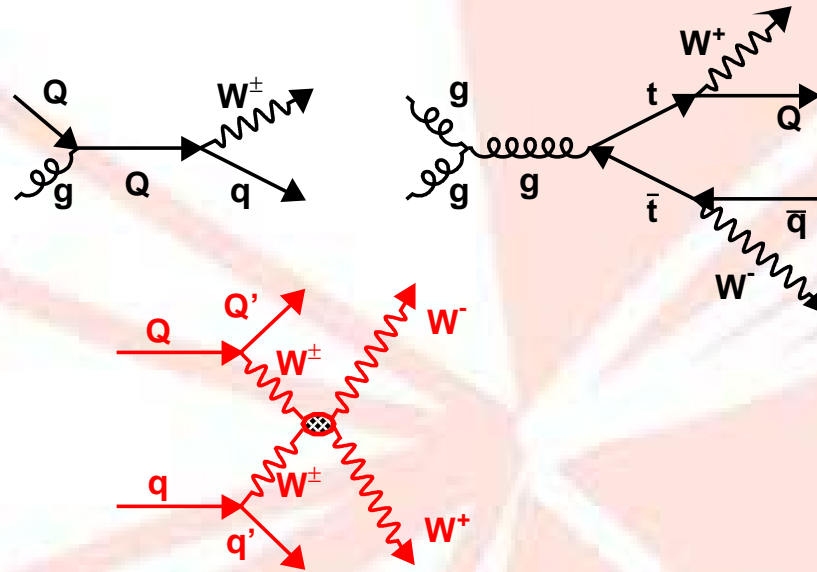




$W_L^+ W_L^-$ scattering: Progress Report

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- Feynman Diagrams for Signal and Background:



- **Signal:**

- Two samples (Continuum, 1TeV Scalar) of 600,000 events each generated with Pythia.
- $W^- \rightarrow l^- \bar{\nu}_l$ and $W^+ \rightarrow 2jets$
- Underlying events tuned with the Rome standards.
- Simulation with ATLFast

- **Background**

- **ttbar:**

- Used the T2 sample from NIKHEF.

- MC@NLO, fully hadronic events were rejected and at least 1 top has $p_T > 500$ GeV.

- **w+jets:**

- Used the A7 sample.

