



Feasibility Study of Measuring the Higgs Self-coupling Using the Muon Collider

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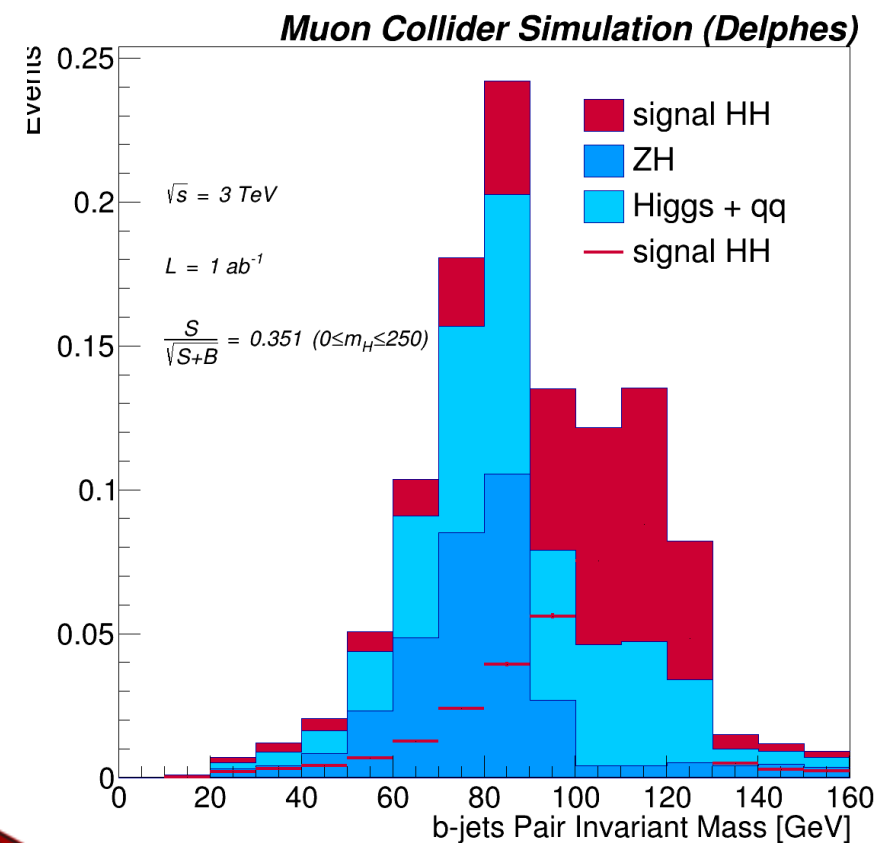
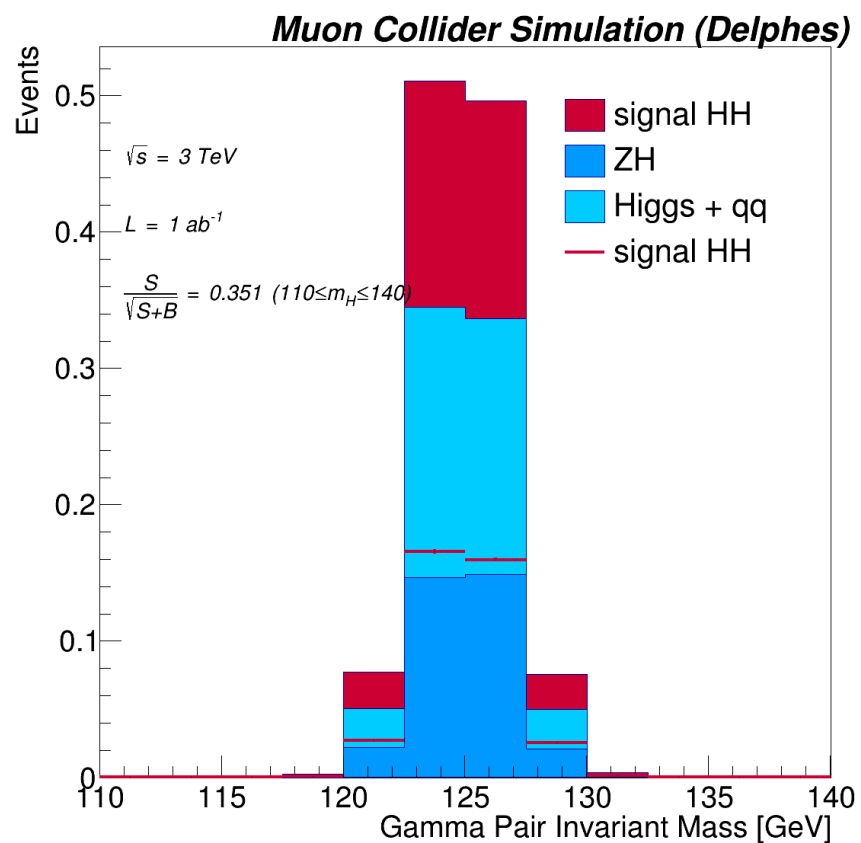
Aug 31st, 2022





