

Charge flip estimation effort

H⁺⁺H⁻⁻ Meeting

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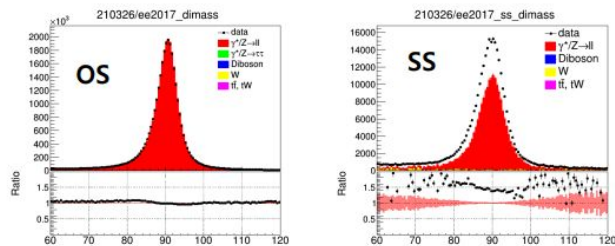


April 20, 2023

Comparison with study by DY Afb measurement group

SS method: CF rate

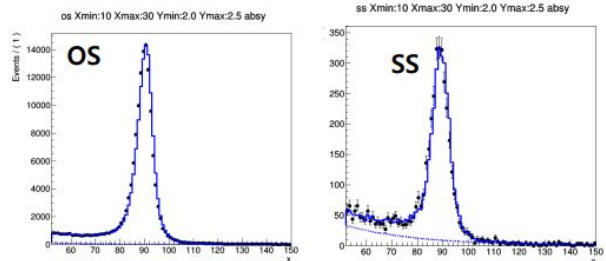
- Isolated SS dielectron region contaminated by charge-flip contributions
- To appropriately describe CF, scale factors for CF are measured



CF rate in bins of electron p_T and η

- p_T bin = [10, 30, 40, 50, 70, 100, 200]
- η bin = [0.0, 1.0, 1.4, 1.7, 2.0, 2.5]
- fitting OS and SS data with MCTemplate+CMSShape
- In data, we don't know which lepton is charge-flipped
 - use MC to take account of this -> need to iterate

Fitting example ($10 < p_T < 30$, $2.0 < |\eta| < 2.5$)

