WW Scattering: Progress Report

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Outline

- Bug fixes at $k_\perp$.
- New Distributions.
- Study of the E_T cut on ATLFAST Cells.
- Report on Full Simulation using GRID.

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Bug fixes at $k_\perp$

- $k_\perp$ crashes when there aren't cells to form the jets.
  - Problem seen when I put high E_T threshold on the ATLFAST Cells.
  - Bug fixed in my local release: Return no jets at these cases.
- Scale Parameter is just R and not R^2 as it should.
  - Bug known and fixed long time ago but **not tagged for the offline releases!**
  - Users should use tags after KtJet-00-00-07.
  - Main idea: For $R = 0.5$, scalling parameter should be $R^2 = 0.25$. But it was $R^2 = 0.5$ which corresponds to $R' = 0.71$. **I was using larger R than I wanted!.**$\rightarrow$ larger tails at big jet-masses

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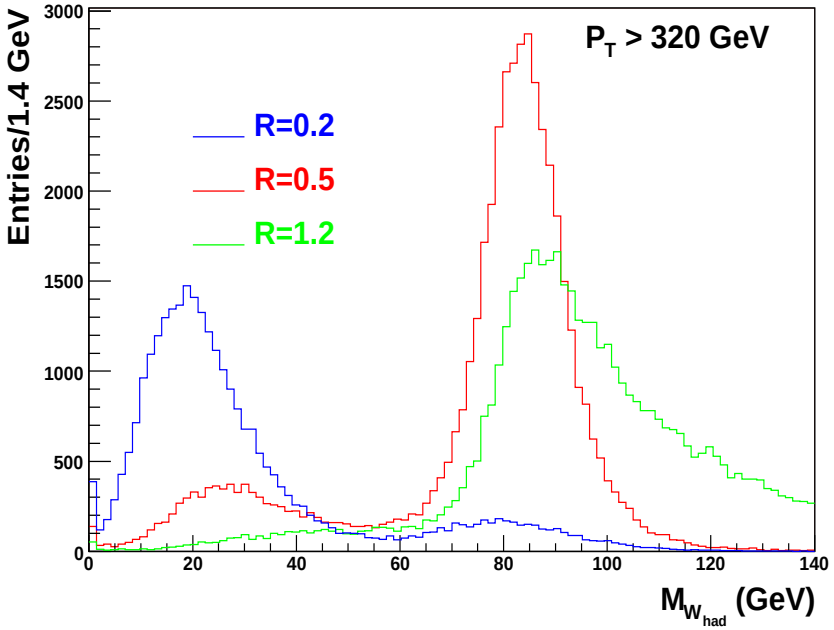
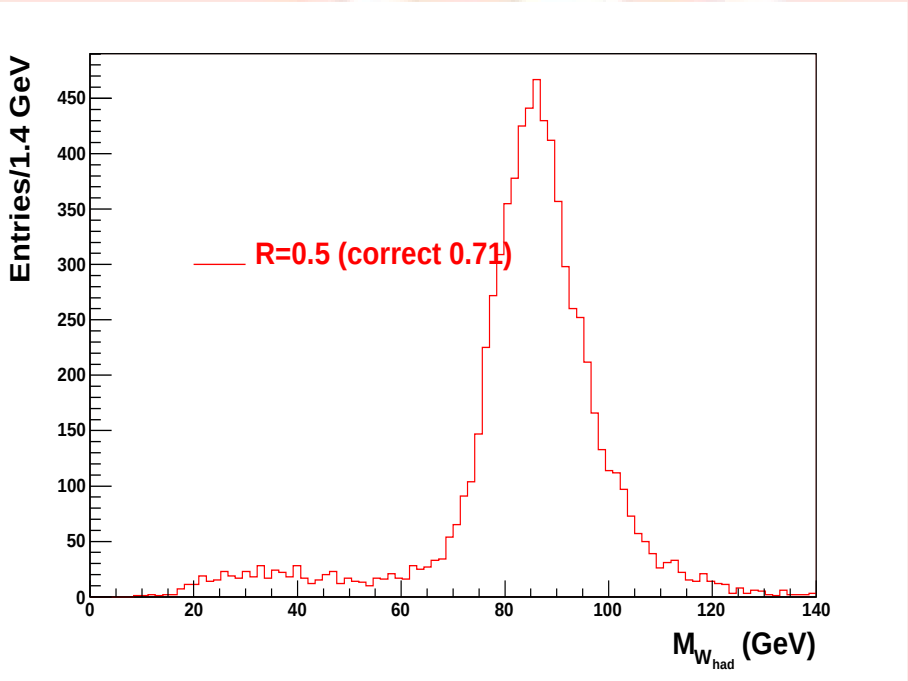
New distributions: Compare R-sizes

- Check again the mass of the leading jet (hadronic W) for different R-parameters.
- See the difference with the previous distributions (on the right).





