Usage of JEWEL generator

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Installing prerequisites

Dependencies

- JEWEL needs LHAPDF5 to provide the PDF's. Install LHAPDF following the instructions on the LHAPDF web page and download the PDF sets you want to use. Please note that you will need the fortran version of LHAPDF, that is version 5 (and not the new version 6). In its default setup JEWEL needs the CTEPQ6L1 (number 10042) and EPS09LOR_208 sets. The latter can be downloaded from the EPS09 web page.
- The provided `Makefile` assumes that JEWEL will be compiled with `gfortran`. People who wish to use a different compiler have to modify the `Makefile` accordingly.

Download and Install LHAPDF5

`https://lhapdf.hepforge.org/downloads?f=old`

`https://lhapdf.hepforge.org/lhapdf5/install`

Download PDF sets (e.g. 5.9.1)

`https://lhapdf.hepforge.org/downloads/?f=pdfsets/5.9.1/EPS09LOR_208.LHgrid`
`https://lhapdf.hepforge.org/downloads?f=pdfsets/5.9.1//cteq6ll.LHpdf`

Put them in (lhapdf path)*/share/lhapdf/PDFsets/*

alternative

Compiling JEWEL

Modify Makefile

LHAPDF_PATH := (your lhapdf install path)/lib/

Modifying your .bashrc or .zshrc

export LD_LIBRARY_PATH=/.../lhapdf-5.x.y/lib:$LD_LIBRARY_PATH
export LHAPATH=/.../lhapdf-5.x.y/share/lhapdf/PDFsets

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Run JEWEL

- Now you have two binaries: jewel-2.2.0-vac and jewel-2.2.0-simple
- ./jewel-2.2.0-vac ⟨configuration file⟩
- ./jewel-2.2.0-simple ⟨configuration file⟩
- Documentation
- The log file and output file are specified by the config file.

Caution

Watch out for xsecs.dat, pdf.dat, and splitint.
If you change physical parameters, delete these files before you run JEWEL again.

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- Show routine initpythia in jewel-2.2.0.f (roughly line 800)
- Pythia 6 Documentation (See pages 140, 145, and 195)

Gluons

MSEL=0
MSUB(13)=1
MSUB(68)=1

Quarks

MSEL=0
MSUB(11)=1
MSUB(12)=1
MSUB(53)=1

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How to understand HepMC2 ascii format

- Documentation link
- Reminder to myself: show an example

RIVET installation

Using apptainer or docker

Using named pipe

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