Les Houches 2005
Standard Model & Higgs

Top Quark session

Proposed topic list

Proposed top quark topics for the Workshop (*contact : Jorgen D'Hondt*)

Estimate the effect of spin correlations on some observables
Names : Maltoni, Frixione, …
Abstract/goal : Try several generators, identify sensitive observables, estimate effect.

Influence of the jet definition on invariant masses and cross-sections
Names : D'Hondt, Heyninck, Ellis, Schmidt, …
Abstract/goal : Identify the different features of several jet clustering algorithms, study and understand the observed differences.

Visibility of tT+jet effect in top analyses, tT rapidity asymmetries
Names : Huston, Ellis, Mrenna, D'Hondt, ...
Abstract/goal : Implement the NLO tT+jet in the CMS/ATLAS experiments, estimate the effect within several analyses, estimate if tT+2jets at NLO is needed.

Towards an optimal single-top selection method
Names : Dudko, Giammanco, Bowen, ...
Abstract/goal : Try the D0 selection method in the LHC environment, include the study of the orthogonal observables to separate the s- and t-channel.

NLO calculations for single-top processes
Names : Dudko, Boos, Motylinski, …
Abstract/goal : Comparison of generators for some crucial kinematic variables.

Definition of systematic uncertainties for top physics

Names : D'Hondt, Mrenna, …

Abstract/goal : Identify the main systematic uncertainties in top events, design a procedure to estimate them, get the values from realistic top quark analyses

Jet energy scale from tT events

Names : D'Hondt, Heyninck, …

Abstract/goal : Design, implement and test methods to get the light and heavy jet energy scale from both the W mass and the top mass constraints. Estimate the precision which can be obtained.

Asymmetries between top and anti-top

Names : D'Hondt, Lykken, …

Abstract/goal : Identify the interesting variables and estimate their potential.

Compare the detector effects in CMS and ATLAS

Names :

Abstract/goal : Setup a method which generates random events and pass them through the CMS or ATLAS detector, study the event-by-event differences.

Extraction techniques for Vtb matrix element

Names : Giammanco, Bowen, ...

Abstract/goal : Try the simultaneous measurement of the single-W and single-top process cross-section.

Top mass extraction methods from the single-top final state
Names : Giammanco, Bowen, D'Hondt, ...
Abstract/goal : Identify several techniques to extract the top mass, get their statistical precision, correlation and possibly an estimate for the systematic uncertainties.

Measuring the top quark charge
Names : Bowen, ...
Abstract/goal : Design or refine the current estimators for the top quark charge, estimate the potential for observing deviations from the Standard Model

Measuring the top quark polarization
Names : Giammanco, Tsuno, ...
Abstract/goal : Reconstruct the angular distributions and design robust estimators to search for signals beyond the Standard Model.

ISR uncertainty benchmarks for tT production
Names : Huston, ...
Abstract/goal : Tune the ISR parameters (for example alpha_s) on distributions from Drell-Yan events (for example the average pT as a function of the Drell-Yan mass), estimate the potential uncertainty and define it as a benchmark for the systematic uncertainties on top physics.

Colour reconnection in ttbar events

Names : Skands, D'Hondt, ...

Abstract/goal : Implementing and testing a first method for colour reconnection effects in ttbar events. The conservative effect on the top quark mass will be estimated.