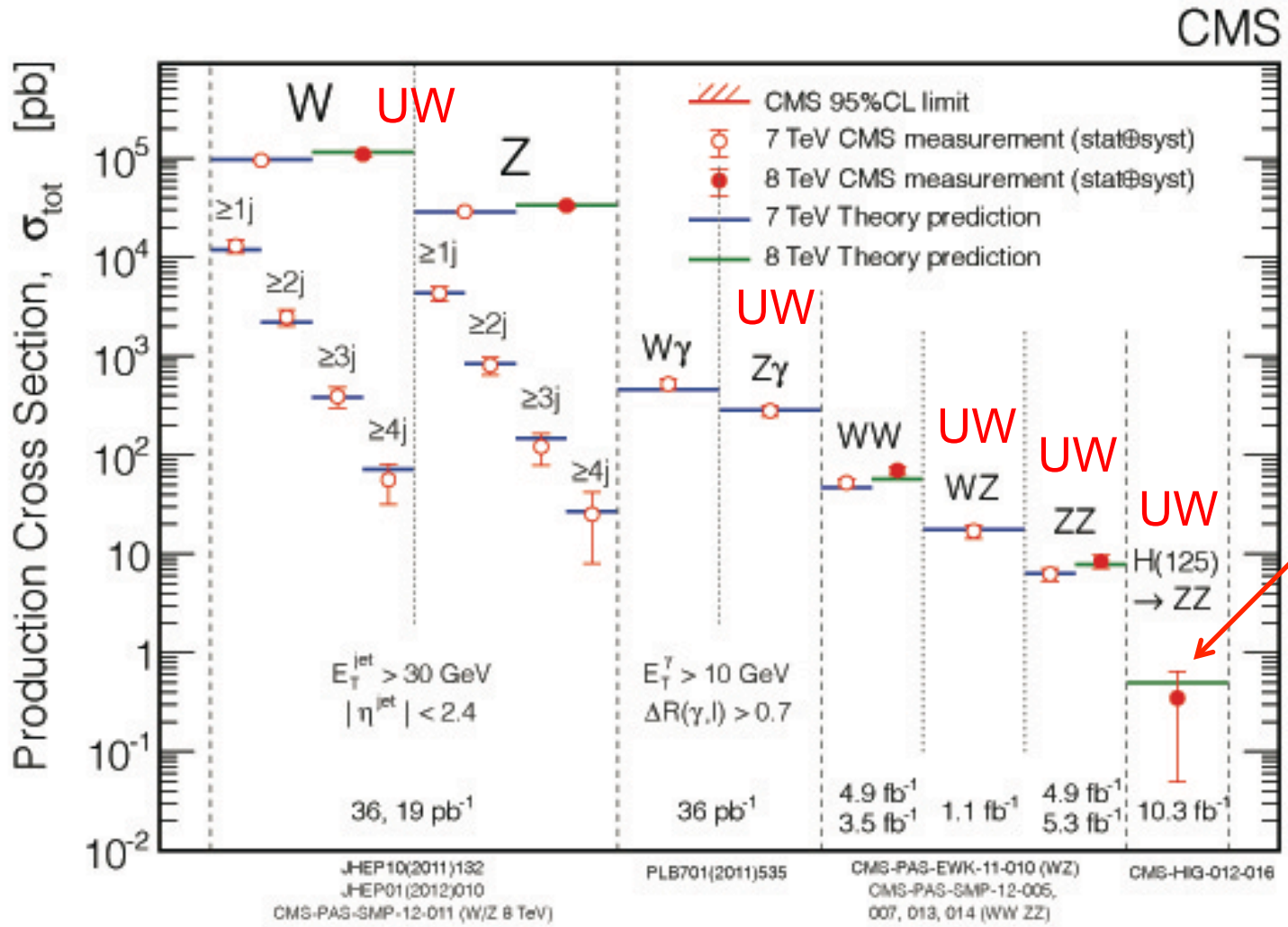
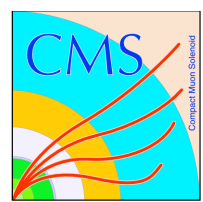




# Diboson/Higgs Physics



Why Dibosons?  
 Let's look at the  
 some of the  
 most interesting  
 diboson final  
 states!