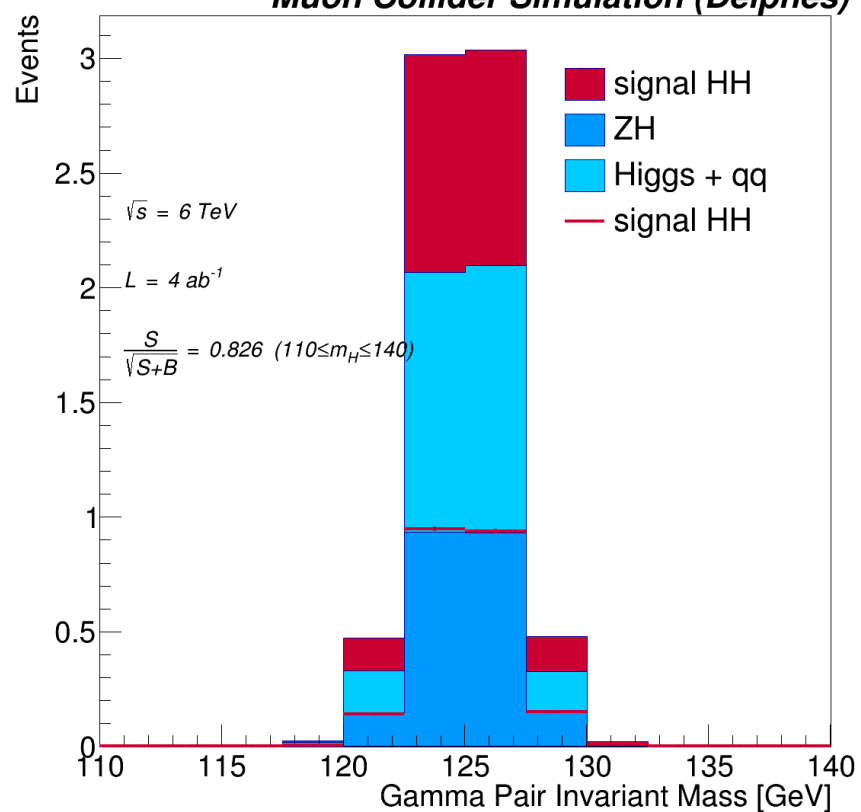
Reconstruction of $bb\gamma\gamma$

- For Higgs to $\gamma\gamma$ pairs, we reconstruct the Higgs with photon pairs which has the highest inv mass (requiring each photon with >15 pt avoiding selecting random photon). Cut on photon pair inv mass between 110 and 140.
- Then for reconstructing the $b\bar{b}$ jets pair, we require:
 - $\Sigma\text{BTag} = 2$ for the $b\bar{b}$ jets pair;
 - Require mass of each jet to be larger than zero since Delphes reconstruct high energy photon as jet too.





Muon Collider Simulation (Delphes)



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