- Smoother and smaller tail at the high masses.
- The second peak at low masses is gone by applying the y-cut (next slide).

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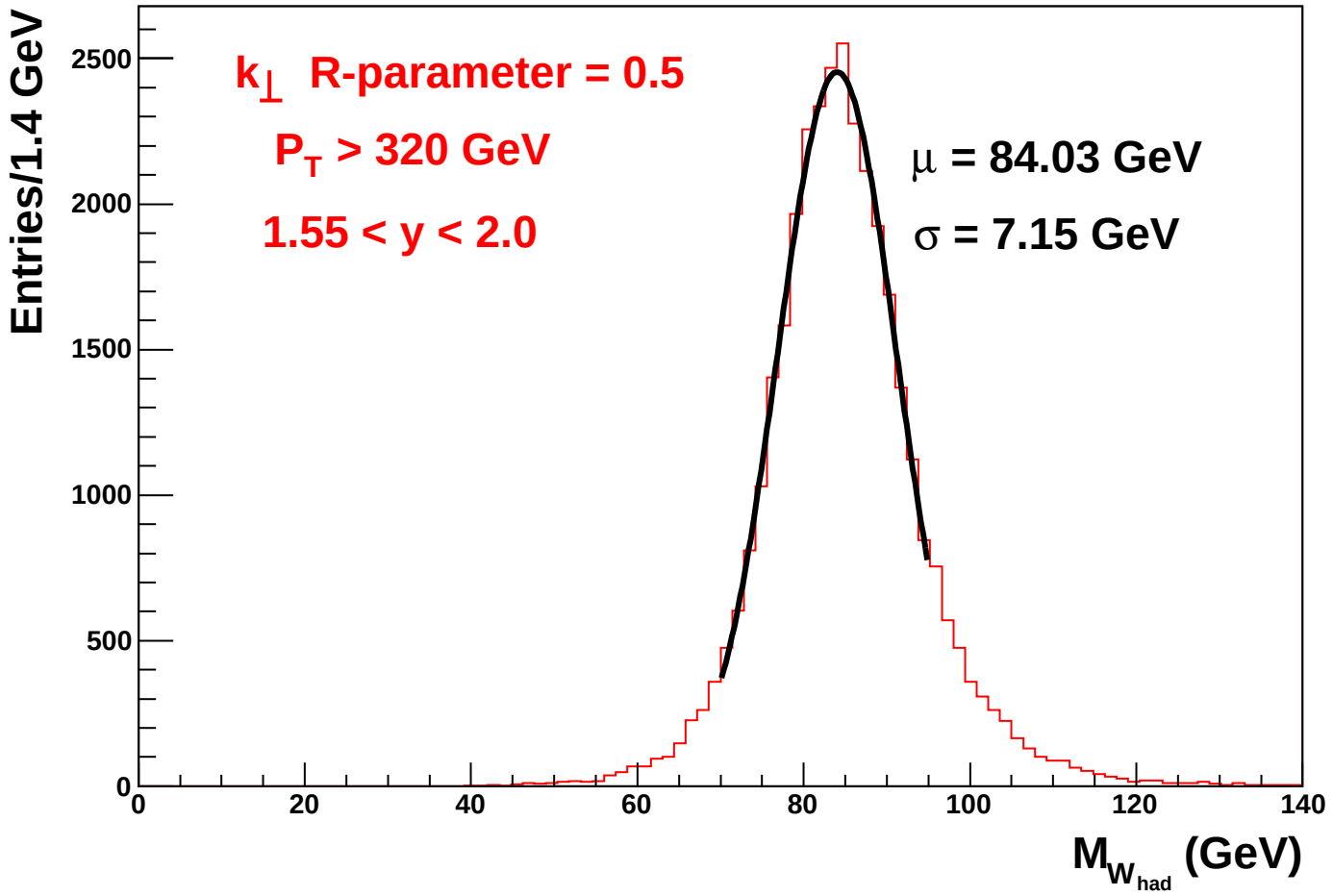

- Sarah gets: $\mu = 84.29\ GeV$ and $\sigma = 7.29\ GeV$.
- At Warwick: $\mu = 85.60\ GeV$ and $\sigma = 7.61\ GeV$.