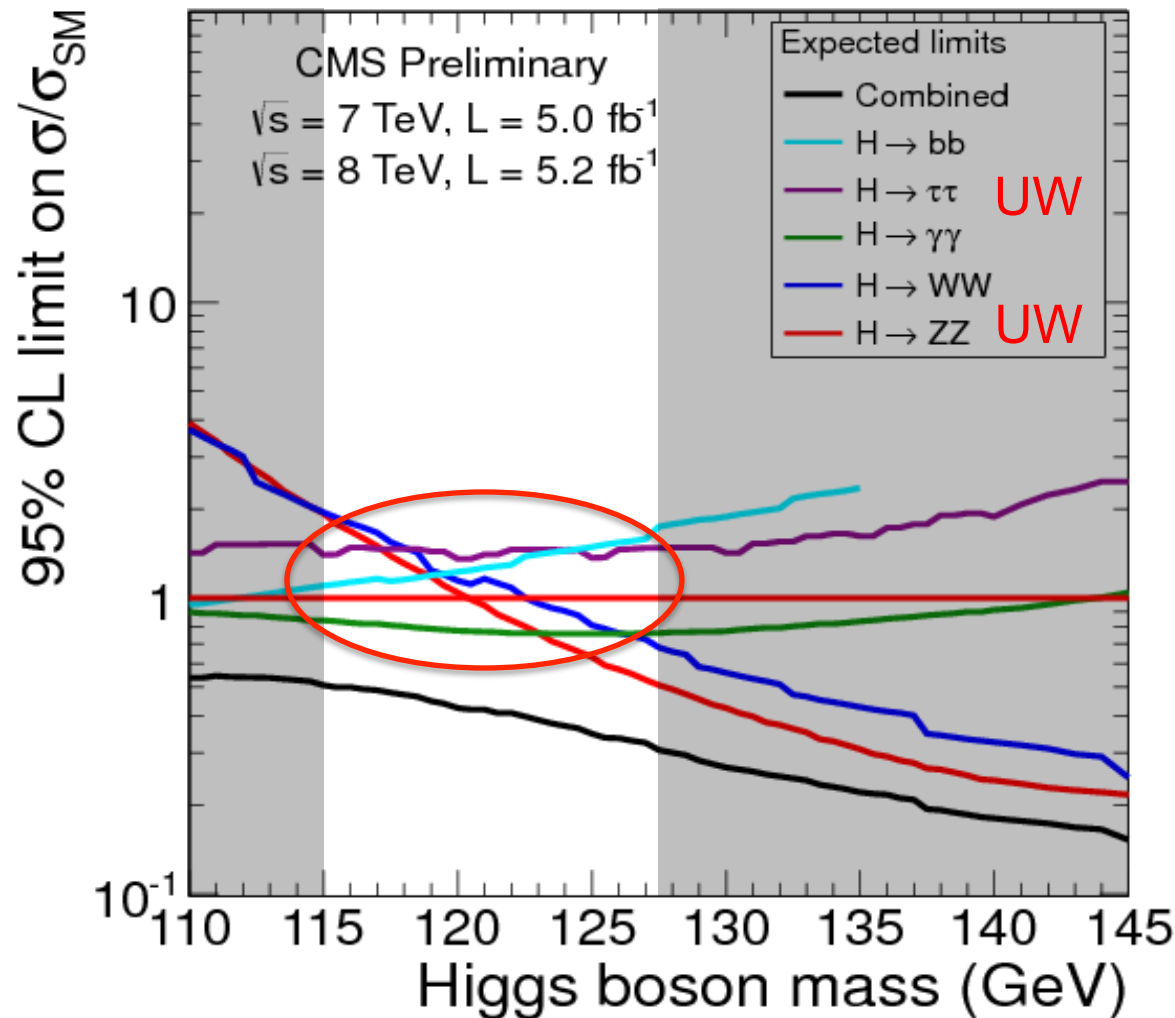
CMS SM Multiboson research group led by Matt Herndon



