Type II Seesaw: Background Estimates

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Outline

- Status of experimental simulations
- Issues on the pheno side
- Next steps

Re-calculated fiducial cross-sections

There were some issues with the cross-sections pointed out. An inclusive
sample was made and the fiducial signal cross-sections were re-estimated.

Final State	200 GeV (in fb)	300 GeV (in fb)	400 GeV (in fb)
$2\ell^{ss}$	2.808	0.625	0.193
3ℓ	1.256	0.292	0.095

Fiducial cross-section is defined as $\sigma_{fid} = A * \times \sigma_{th} \times BR$. where
Acceptance, A, is the ratio of the total $2\ell^{ss}/3\ell$ that pass the p_T and η
cuts to the total number of $2\ell^{ss}/3\ell$ final state events. The cut-flow is
included in the back up.

ATLAS simulations of the model

- Production of samples in the xAOD format in place.
- One MC with full-sim of the detector simulated for mass point 200 GeV.
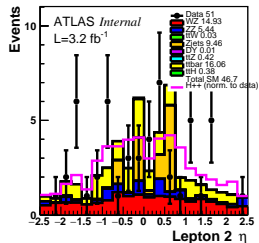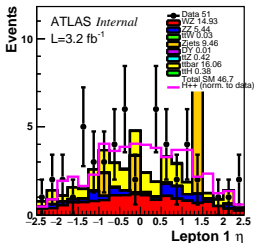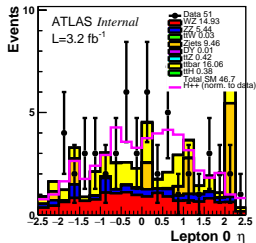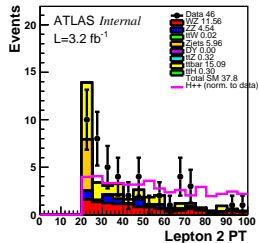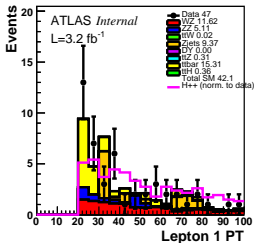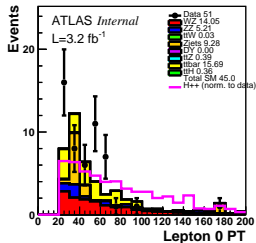- Inclusive decays of W.

Cut-flow for the 3-lepton final state
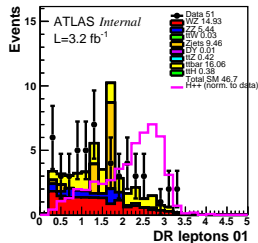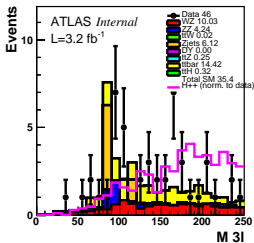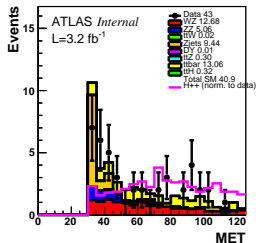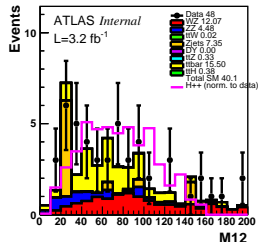
Preliminary cuts with the ATLAS simulation.

Cut	Number of events
3ℓ	3242
$P_T > 20$ GeV	2257
$MET > 30$ GeV	2065
$M_{\ell\ell} > 30$ GeV	1884
nJets > 2, bJets $= 0$	796

If acceptance is defined as before, fiducial cross-section $= 0.526$ fb. Some plots with data on the next slides.

Kinematics I

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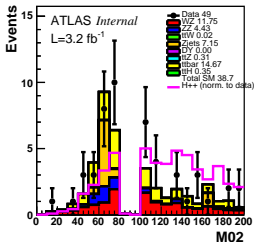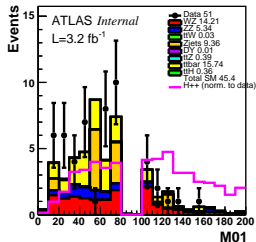
Pheno Issues

Showering of the signal is done.
Biggest problem is the background. The only available samples are a bit customized.
Isolation variables cannot be accessed due to compatibility issues.
The only available sample now is WZ.