

Higgs Signal optimisation

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Summary

- 1 General background on Higgs
- 2 How Higgs signals are simulated
- 3 How the Higgs signal is optimised
- 4 Problems in optimisation and improvements
- 5 Possible expansions of the project

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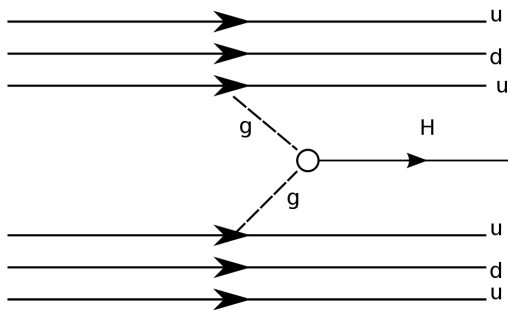


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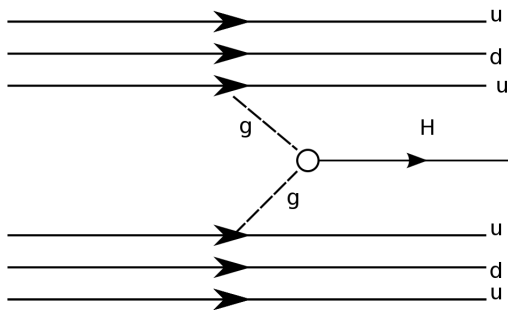


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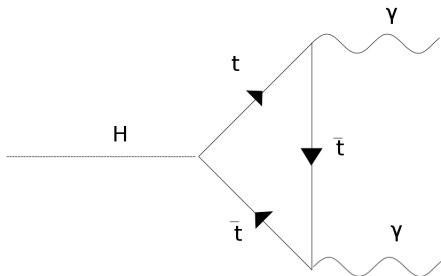


Figure : Decay of Higgs into 2 photons

This has a branching fraction of order of 10^{-3} but is much easier to detect experimentally.

Simulation

The Higgs events and background events are simulated using PYTHIA. The simulation consists of a text file of the Energy and momentum (4 momentum) of each photon in each event (read collision.) We will use 1 simulation of Higgs events (which still have background in them) and 1 simulation of background events.

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$$\Sigma \equiv \frac{S}{\sqrt{S+B}} \quad (1)$$

Where S is the number of filtered signal (from the simulation) events and B is the number of filtered background events (also simulated.)