# Higgs Sensitivity

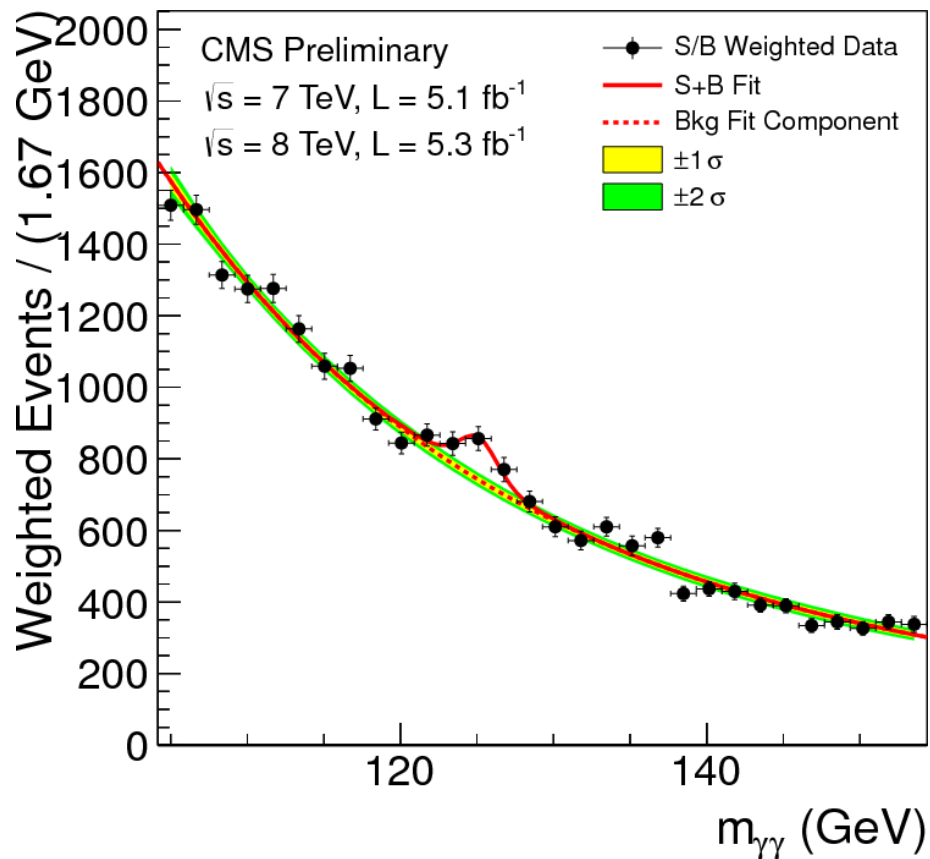


- Higgs boson not yet excluded:  
 $m_H$ : 115-130 GeV
- Strong sensitivity to 5 decay modes led by  $\gamma\gamma$  and ZZ
- below 1 means sensitivity to SM Higgs production or smaller





