

2024 Data/MC Comparison

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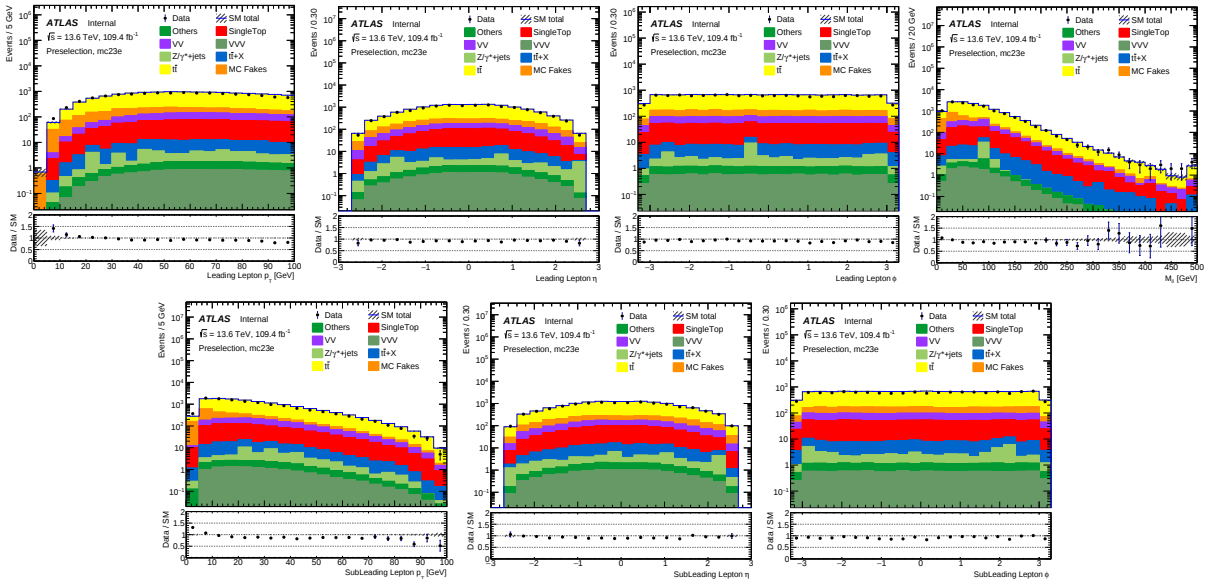
30th October - Run 2&3 stop meeting

Technical Details

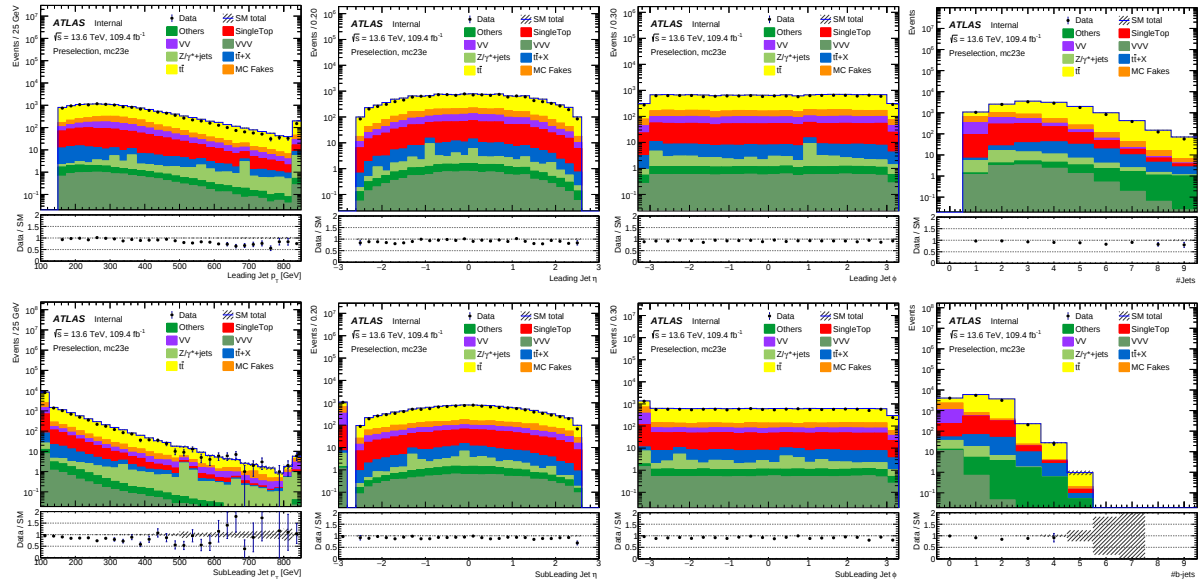
- Mel: AnalysisBase 25.2.56, with DAOD_PHYS samples (cleaned up [config file](#))
- LSF: AnalysisBase 25.2.31
- 21 variables (DNN inputs):
 - ▶ the leading and subleading lepton p_T , η and ϕ
 - ▶ the leading and subleading jet p_T , η and ϕ
 - ▶ MET, METsig, $R_{2\ell} = MET/(p_T^{\ell 1} + p_T^{\ell 2})$, $R_{2l4j} = MET/(MET + p_T^{\ell 1} + p_T^{\ell 2} + p_T^{j 1 \dots 4})$
 - ▶ the number of jets and b -tagged jets in the event, $m_{\ell\ell}$, $\min\Delta R_{\ell 1, j_i}$, $\min\Delta R_{\ell 2, j_i}$
- No overlaid signals as request is in progress, see [ATLMCPROD-12032](#)
- Variables at preselection level with stat-only uncertainties

