

PAUL SCHERRER INSTITUT



Particle Theory Seminar

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“Predictions for Higgs signal and background processes with many-particle final states at the LHC”

Monday (!), March 03, 2008, 11:00 (!)

WHGA/Auditorium (!)

Abstract:

At the LHC, many interesting processes involve three or more particles in the final state. Such many-particle reactions often proceed via resonances that subsequently decay, or they represent a background to resonance processes. A thorough description of such processes requires the evaluation of strong and to some extent also of electroweak radiative corrections in next-to-leading order. While the gauge-invariant treatment of corrections to resonance processes is quite non-trivial conceptually, the technically most complicated part concerns the numerically stable evaluation of the one-loop tensor integrals. In this talk some recently proposed solutions and their applications are discussed. The latter, in particular, include strong and electroweak corrections to Higgs production via weak-boson fusion and to the Higgs-boson decay $H \rightarrow WW/ZZ \rightarrow 4 \text{ fermions}$, as well as QCD corrections to the important background processes $pp \rightarrow t\bar{t} + \text{jet}$ and $pp \rightarrow WW + \text{jet}$.