MC generators for ttbar studies @LHC

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Acquired expertise

- MC generators for the LHC:
 - Mc@NLO, Powheg
 - Herwig++, AlpGen, Sherpa, Madgraph
- Jet Algorithms:
 - SIScone^(used in the following), Kt, antiKT
- Analysis Tool:
 - Rivet (comparison MC/data)

A final note is being written...

Mc@NLO vs Powheg

- In Atlas, ttbar events @ NLO are generated w/ Mc@NLO + FHerwig
- IMHO, Powheg is easy to use, all events have weight > 0 and can be interfaced to any shower model



QCD bkg

- I've run some tests with FHerwig, AlpGen
 +FHerwig, Sherpa and MadGraph/MadEvent
- Huge XS makes practically impossible to store on disk even few pb⁻¹
 - However, e.g. using Rivet, one can perform an analysis 'on the fly'
- I focussed my efforts on Event Shape Variables and some kinematical quantities







Future plans (for my PhD thesis)

- Production of *ttbar* evts w/ Powheg&Herwig++ using Athena, AtlFast on the grid
 - Comparison against Mc@NLO dataset
- Implementation of *ttbar* analysis for the measurement of the xs in the semileptonic-µ channel
 - Calibration of JES and μ -related systematics

Stay tuned!

<u>http://www.bo.infn.it/atlas_rpc/analysis.htm</u> <u>http://pchb8.bo.infn.it/wiki/index.php/Portal:Top</u>