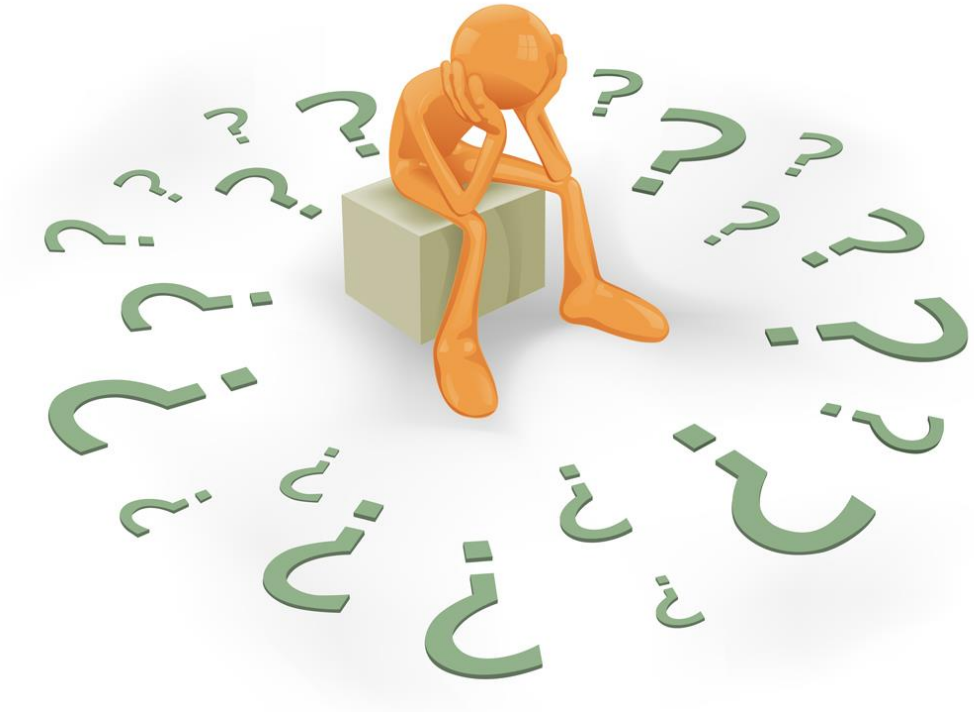
Tutorial category: Normal mode

What is MadAnalysis?



Version 1.2

Date 10/02/2020

Official MadAnalysis 5 website : https://launchpad.net/madanalysis5/

Goals of this tutorial

- Performing an very-brief overview of the MadAnalysis scope.

- Helping you to decide if you would like to join the MadAnalysis user community.

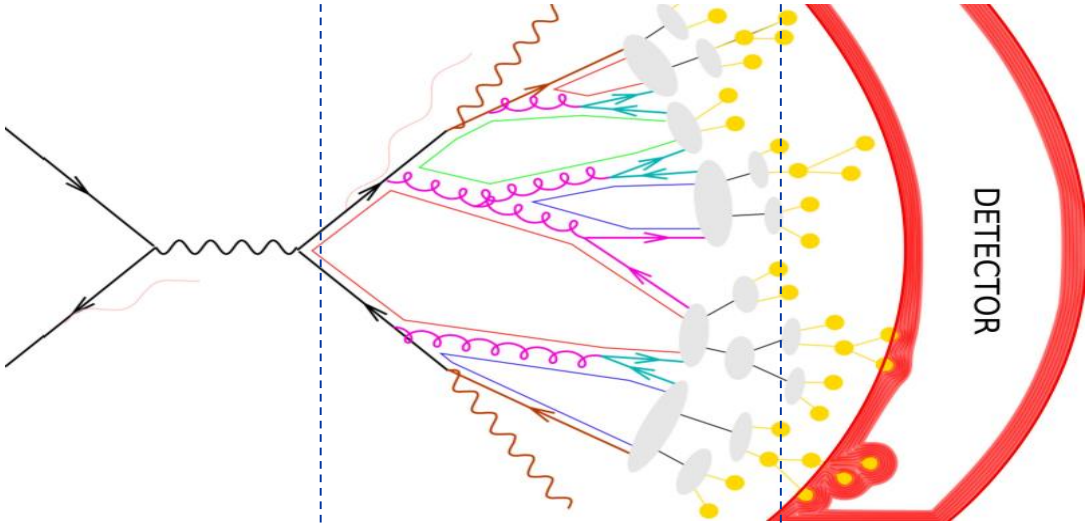
Requirements

- Nothing. It's the first tutorial of this collection.