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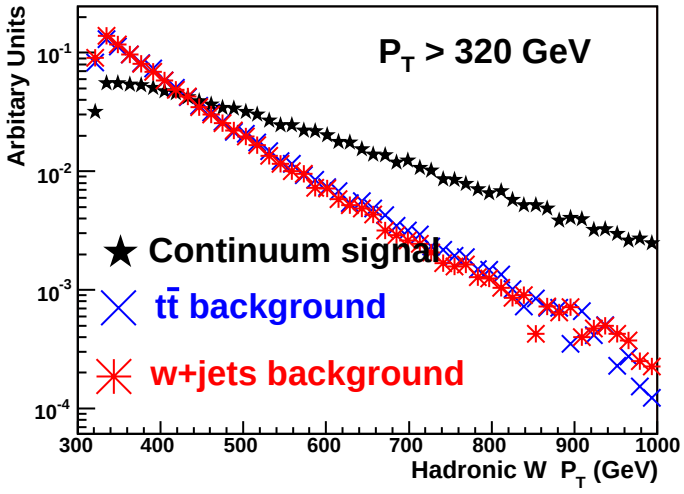
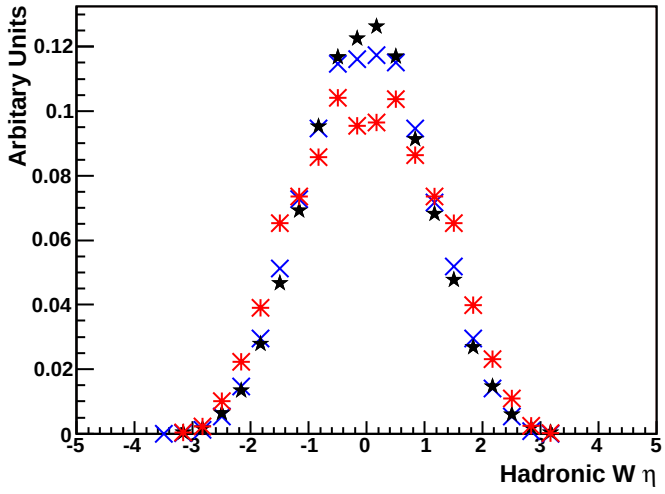
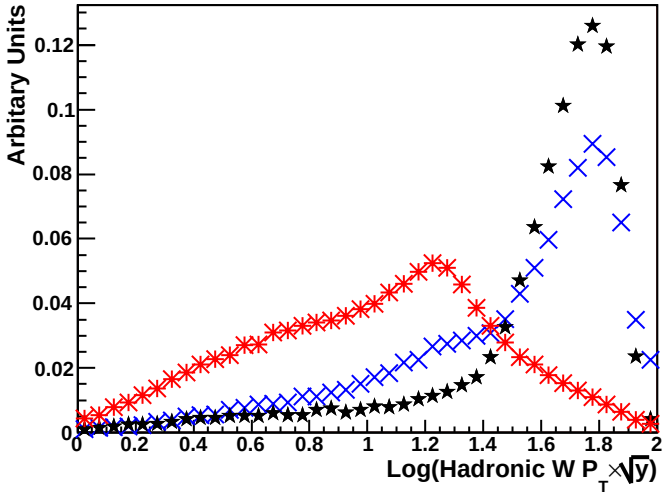
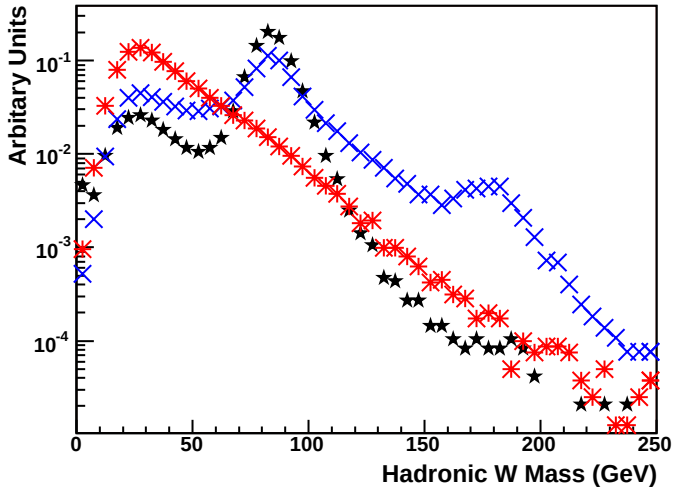
New distributions: Hadronic Sector of the Signal & Backgrounds - Revised









- Distributions agree more with the papers, but there are still discrepancies.
- The distributions of the features are still to be fixed.

