

# **alpgen\_prod\_x tutorial**

(updated February 2007)

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Create a working directory and set it up:

*mkdir tutorial*

*cd tutorial*

*setup D0RunII p17.09.08*

*d0setwa*

alpgen executables and alpgen\_prod\_x are available :

*which wqqgen*

*which alpgen\_prod\_x*

Grab an alpgen input file :

*cp \$SRT\_PUBLIC\_CONTEXT/alpgen\_prod/itest/pythia/alpgen.cards .*

Run alpgen only:

*alpgen\_prod\_x \*

*-rcp \$SRT\_PUBLIC\_CONTEXT/alpgen\_prod/rcp/runAlpgenOnly.rcp*

## The alpgen.cards card file

```
# example cards for w+2j with w->enu
W=1
WDecay=enu
LightPartons=2
PDFset=CTEQ5L

alpgen::ptjmin=8
alpgen::etajmax=3.5
alpgen::drjmin=0.4
alpgen::ptlmin=0
alpgen::etalmax=10
alpgen::drlmin=0
alpgen::metmin=0
alpgen::iqopt=2
alpgen::qfac=1
alpgen::ktfac=1
```

gridFlag=0  
NeventsWarmup=100000  
NWarmup=2  
NeventAfterWarmup=100000

matchingMode = exclusive  
alpgen::cluopt=1

WantedEvents=30

---

To test an alpgen.cards file :

*alpgen\_prod\_x -rcp \$SRT\_PUBLIC\_CONTEXT/alpgen\_prod/rcp/runInputTest.rcp*

Produce 4 dumps of config dictionary with no unset labels

2 examples of bad card file :

Edit alpgen.cards to set 'W=3' then run alpgen\_prod\_x with runInputTest.rcp

Program crash with error message :

*Can't find an alpgen executable to handle the requested process ---> will abort execution*

Put back 'W=1' and comment line alpgen::ptlmin=0 by adding a '#' character in front of it.

Run alpgen\_prod\_x with runInputTest.rcp

Program crash with error message :

*UNSET LABELS : BAD alpgen.cards FILE --> aborting*  
and lists the missing labels.

Uncomment the alpgen::ptlmin line for the next step.

Other examples of card files can be found in alpgen\_prod/testMaterial/\*.cards

To run alpgen+pythia, you need standard pythia input files :

```
cp $SRT_PUBLIC_CONTEXT/alpgen_prod/itest/pythia/pythia.cmd .  
cp $SRT_PUBLIC_CONTEXT/alpgen_prod/itest/pythia/pythia.cards .  
cp $SRT_PUBLIC_CONTEXT/alpgen_prod/itest/pythia/pdg_mass.tbl .
```

The wanted number of events is given in alpgen.cards file with the line  
WantedEvents=30

now run:

```
alpgen_prod_x -rcp \  
$SRT_PUBLIC_CONTEXT/alpgen_prod/rcp/runAlgenPythia.rcp > log
```

produces :

DSPACK file : MCevents.dat

bookkeeping file for FOME metadata : alpgen.bookkeeping

## Running pythia on an already existing alpgen set of files

In the pythia.cards card file, you should set the parameter :

•  $MSTP(143)=1$

if you match alpgen partons and pythia jets (set it to 0 if no matching).  
You request matching if your alpgen.cards file contains a line starting  
with 'matchingMode'

To run on an already existing alpgen output file,

If you had run an alpgen executable in the directory /tmp with the file label set  
to stuff, then your alpgen output files are named /tmp/stuff.unw, /tmp/stuff.par,...

In your alpgen.cards file, put the line

FileLabel = /tmp/stuff

and run with

*alpgen\_prod\_x -rcp \$SRT\_PUBLIC\_CONTEXT/alpgen\_prod/rcp/runPythiaOnly.rcp*

The alpgen.cards file should contain eventual matching instructions.

FileLabel value should have less than 100 characters.

You should have write permission in the directory where alpgen output files are located.

If you want to have the matched alpgen cross-section from a given official request-id :

do

*setup sam*

*$\$SRT\_PUBLIC\_CONTEXT/alpgen\_prod/script/getXsection.py XXXX$*

where XXXX is the requestid

If you have run *alpgen\_prod\_x* privately and want to know the matched-cross section, you will need the *alpgen.bookkeeping* file :

go to the directory where the *alpgen.bookkeeping* file is then run :

*$\$SRT\_PUBLIC\_CONTEXT/alpgen\_prod/script/generateFome.py$*

This prints the Fome metadata python dictionary where the matched cross section is stored in the entry labeled by 'xsect-lo'

The cross-section error is given by the entry labeled by 'd-xsect-lo'

More detailed info on alpgen\_prod\_x executable and software can be found in D0note 5148

If you compile alpgen\_prod yourself, you will get an extra executable alpgen\_prod\_herwig\_x  
that can run alpgen+herwig instead of alpgen+pythia.

It works with the same alpgen.cards files but for the herwig part, you will need a herwig.cmd and herwig.nodec file that can be found in alpgen\_prod/itest/herwig.

You will also need to use herwig version of rcp that are in alpgen\_prod/rcp/