Weekly

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26/09

Outline

- **Non-res search;**
  - first need to determine fakes and QmisID backgrounds using data-driven methond, validated in CR(Njet==2, 2 SS leptons);
  - perform significance scan to choose best cuts and decide final signal region;
  - with signal region, to decide additional CRs in return.;
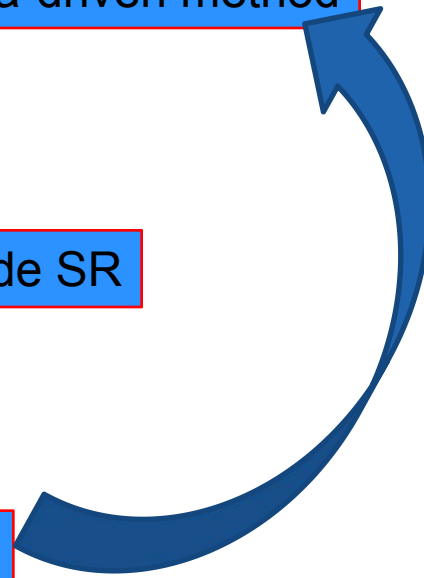 - validate data-driven methods in additional CRs.

CR: data/bkg comparisons with data-driven method
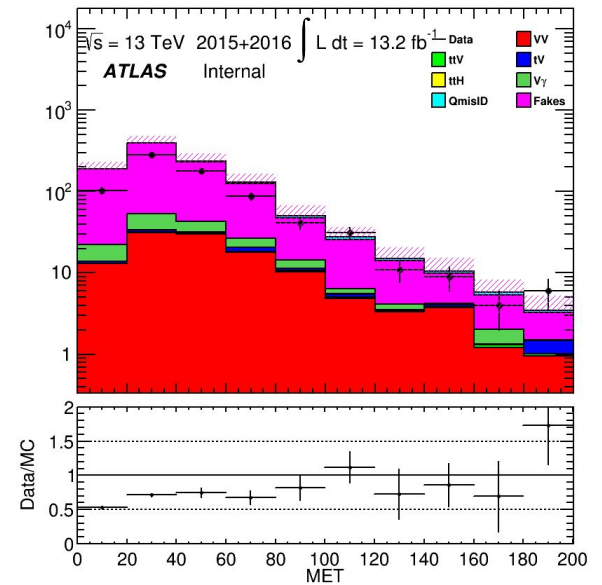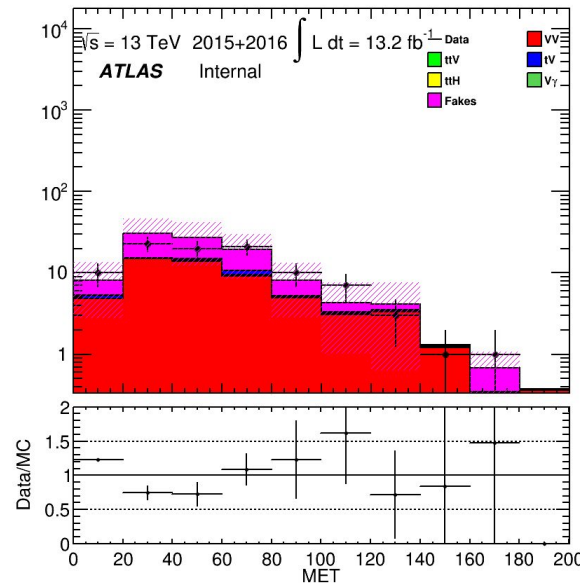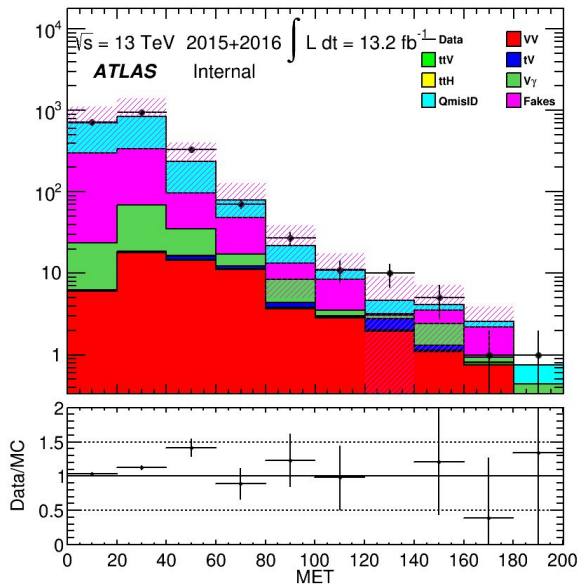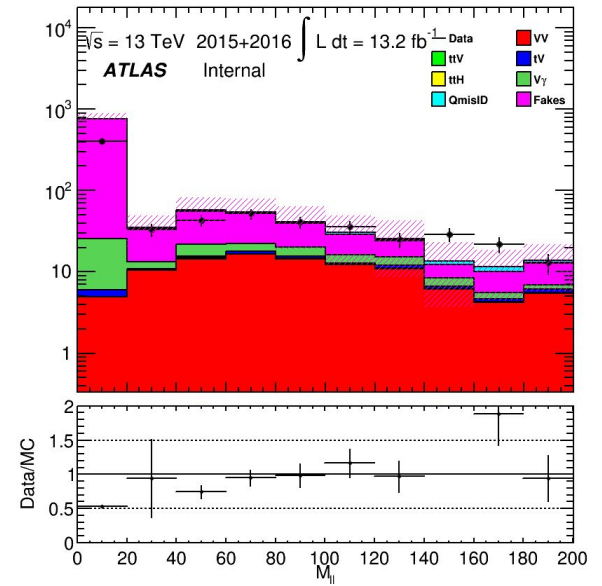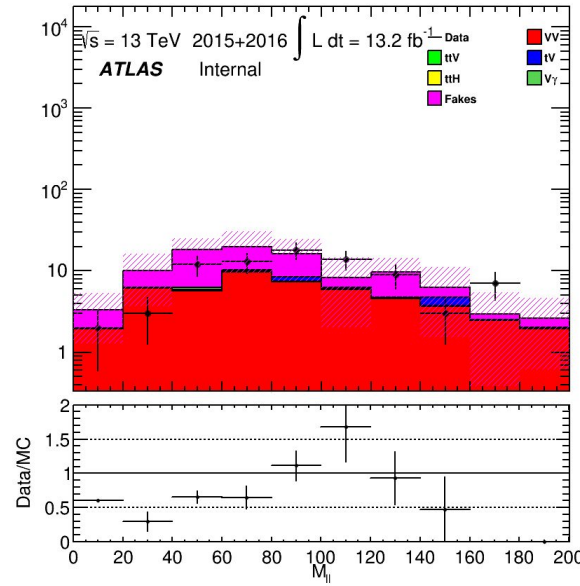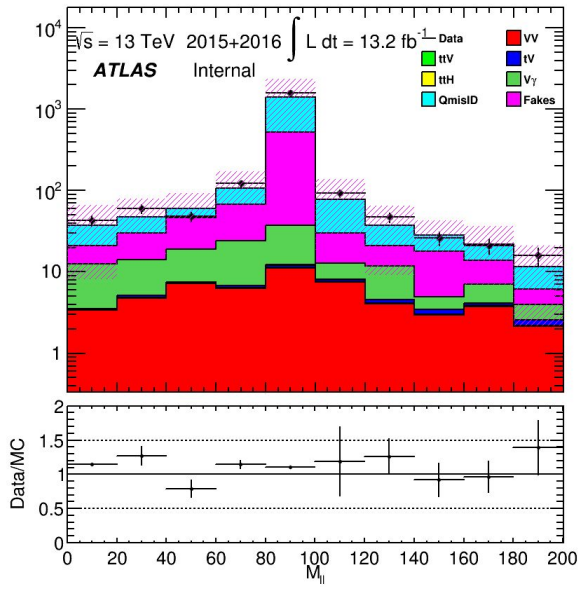
sifnificance scan, to decide SR

