

First Glance at γH Samples via JHU Generator

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Set up Parameters

In SM: $a_2^{Z\gamma} = -0.007$, $a_2^{\gamma\gamma} = 0.004$

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Scalar, $J^P = 0^+$: $a_2^{Z\gamma} = -0.007$, $a_2^{\gamma\gamma} = 0.004$

Pseudoscalar, $J^P = 0^-$: $a_3^{Z\gamma} = -0.007$, $a_3^{\gamma\gamma} = 0.004$

Use JHU generator to generate weighted samples

$$\sigma(\gamma^* \rightarrow \gamma H, J^P = 0^+) = 2.8 fb$$

$$\sigma(\gamma^* \rightarrow \gamma H, J^P = 0^-) = 2.8 fb$$

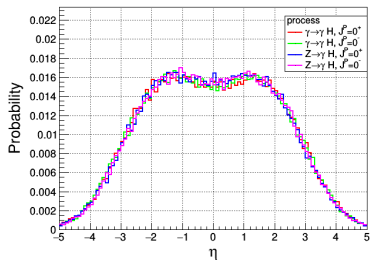
$$\sigma(Z^* \rightarrow \gamma H, J^P = 0^+) = 14.6 fb$$

$$\sigma(Z^* \rightarrow \gamma H, J^P = 0^-) = 14.7 fb$$

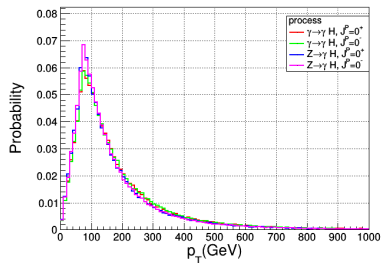
Comparison: $\sigma(ZH) = 0.88 pb$, $\sigma(tth) = 0.50 pb$

Note: Data taken from PDG-2017

Kinematics of Higgs

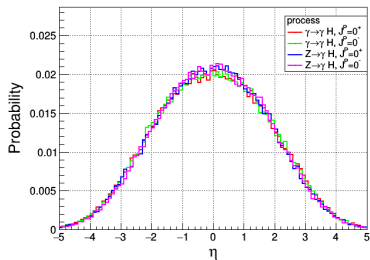


(a) Distribution of Higgs η

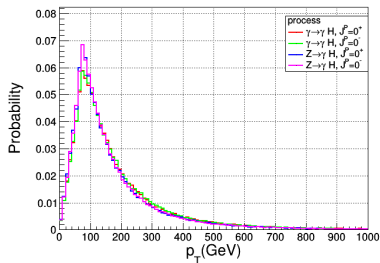


(b) Distribution of Higgs p_T

Kinematics of photon

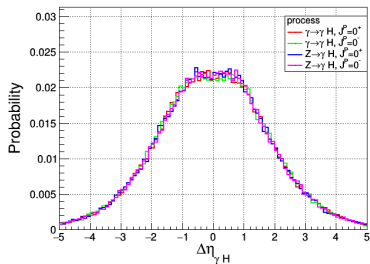


(a) Distribution of photon η

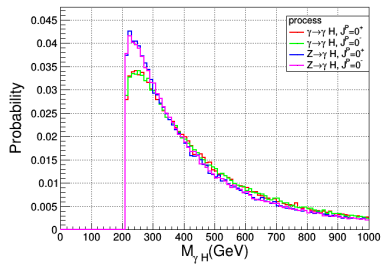


(b) Distribution of photon p_T

Kinematics



(a) Distribution of $\Delta\eta_{\gamma H}$



(b) Distribution of invariant mass