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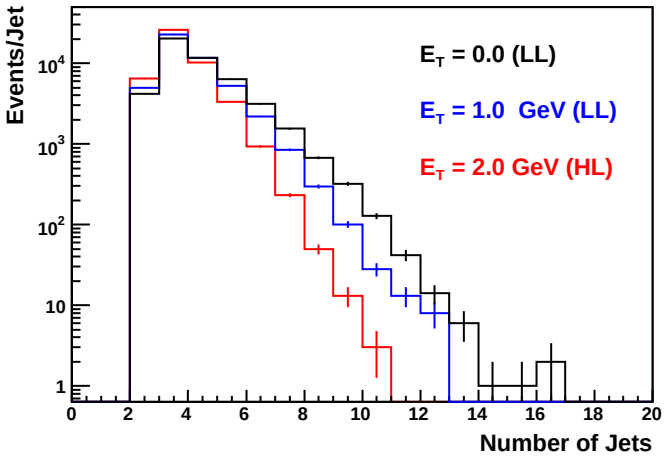
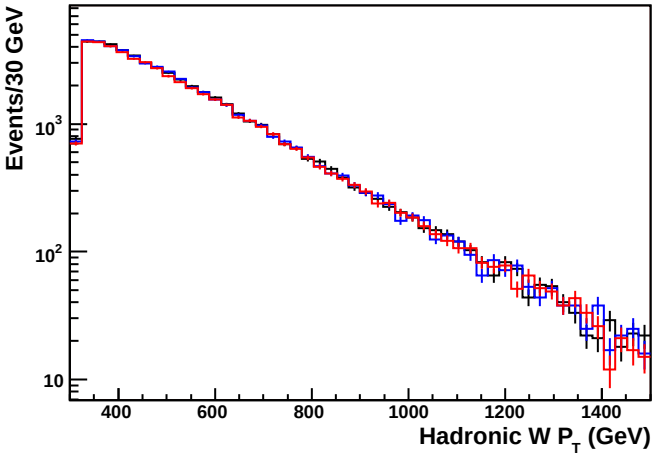
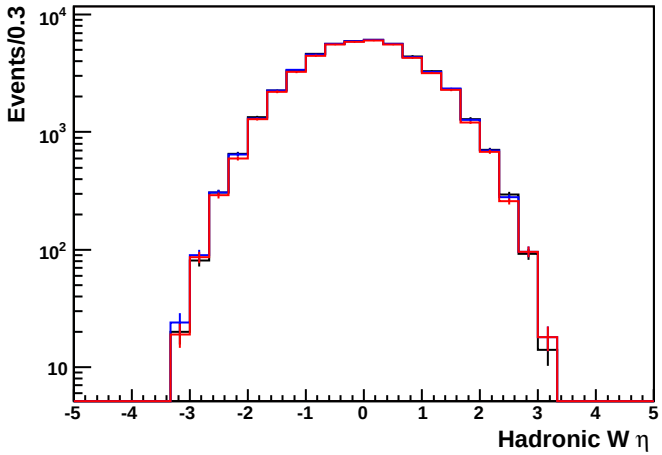
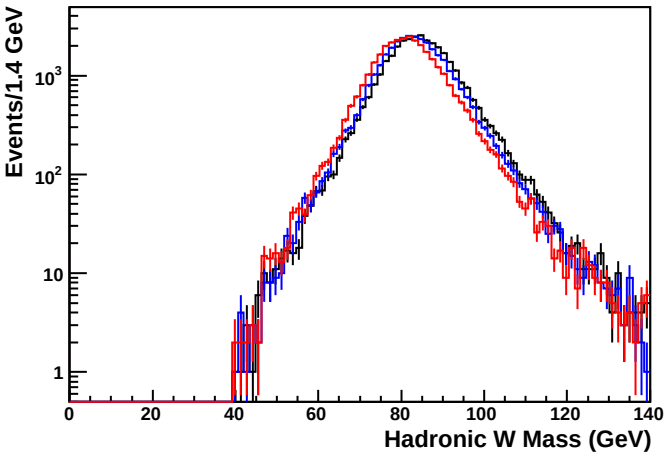
Apply E_T cut on ATLFAST cells.

- Caution: ATLFAST cells are not the 'real' calorimeter cells. They're of different sizes.
- Scenarios presented for the Signal: a. $E_T^{cut} = 0$ at Low Luminosity (normal case) b. $E_T^{cut} = 1.0\ GeV$ at Low Luminosity and c. $E_T^{cut} = 2.0\ GeV$ at High Luminosity.









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Full Simulation using GRID

- A Wiki page which gives basic instructions and tips on how to run the full simulation on the GRID: **https://www.hep.ucl.ac.uk/twiki/bin/view/Main/AtlasGrid**
  Covers tips and scripts from my performance till now.
- The chain is more robust. It is now faster to get the final output.
- 5k events of Continuum Signal are now fully simulated. Files located at: **/unix/atlas1/sstef/wwScattering/Signal/simu/**
- Disk space for storage: 100MB/file (∼1MB/event) + Reconstructed files. Ben is aware of my requirements for the new RAID.

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