- AlpGen, requiring 4 final state QCD partons

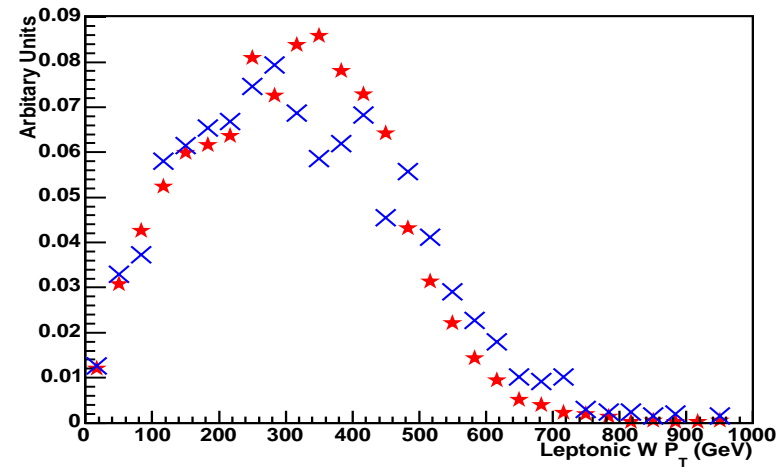
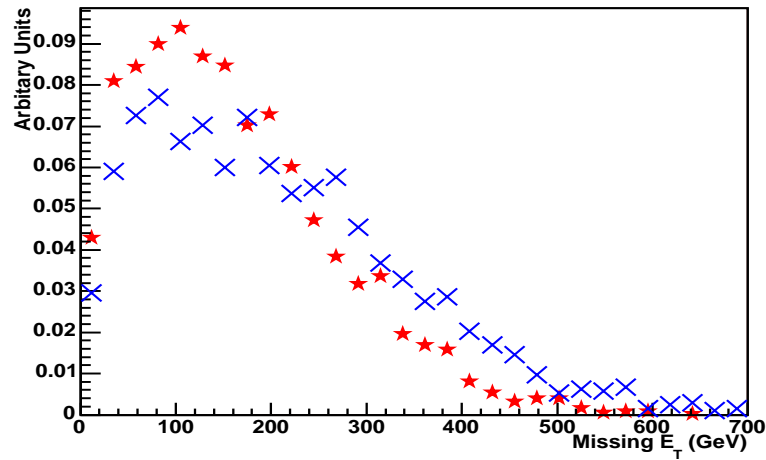
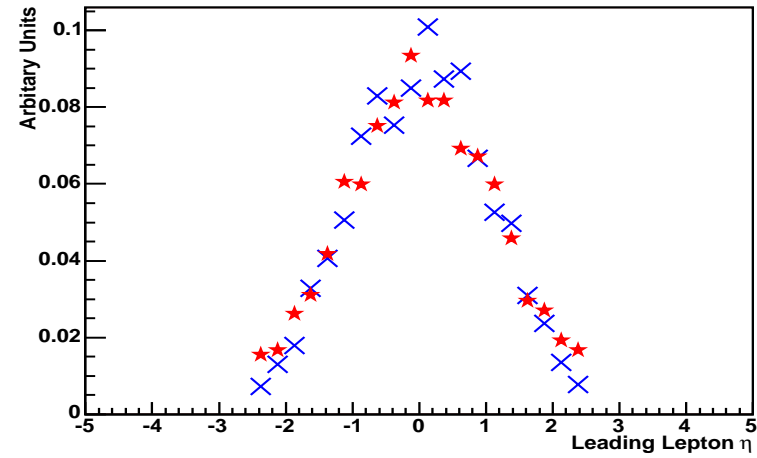
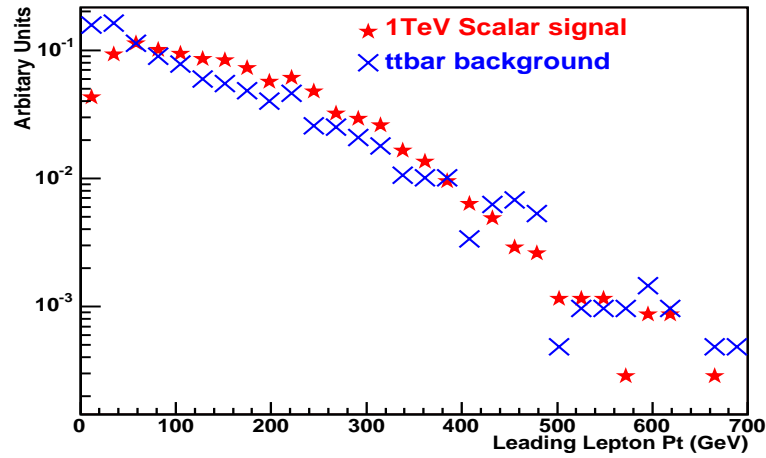
- Light Jets: $p_T^{min} = 20\text{GeV}$, $\eta^{max} = 5.0$, $\Delta R_{jj} = 0.4$

- Lepton: $p_T^{min} = 20\text{GeV}$, $\eta^{max} = 3.0$, $\Delta R_{lj} = 0.4$, $E_T^{miss} > 15\text{GeV}$

