

# Heavy Higgs and uncertainties

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# Followup on heavy Higgs classifier

## Significance definition

Positively and negatively weighted events in signal: How to define  $s$  in  $s/\sqrt{b}$ ?

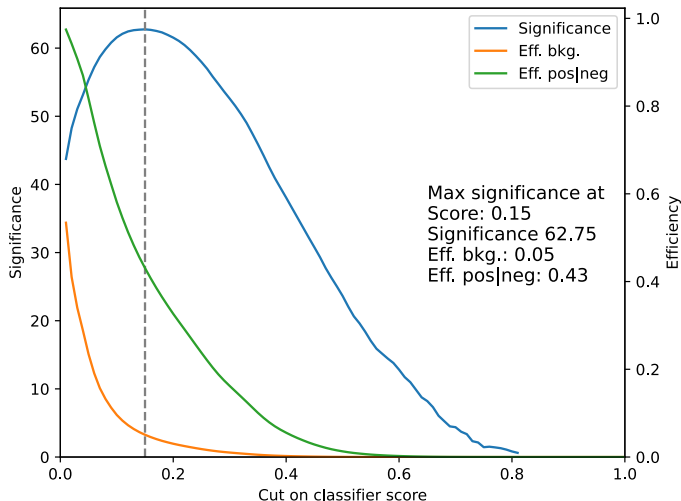
$$s = \sum_{\text{pos. signal}} w + \sum_{\text{neg. signal}} |w|$$

Another approach: Use

$$\sqrt{-2 \ln \frac{L_B}{L_{S+B}}}$$

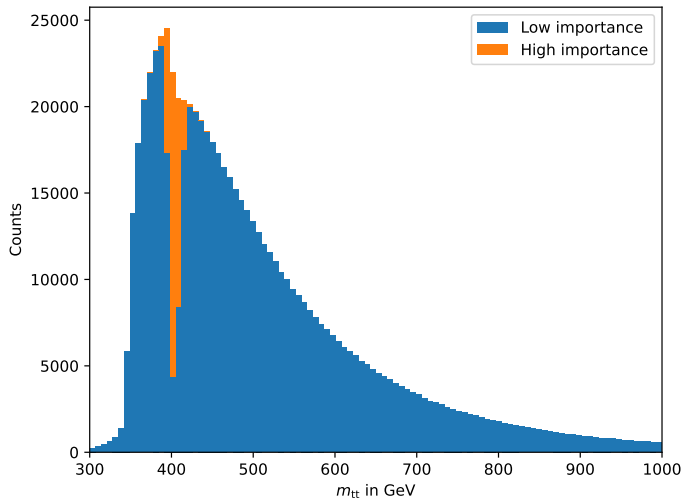
but haven't looked into.

# Follow up on heavy Higgs classifier



# Follow up on heavy Higgs classifier

What such a cut the classifier score could select

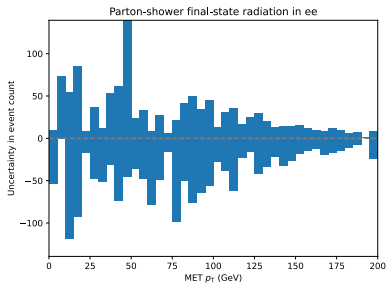
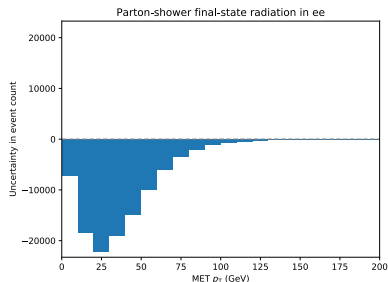


