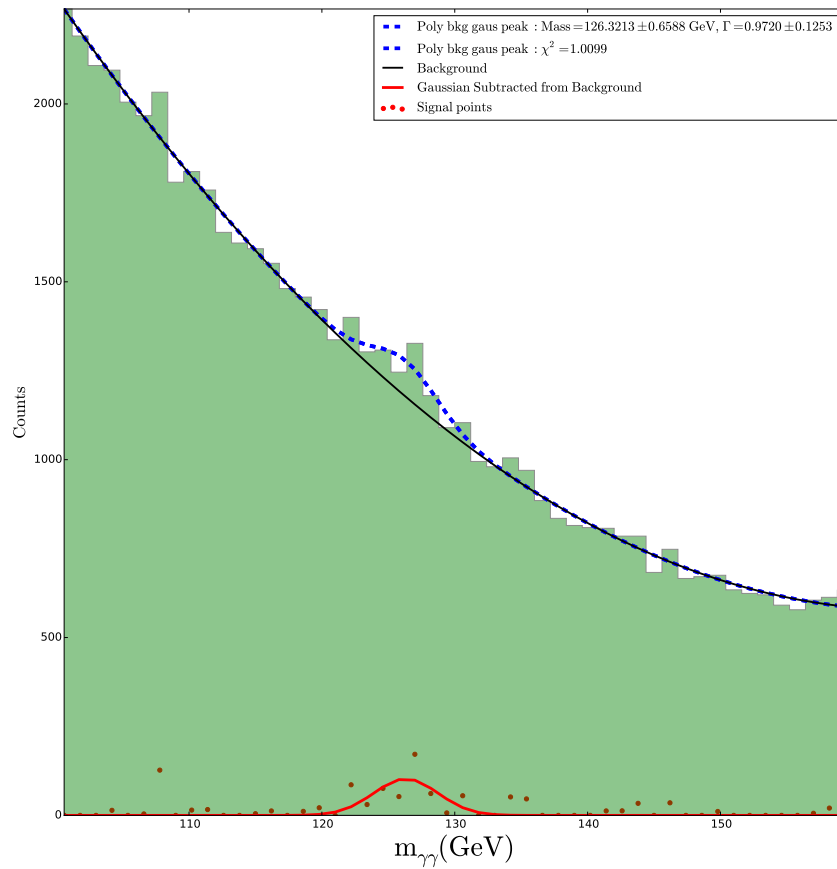


# PHYS 721 Homework 7

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1. By fitting a function to the data there appears to be a few regions where the data is above the background function especially in the region around  $126.5 \text{ GeV}$ . When investigating this region further by fitting a Gaussian function with a mean around  $126.5 \text{ GeV}$  a peak appears with a mass of  $126.32 \pm 0.66 \text{ GeV}$  and a width of  $0.97 \pm 0.13 \text{ GeV}$  with a  $\chi^2$  value close to 1.



**Figure 1:** Shows the mass of  $\gamma\gamma$  pairs with a background function fit as well as a gaussian peak fit on the background. In red the subtracted signal as well as subtracted Gaussian function can also be seen.

2. Given that the width is  $1.66 \text{ GeV}$  without any knowledge of the mass gives a significance of