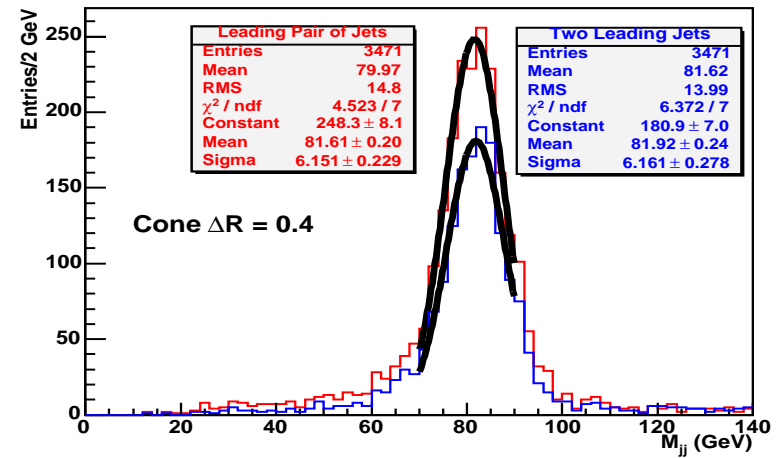
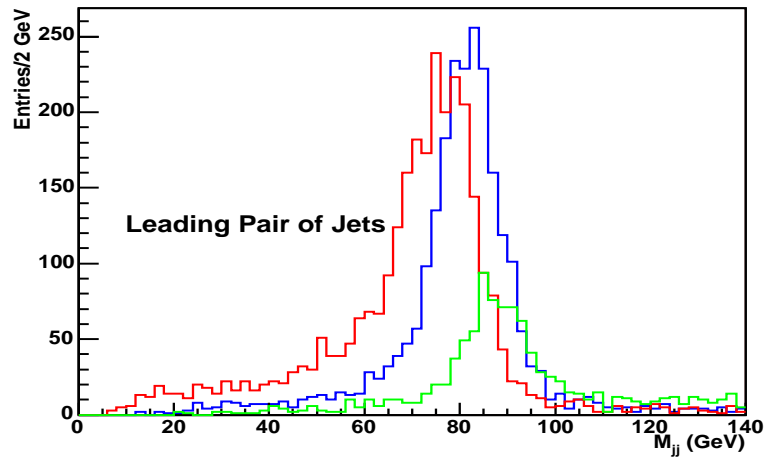
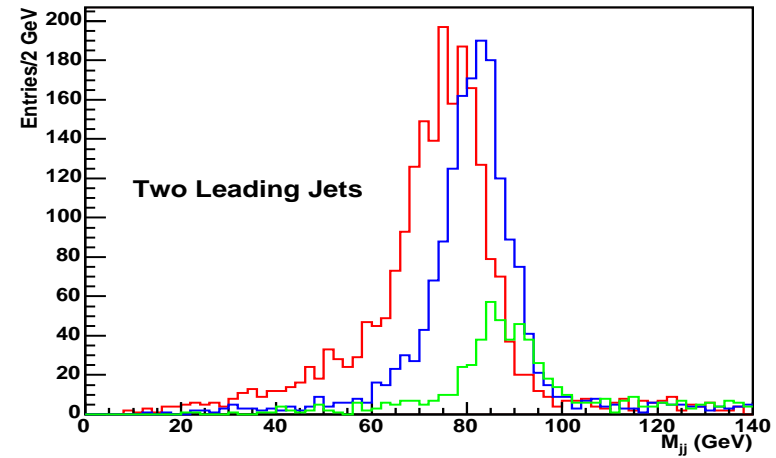
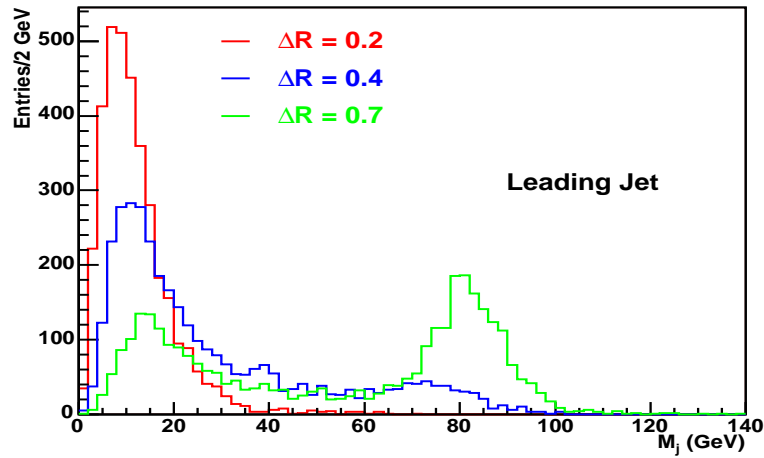
- I need a better look on the background samples