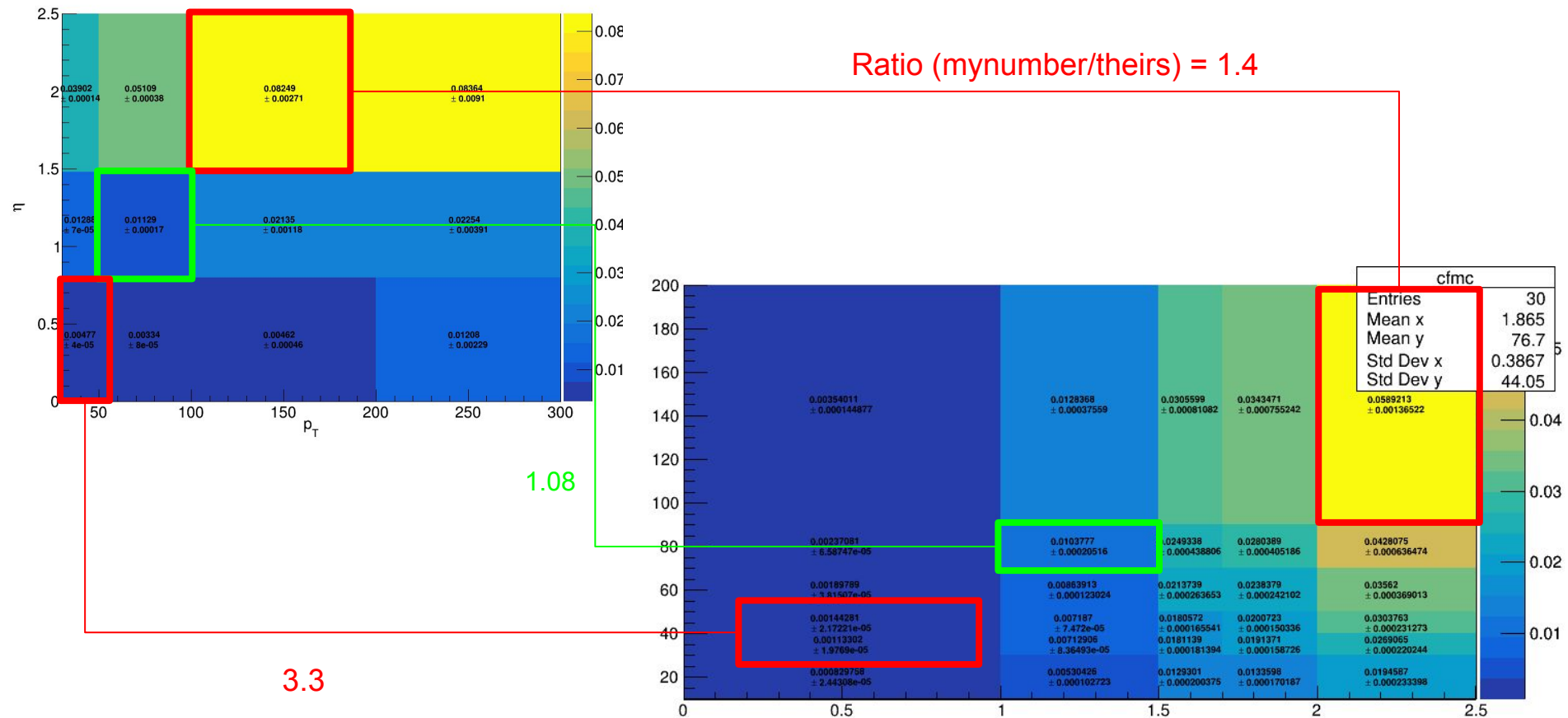


8

- Not exactly clear how these di-electron events are selected
- Presumably it differs a bit with respect to what I am using:

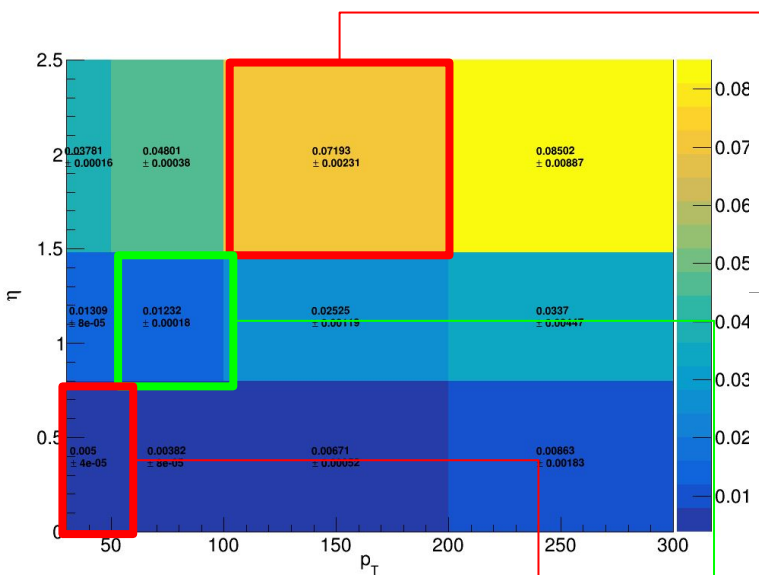
```
electronCuts = {
'Electron_pt': '>30.0',
'abs(Electron_eta)': '<2.5',
'Electron_cutBased_HEEP':" ,
'Electron_ptRelIso03_all': '<0.4',
'abs(Electron_dxy)': '<0.05',
'abs(Electron_dz)': '<0.1'
}
```

