

PAUL SCHERRER INSTITUT



Particle Theory Seminar

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“Standard Model Yukawa corrections to $b\bar{b}H$ production at the LHC”

Tuesday (!), January 22, 2008, 11:00 (!)

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Abstract:

I will discuss the leading one-loop Yukawa correction to Higgs production associated with a tagged bottom–anti-bottom pair in the Standard Model at the LHC. In the limit of vanishing bottom Yukawa coupling where the LO contribution vanishes, the process can still be induced at one loop through the top-quark transition. Though this contribution which can be counted as part of the NNLO correction is small for Higgs masses around 120 GeV, it rapidly increases for higher Higgs masses. For LHC energies and a Higgs heavier than $2M_W$, the amplitude develops a Landau (a pinch) singularity for some phase space configuration. This corresponds to the rescattering of the top quarks and their decay into W 's leading to Higgs production through WW fusion. I will discuss how this singularity can be treated. In doing so I review the issue of the Landau singularity and will also give some specific examples that have recently appeared in the literature such as the 6-photon amplitude, W pair production through gluons, ...