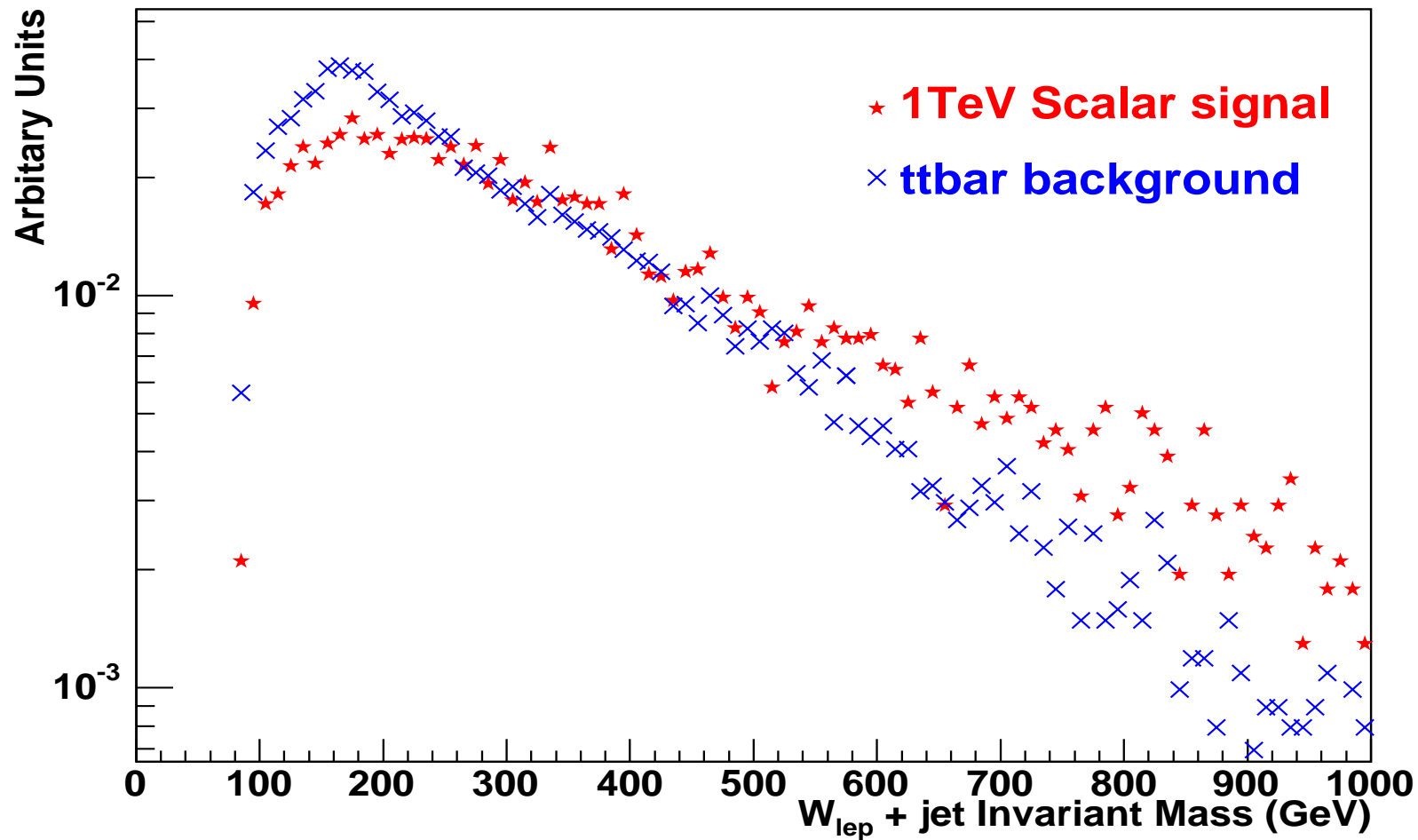
- For what follows I simulated/reconstructed only 5,000 events of the signal and the ttbar background