optimal CR decisions

Tuning fake factor

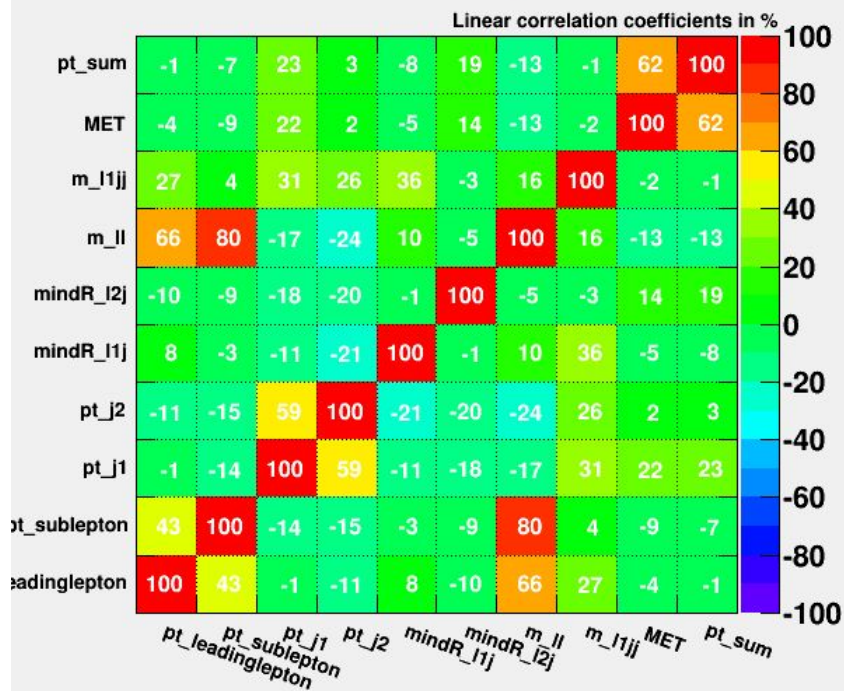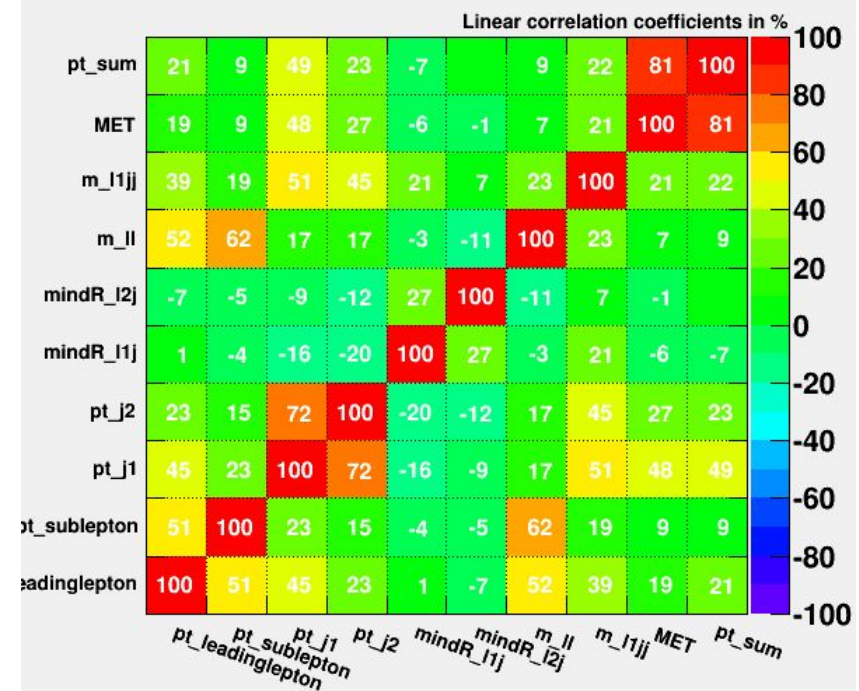- ## Increase pt of sub lepton to 20GeV; Worse?

Signal optimizations for non-res

- **eg: training signal vs diboson;**
  - mindR_l1j, mindR_l2j, m_l1jj;
  - No significant correlations;

```
Rank : Variable        : Separation
--------------------------------------
  1 : mindR_l1j        : 2.699e-01
  2 : mindR_l2j        : 2.395e-01
  3 : m_l1jj           : 1.890e-01
  4 : m_ll             : 1.098e-01
  5 : pt_j1            : 9.537e-02
  6 : pt_j2            : 6.582e-02
  7 : pt_leadinglepton : 5.700e-02
  8 : pt_sum           : 4.410e-02
  9 : MET              : 3.804e-02
 10 : pt_sublepton     : 1.689e-02
```


Correlation Matrix (signal)

