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Top MC validation (How To)

Rivet

Rivet is a software toolkit for data analysis of MC event generator samples, providing tools (jet finders, event shapes, etc.) for easy writing of analyses which are not generator-specific, and a large (250+) collection of MC versions of published experimental analyses. <http://rivet.hepforge.org>.

Producing EVGEN files

Information not yet ready 🙄

Running Rivet 1.X

First, log on **lxplus5** and create a directory to work, let's say a temporal one:

```
tmpdir=$(mktemp -d)
mkdir ${tmpdir}/evgen
```

Rivet will run over EVGEN files, so one can produce these files, they can be retrieved from the GRID or read from any location if they already exists. Let's do the latter and read EVGEN files from EOS here

```
/eos/atlas/user/c/cescobar/top/validation/evgen/mc12_8TeV.117050.PowhegPythia_P2011C_ttbar.evgen.
```

Now, one can produce the rivet output file (i.e. AIDA file) just running the `produce_rivet_validation.py` script which is available. It can be retrieved doing this:

```
cd ${tmpdir}
svn export svn+ssh://svn.cern.ch/repos/atlasphys/Physics/Top/Software/MCvalidation/Rivet/Rivet1.X/
```

Now, just run this script:

```
python produce_rivet_validation.py -i /eos/atlas/user/c/cescobar/top/validation/evgen/mc12_8TeV.1
```

This script will run over 1 input file (i.e. 5000 events) in the input directory and will produce an AIDA file with the plots. You can explore the options of the previous script doing:

```
python produce_rivet_validation.py -h
```

Assuming that you have produced the AIDA file with the statistics you wanted for all the samples you want to compare, let's now produce some plots.

Producing plots using Rivet

Setup Rivet in either **lxplus** or **lxplus5**:

```
asetup 17.2.10,here
source /afs/cern.ch/sw/lcg/external/MCGenerators_hepmc2.06.05/rivet/1.8.1/${CMTCONFIG}/rivetenv.s
```

Now, one can use `compare-histos` utility to produce all the plots that are defined in the plug-in you selected.

```
mkdir plots
compare-histos myfile1.aida:'Title=myTitle1' myfile2.aida:'Title=myTitle2'
make-plots --png *.dat
mv MC_* plots
```

Or one can use the `rivet-mkhtml` utility to produce the plots together with a (ugly) webpage.

```
rivet-mkhtml myfile1.aida:'Title=myTitle1':'LineColor=black':'LineStyle=solid' myfile2.aida:'Titl
```

You can also add options such as `--mc-errs, -s, -n 20, --times`, etc...

-- CarlosEscobar - 14-May-2013

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