Variable	Cut / Value	Motivation
Cleaning Cuts, Overlap Removers	Default	-
MET Triggers	HLT_xe65_cell_xe90_pfopufit_L1jXE100 HLT_xe65_cell_xe105_nn_L1jXE100	Default
Number of signal leptons	= 2	Final state
MET [GeV]	> 250	Trigger Plateau
Lepton charge	Opposite Sign	Final state
Leading lepton p_T [GeV]	$p_T < 100$	Soft lepton
SubLeading lepton p_T [GeV]	$p_T < 100$	Soft lepton
Dilepton Invariant Mass [GeV]	> 10	Low-mass resonances
Leading jet p_T [GeV]	$p_T > 150$	ISR

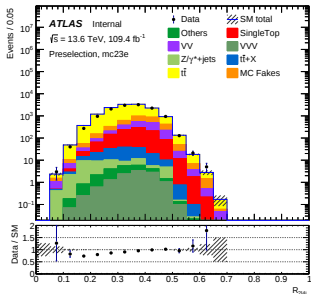
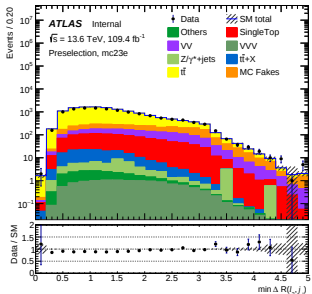
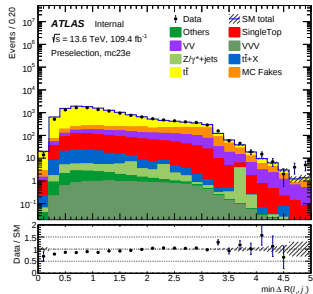
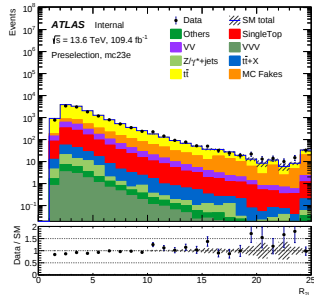
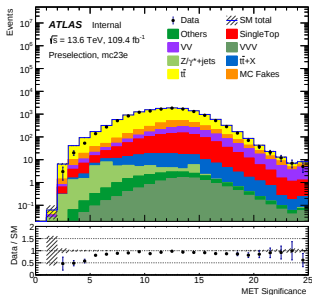
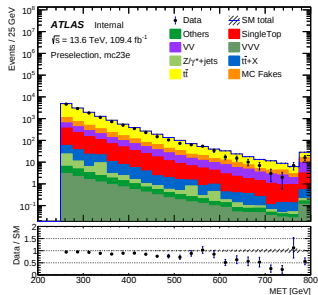
Lepton variables at preselection level - Stat-only uncertainties



Jet variables at preselection level - Stat-only uncertainties



Other variables at preselection level - Stat-only uncertainties



Conclusions

Distributions show similar behavior wrt other mc23 campaigns. No major issues in 2024.

ToDo list:

- Process other MC campaigns with LSF and update corresponding preselection plots
- Add/Update sample lists and plots in the INT Note
- Implementing systematic processing in LSF, while waiting for 2024 signals