Let's start!

Primary goals of MadAnalysis 5

Analyzing generated & simulated samples



Parton level — LHE files

Hadron level — STDHEP/HEPMC files

Reconstructed objects level — LHCO, ROOT files

Relevant features of design

- ✓ User-friendly
- ✓ Flexible
- ✓ Efficient
- ✓ Easy to maintain

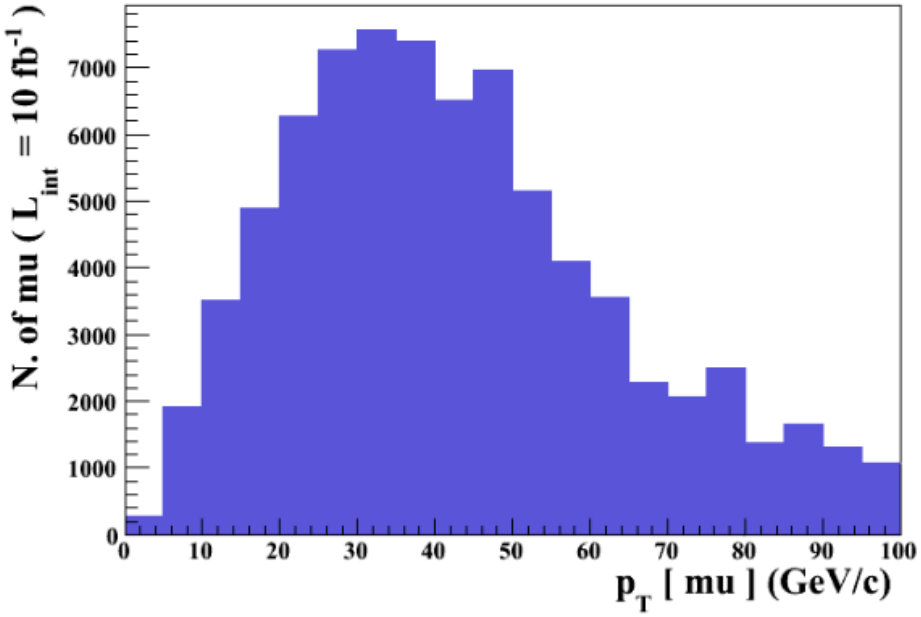
A unique framework : MadAnalysis 5

Examples of basic features

- Reading of signal and background event files
- Production of histograms for different distributions.
- Definition of various selection cuts on the input samples.
- Results of the analysis summed up by a S/B-like ratio table.
- Dumping results in a smart report (PDF, DVI or HTML)

Dataset	Integral	Entries / events	Mean	RMS	Underflow	Overflow
defaultset	82747	0.752	42.8177	21.36	0.0	1.296

Statistics table



But MadAnalysis 5 can do others thing for you…

- Producing special plots such as **ME/PS merging validation plots** (see talk devoted to merging)
- Applying **a jet-clustering algorithm** to your hadronic events
- Applying a **fast-simulation detector (Delphes)** to your hadronic events
- **Writing** the events in another data format.
- Designing a sophisticated analysis in the **expert mode**
- **Recasting an existed analysis** and **computing a limit** to a BSM signal

What is MadAnalysis?

About this document

- The present document is a part of the tutorial collection of the package MadAnalysis 5 (MA5 in abbreviated form). It has to be conceived to explain in a practical and graphical way the functionalities and the various options available in the last public release of MA5.

- The up-to-date version of this document, also the complete collection of tutorials, can be found on the MadAnalysis 5 website :

  https://madanalysis.irmp.ucl.ac.be/wiki/tutorials

- Your feedback interests ourselves (bug reports, questions, comments, suggestions). You can contact the MadAnalysis 5 team by the email address : ma5team@iphc.cnrs.fr

Change log

Version	Date	Update
1.0	23/07/2016	First release
1.2	19/02/2020	Comptability with v1.8