Search for flavour-changing neutral current (FCNC) in the top quark sector

17/07/2014

Outlines:

- Gridpack production
- LHE production at IIHE

Gridpack production

sm-no_masses model

Previously manually produced gridpacks were deleted and reproduced lobster in order to incorporate the mgPostProcv2 script.

Process	Produced	Location
$Z/\gamma^* \to ll$ (1 jet), $10 < m_{ll} < 50$	NO	IIHE
$Z/\gamma^* \to ll$ (2 jets), $10 < m_{ll} < 50$	NO	IIHE
$Z/\gamma^* \to ll$ (3 jets), $10 < m_{ll} < 50$	NO	IIHE
$Z/\gamma^* \to ll$ (4 jets), $10 < m_{ll} < 50$	NO	IIHE
$Z/\gamma^* \to ll$ (1 jet), $50 < m_{ll}$	YES	IIHE
$Z/\gamma^* \to ll$ (2 jets), $50 < m_{ll}$	YES	IIHE
$Z/\gamma^* \to ll$ (3 jets), $50 < m_{ll}$	YES	IIHE
$Z/\gamma^* \to ll$ (4 jets), $50 < m_{ll}$	YES(Friday night)	IIHE
$W \to l\nu$ (1 jet)	YES	IIHE
$W \to l\nu$ (2 jets)	YES	IIHE
$W \to l\nu$ (3 jets)	YES	IIHE
$W \to l\nu$ (4 jets)	YES	IIHE
$WZ \to l\nu jj$ (up to 2 jets)	NO	IIHE
$ZZ \to lljj$ (up to 2 jets), $10 < m_{ll}$	NO	IIHE
$ZZ \to llll$ (up to 2 jets), $10 < m_{ll}$	NO	IIHE
$H \to \gamma\gamma$ (up to 2 jets)	YES	IIHE
$H \to b\bar{b}$ (up to 2 jets)	YES	IIHE
$WH \to \gamma\gamma$ (up to 2 jets)	NO	IIHE

Gridpack production

Higgs processes

param cards associated to the Higgs processes uses the full sm model. All objects are massive and have different masses.

Process $pp \rightarrow hjj$:

- Common gridpack for all decay modes?

Process $pp \rightarrow hjj$:

- 20600 jobs needed
- 100jobs/hour on a 8-core machine...

Question: can we switch to sm no masses model for all Higgs related processes?

$t\bar{t}ZZ$, $ZZ \rightarrow llll$

- 3200 jobs needed. 6jobs/h on a 8-core machine...

LHE production at IIHE

Lobster:

- job submission: if too many jobs (ex:400), some get aborted (30% on average)
- still a high crash rate during gridpack compilation
  - ▶ switched to dynamic compilation. Is this wise?
  - ▶ do we need to recompile the gridpack if it has been done before the copy to the SE?
- qsub command: cannot access the stdout/err files. Needs to be fixed.

LHE file production:

- W+1jet: a lot of aborted jobs. Reason still unknown. $400 \times 100k$ events though ($\times$ failure rate...)
- W+4jets: 100k event jobs have a high failure rate (20h). Most of the successful jobs do not have 100k events (50k on average). Propose to reduce to 10k.

Thanks.

Back-up