2016OG MC



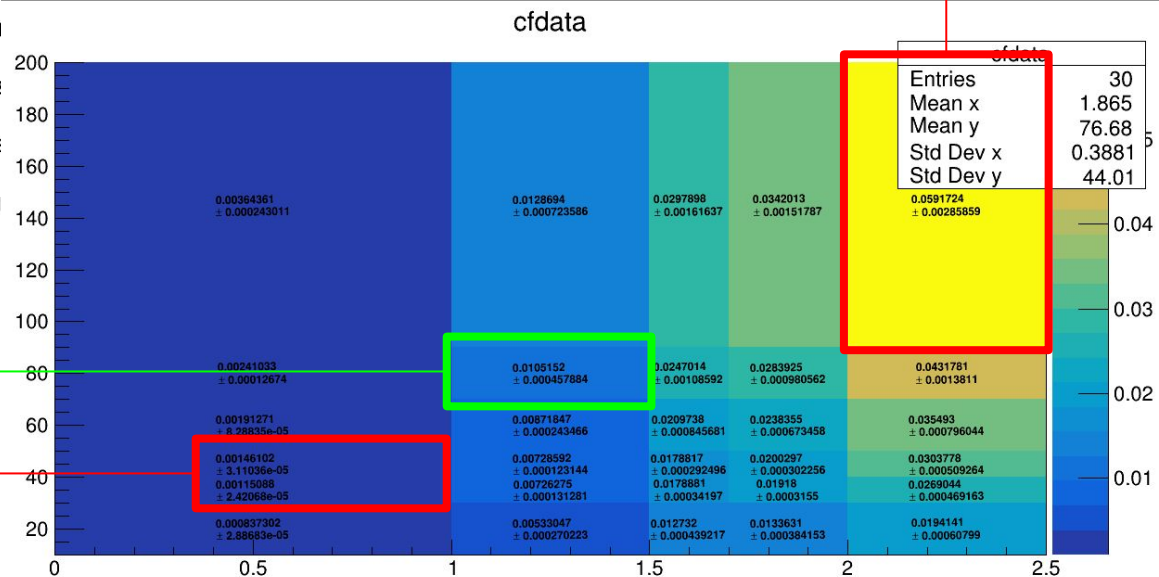
2016OG Data

1.24



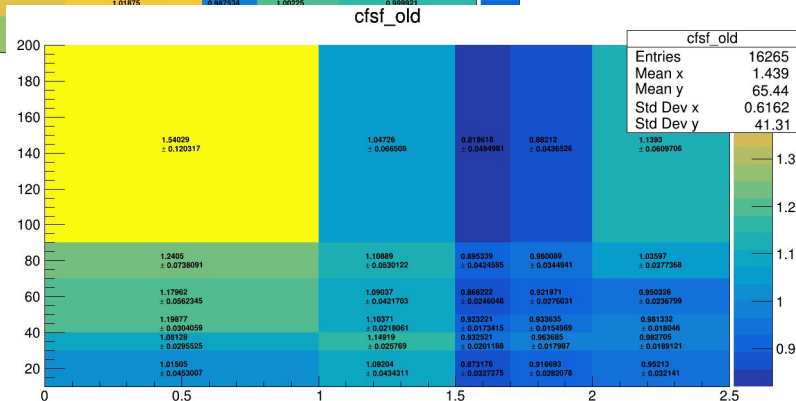
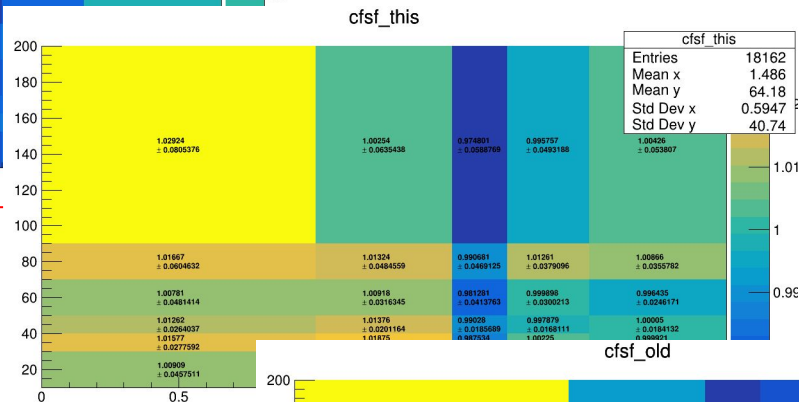
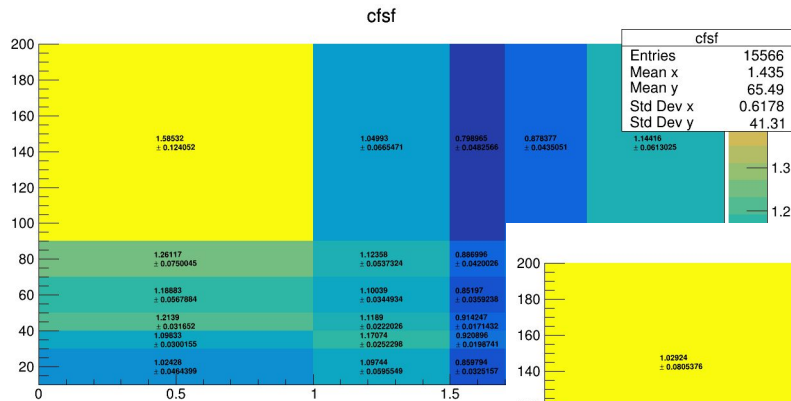
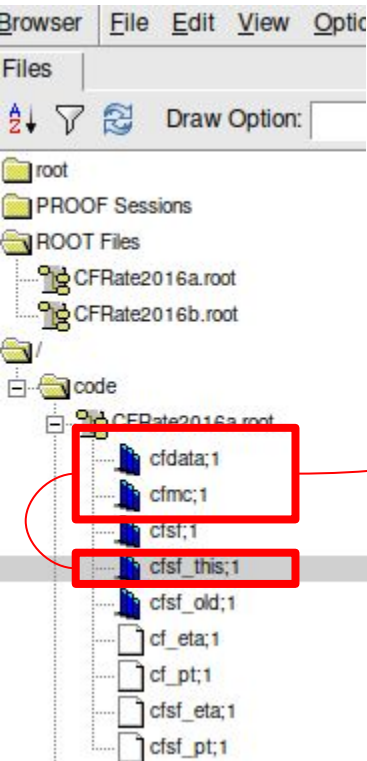
3.42

