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Particle Physics at LPTHE

Mardi 17 Octobre 2017, 14 :00
LPTHE, Library
Domaines : hep-ph

Titre : *Higgsplosion*

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Résumé : *Higgsplosion is the mechanism that leads to exponentially growing decay rates of highly energetic particles into states with very high numbers of relatively soft Higgs bosons. We argue that Higgsplosion regulates all n-point functions, thereby embedding the Standard Model of particle physics and its extensions into an asymptotically safe theory. There are no Landau poles and the Higgs self-coupling stays positive. We also argue that the effects of Higgsplosion alter quantum corrections from very heavy states to the Higgs boson mass. Above a certain energy, which is much smaller than their masses, these states would rapidly decay into multiple Higgs bosons. The loop integrals contributing to the Higgs mass will be cut off not by the masses of the heavy states, but by the characteristic loop momenta where their decay widths become comparable to their masses. This suppresses the radiative corrections from the heavy states to the Higgs boson mass, solving the Hierarchy problem.*