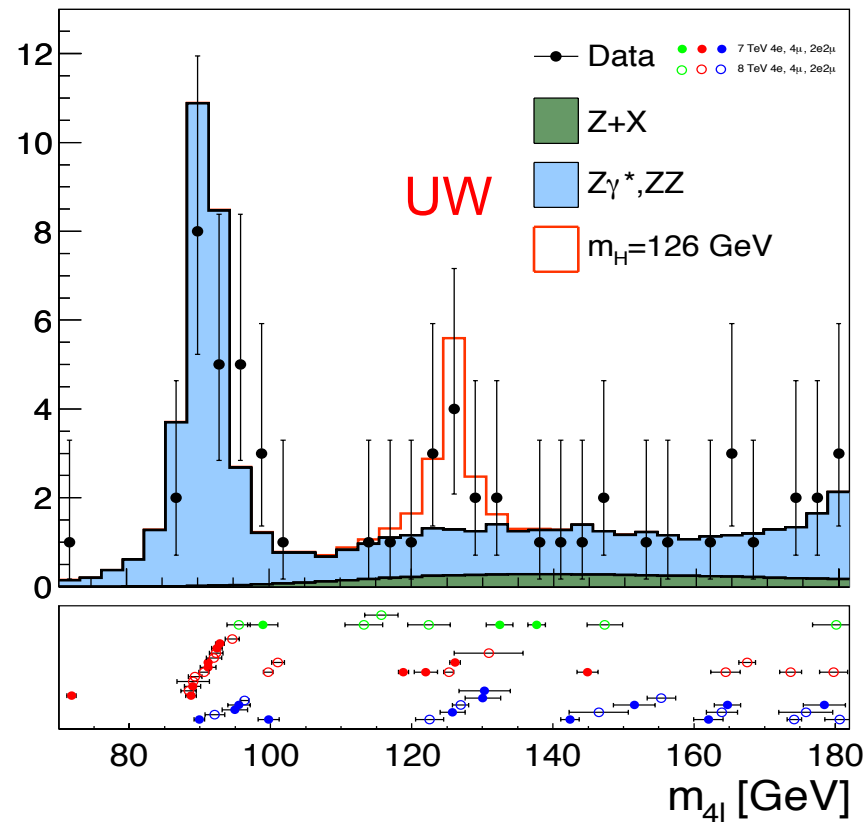
# Higgs Searches



$\gamma\gamma: 4.0\sigma$

CMS Preliminary  $\sqrt{s} = 7 \text{ TeV}, L = 5.05 \text{ fb}^{-1}; \sqrt{s} = 8 \text{ TeV}, L = 5.26 \text{ fb}^{-1}$

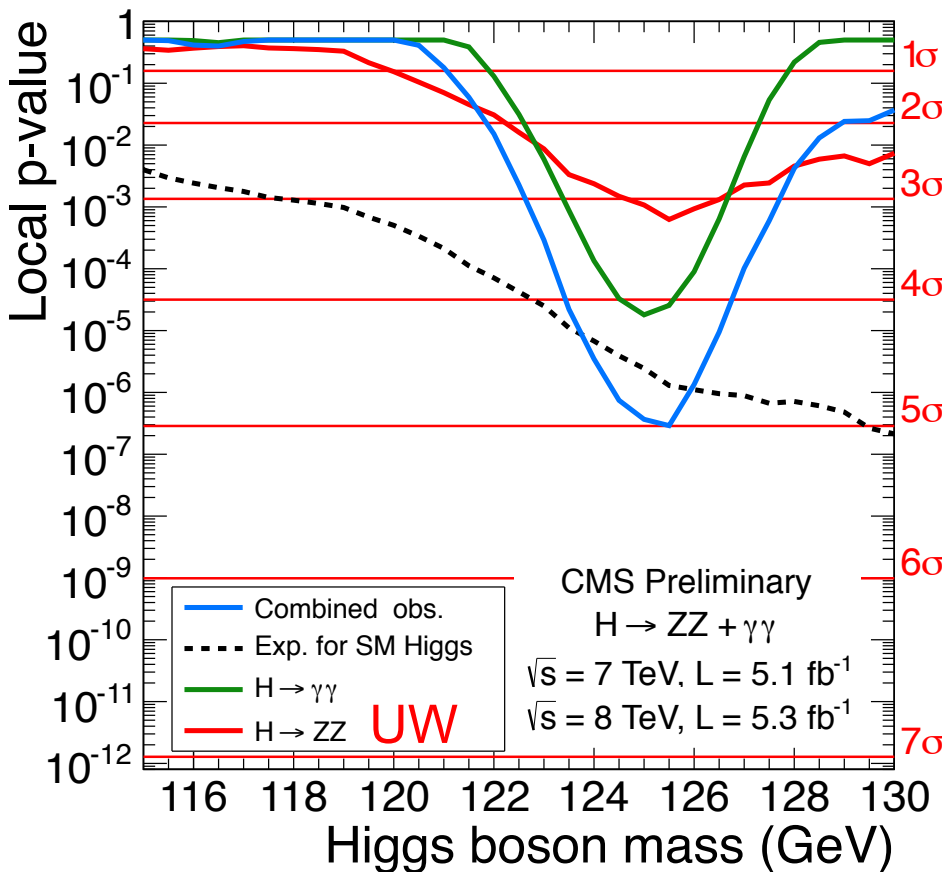
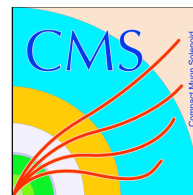
Events / 3 GeV