1.17



cfdata	
Entries	30
Mean x	1.865
Mean y	76.68
Std Dev x	0.3881
Std Dev y	44.01

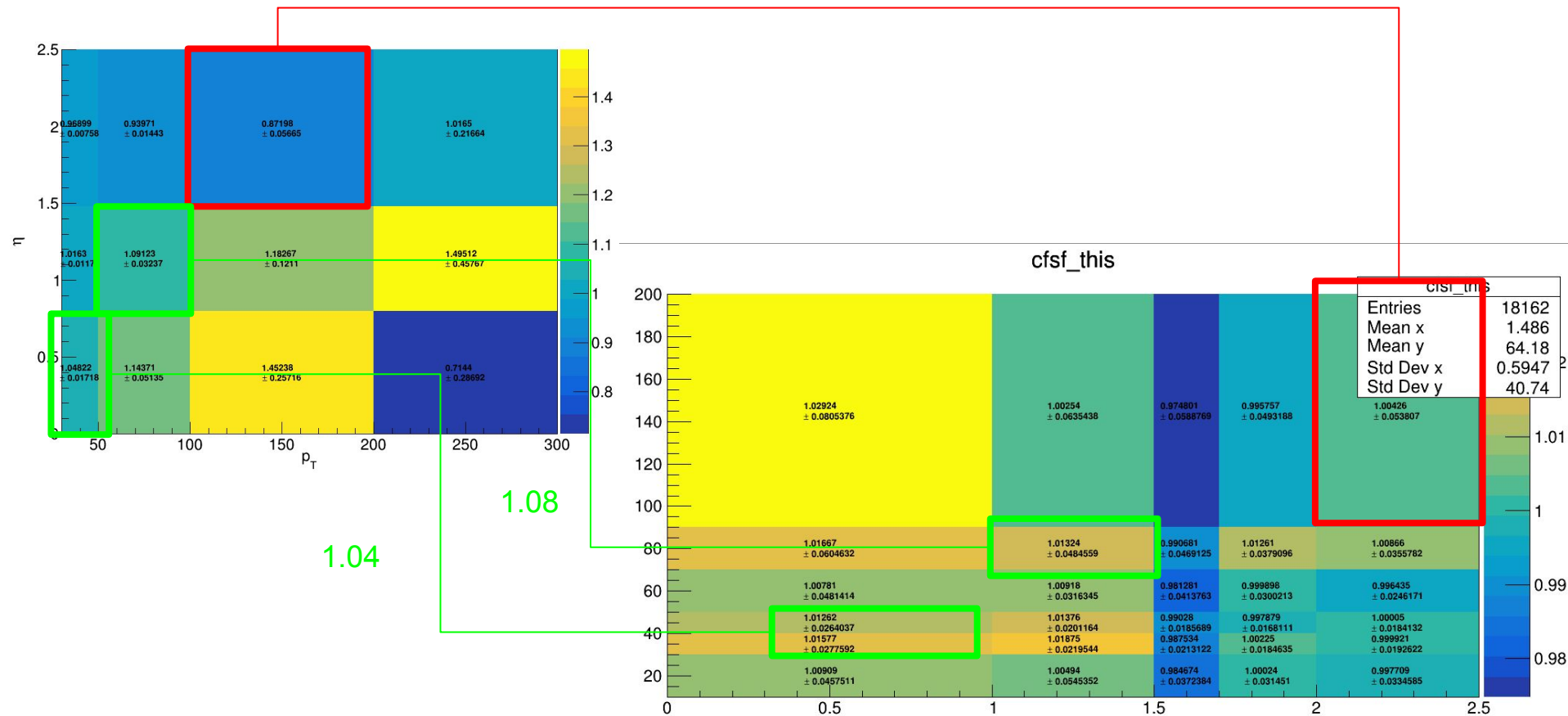
About their CFSF



They seem to use **cfsf** but not sure what that sf is or what **cfsf_old** is.