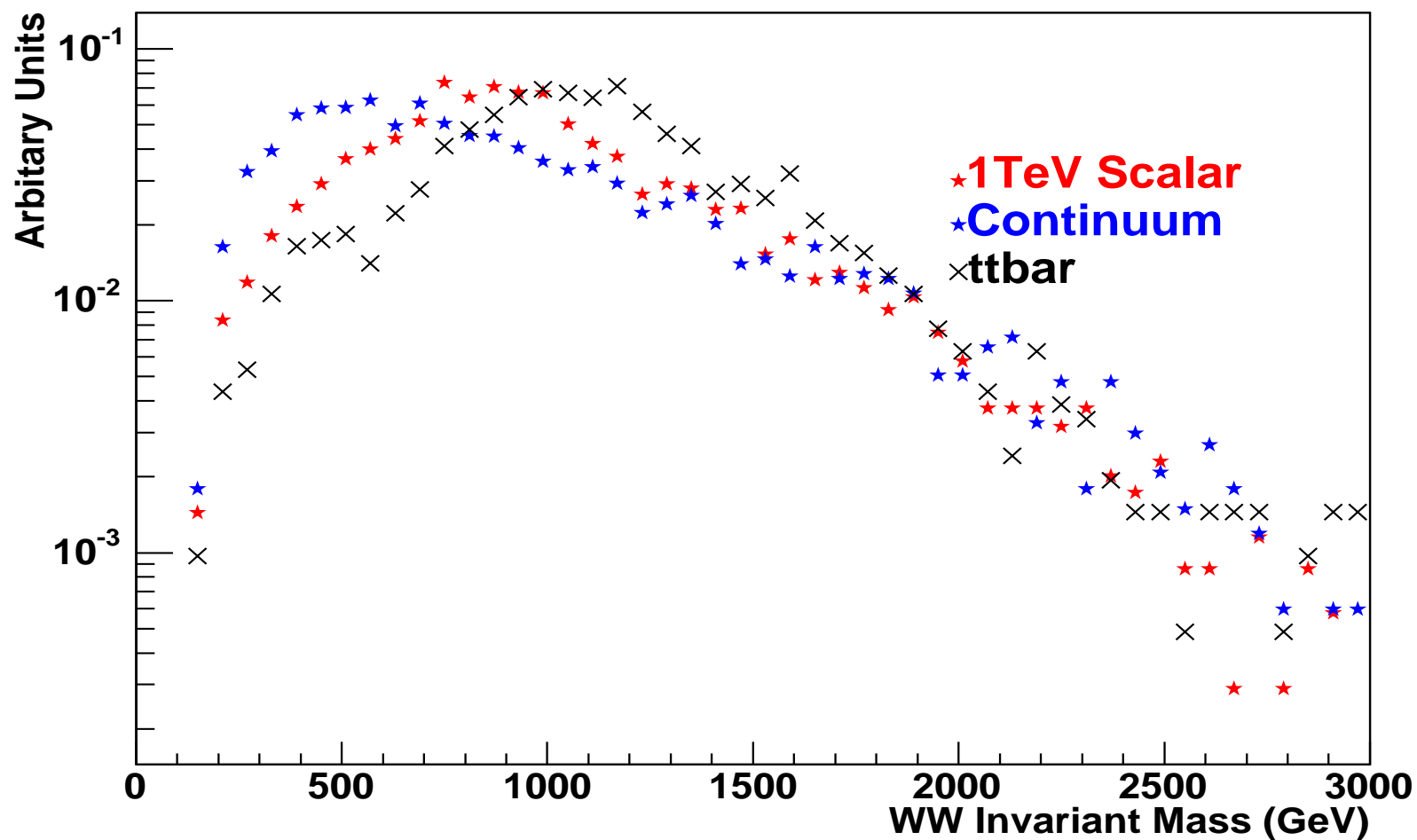
Initial distributions



The case of the hadronic W reconstruction







- The distributions look similar to what has been published. But needs a better look at the high energy part of the spectra. Deviations are probably due to statistics.
- Keep working with the current samples, aiming in setting up and improving the analysis code.
- Add the extra event characteristics for the signal and background. Apply the cuts.
- Implement the Cone algorithm methods from Sarah for the jet finding.
- Get the trigger efficiencies.
- Look for the background samples.