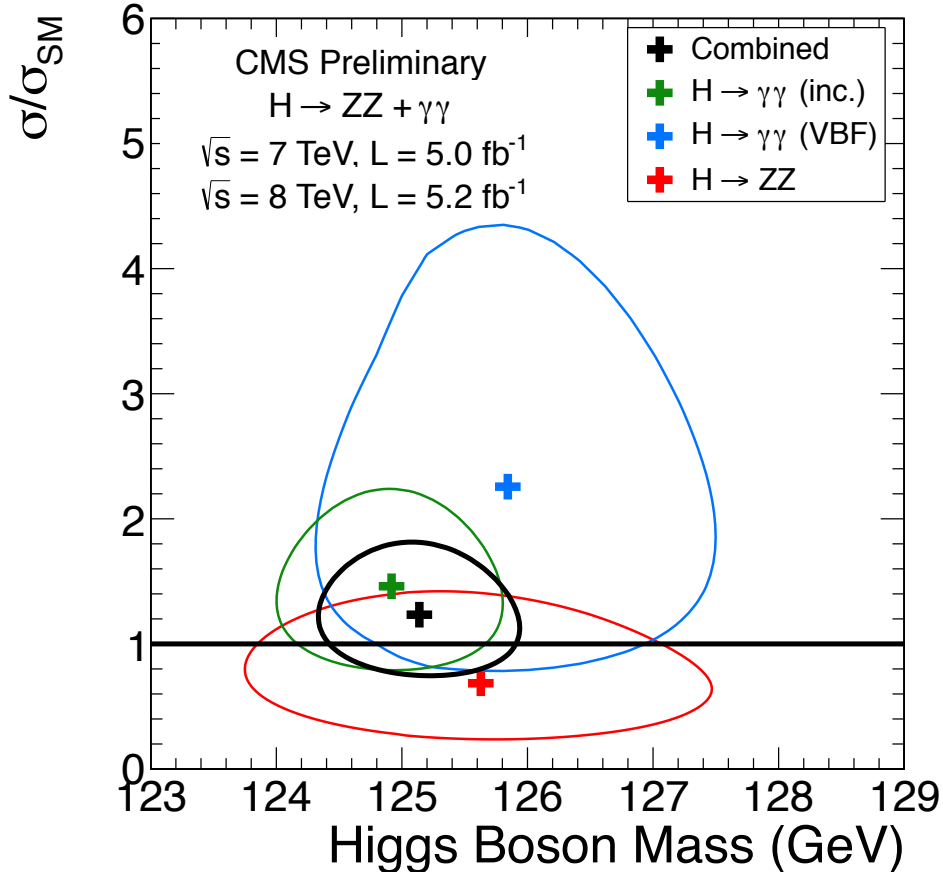
$ZZ 3.2\sigma$



# Higgs Observation!



Combined 5.0 $\sigma$ !



$m_H = 125.3 \pm 0.6 \text{ (stat+sys)}$