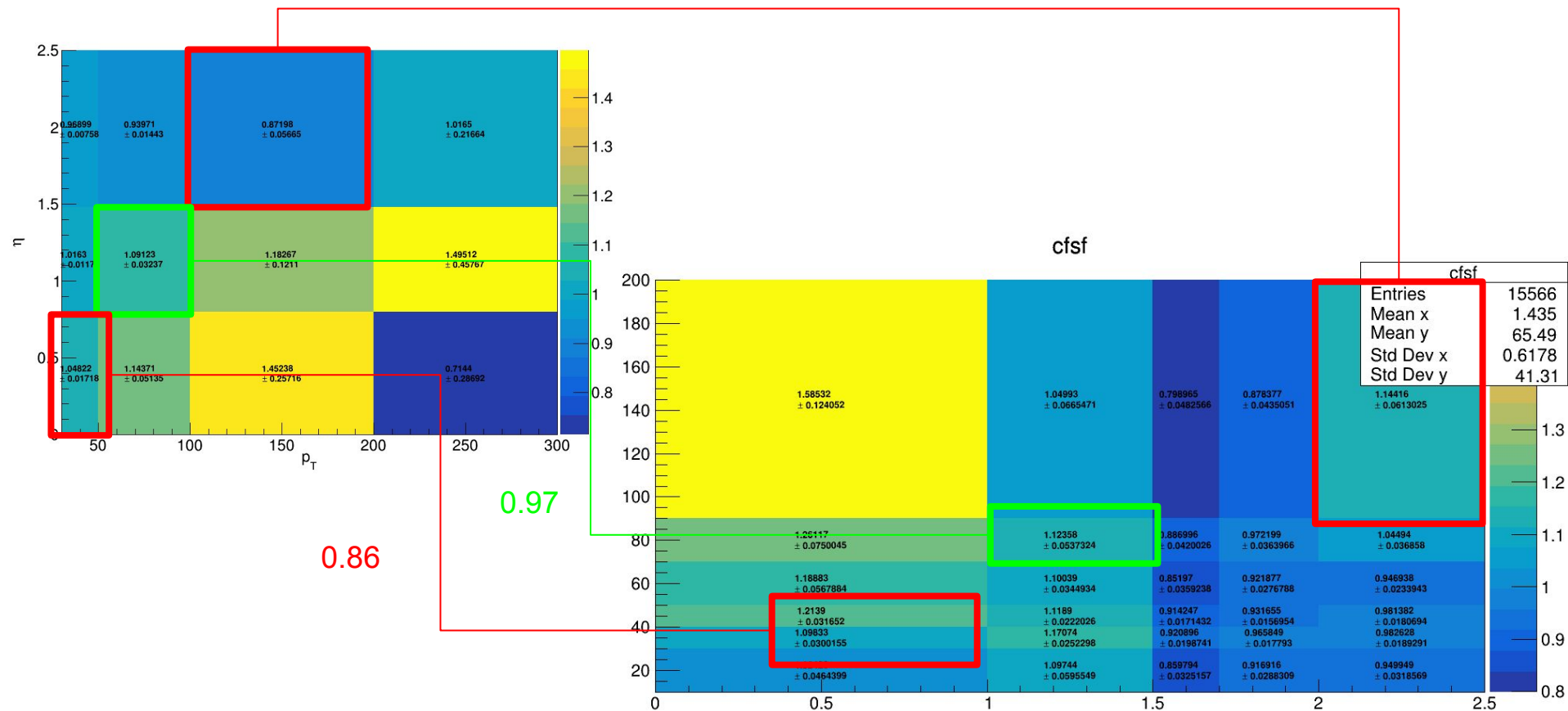
2016OG SF(Data/MC) with cfsf_this

0.87



2016OG SF(Data/MC) with cfsf

