extensions of the Standard Model is sensitive to the Kaluza-Klein excitations of the quarks, which can be exchanged as virtual particles in the loop. It is shown that the discovery of a light Higgs boson in the $\gamma\gamma$, ZZ , and WW decay channels at the LHC, with cross sections not far from the predictions of the Standard Model, would have very important implications for the parameters of warped extra-dimension models with a brane-localized Higgs sector. Moreover, the origin of a long-standing discrepancy between two different calculations of Higgs production in warped extra dimensions is explained.