Correlation Matrix (background)
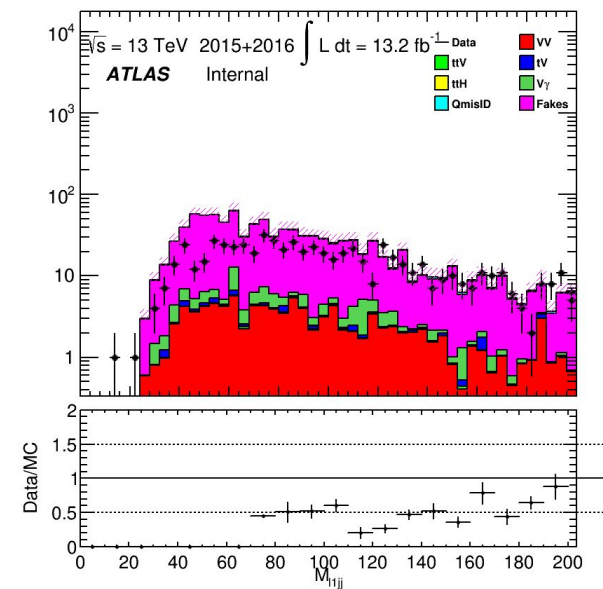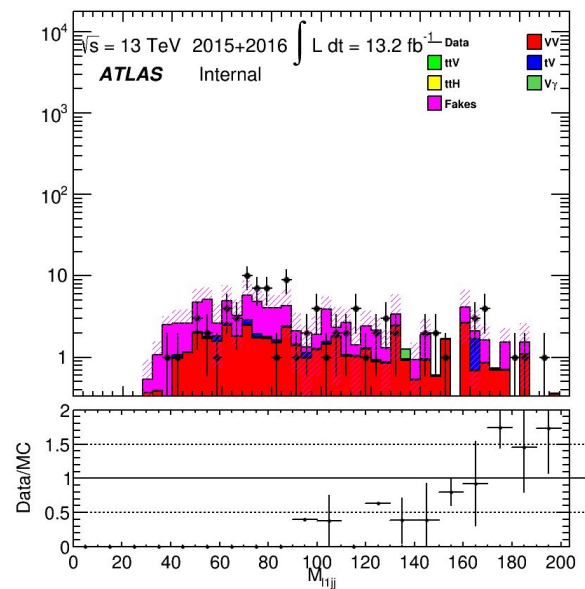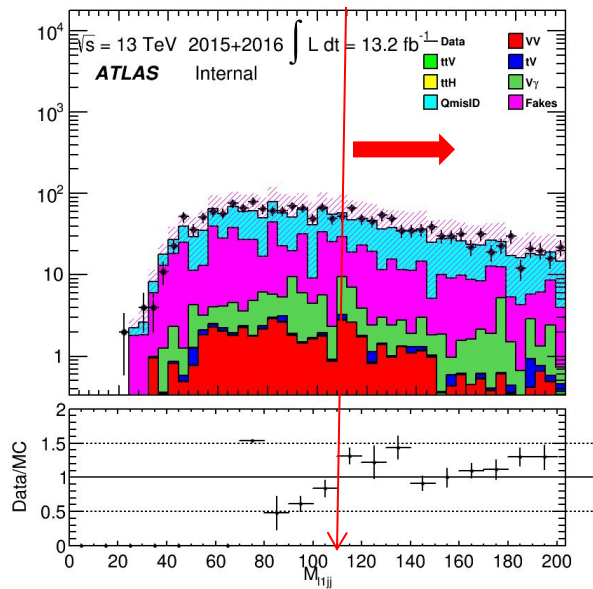
Signal optimizations for non-res

- **Cuts based:**
  - m_ll(ee): to reduce QmisID;
  - mindR_l2(1)j;
  - m_l1jj: mostly reduce promptSS, final discriminant.

	mindR_l2j<	mindR_l1j<	m_l1jj<(GeV)
ee	1.5	1.5	110
mm	1.5	1.5	110
em	1.5	1.5	120

	ee	mm	em	combined
Signal	0.043	0.113	0.217	
promptSS	1.48	2.57	7.98	
Vgam	0.66	0	2.7	0.12
QmisID	2.58	~	1.2	
Fakes	2.39	-1.7	35.9	
S/sqrt(B)	0.016	0.12	0.03	

- **Same selections as SR, but only reverse final m_l1jj cut;**
- **Note: need estimate fakes again, below just as an example!**

Summary & To do list

- **Non-res almost done;**
- **Systematics considered later;**
- **Preparing note first.**

Back up