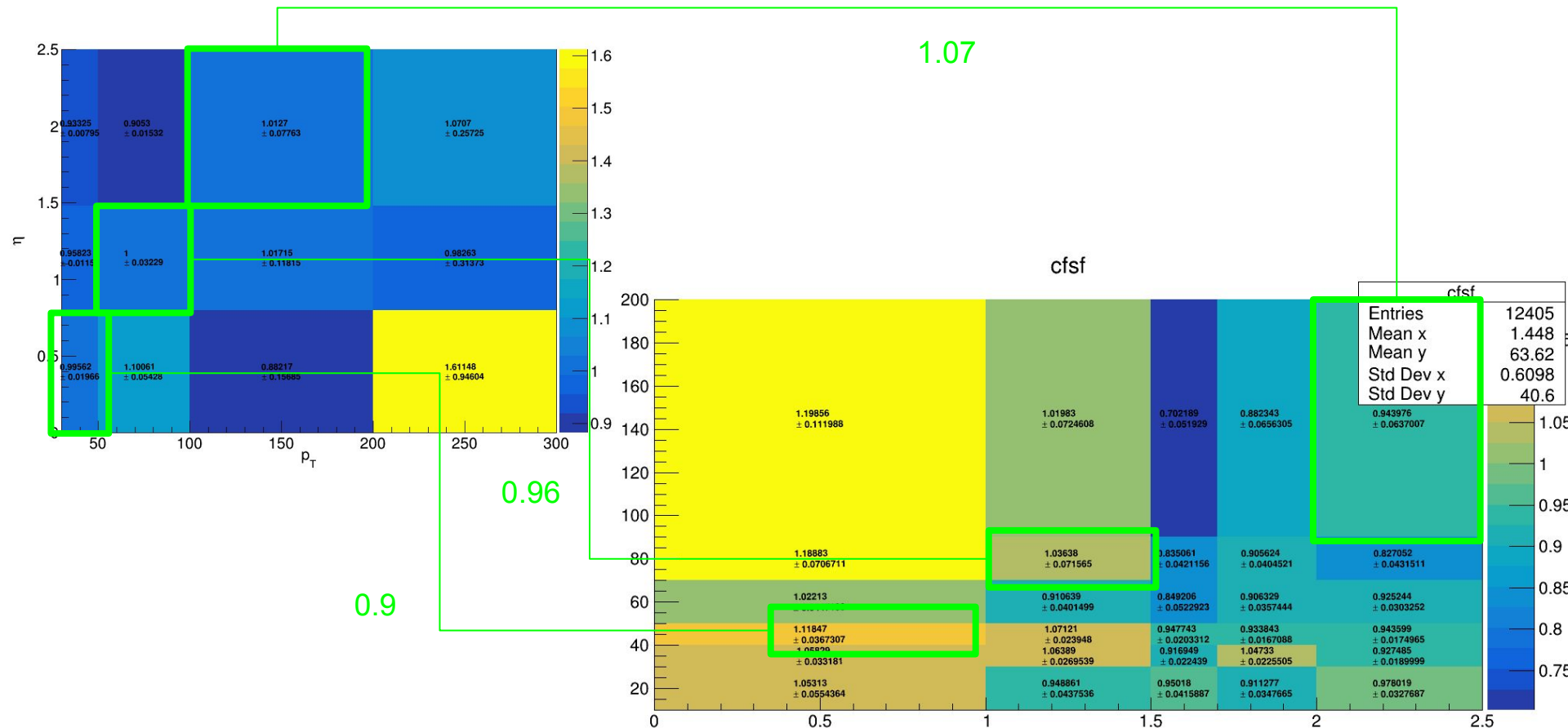
0.76



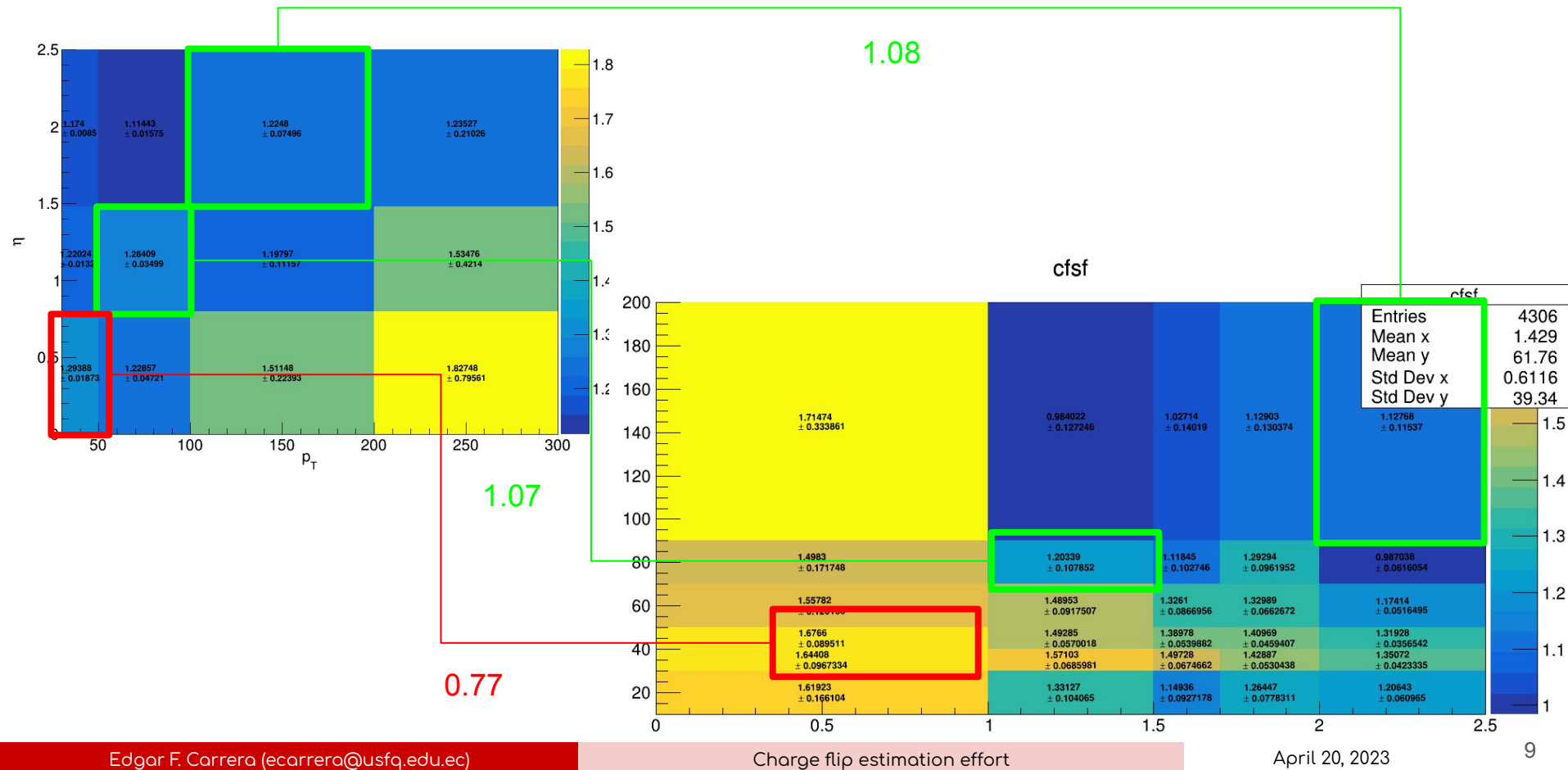
0.86

0.97

2016 SF(Data/MC) with cfsf



2017 SF(Data/MC) with cfsf



2018 SF(Data/MC) with cfsf