# NanoAODv7

Before my pull request to NanoAOD, there was a problem with the PS weights

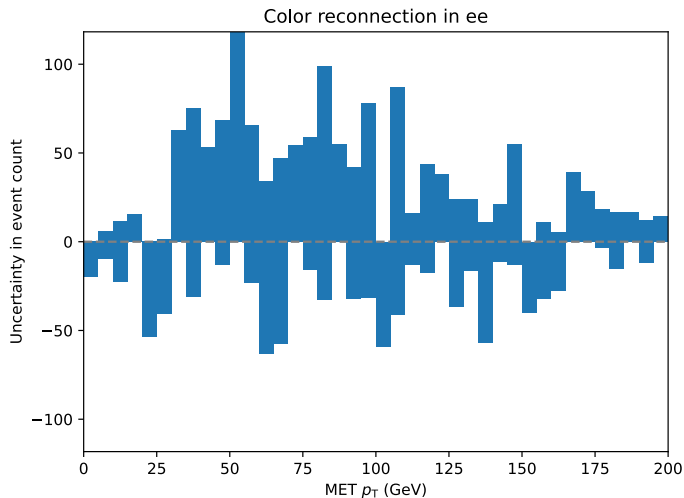
From one of our meeting in February

Now with NanoAODv7



# Color reconnection uncertainties

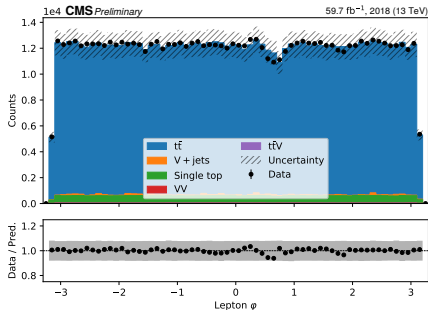
How large is the impact of color reconnection uncertainties?



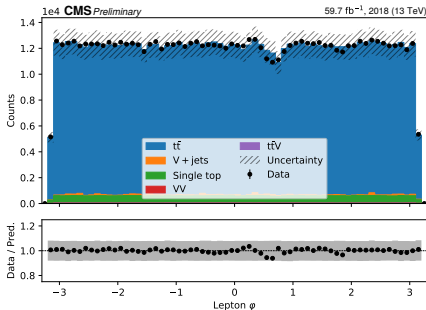
# Single top uncertainties

Dedicated datasets for Tune, top mass and CR uncertainties for single top processes. Here:  $e\mu$  channel after MET cut

Without ST uncertainty datasets



With ST uncertainty datasets



No difference visible

# MET type-1 correction

POG instructions: Propagate Jet corrections only from specific jets

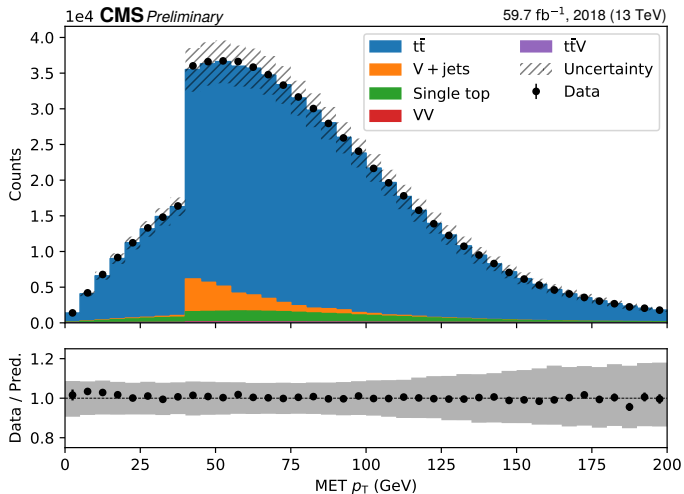
$$p_T > 15 \text{ GeV}$$

$$\text{EM Energy fraction} < 0.9$$

Also no overlap with muon PF candidate.

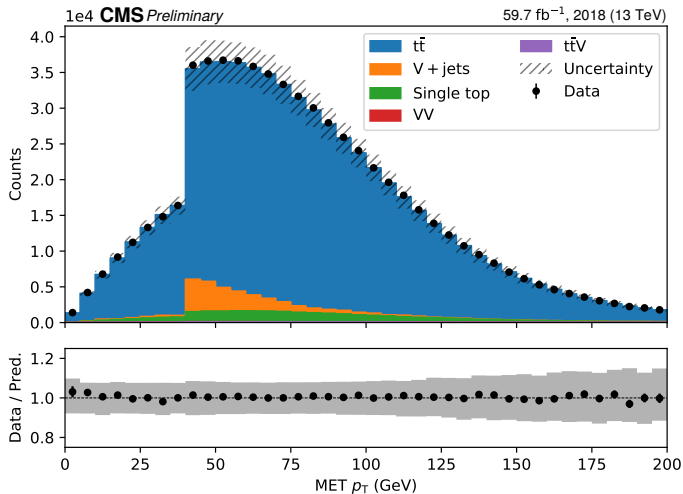
# MET type-1 correction

Using all jets from the Jet collection (after MET cut, all channels)



# MET type-1 correction

According to POG instructions (after MET cut, all channels)



Lower uncertainties. However: Still missing very low  $p_T$  jets.

# Thank you