



MADGRAPH5_AMC@NLO tutorial

CERN

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Part 0: Getting familiar with

What is MADGRAPH5_AMC@NLO?

- It is an **automatic** meta-code that write the code for computing the cross-section and generating events for any process at colliders
- All the details are in **arXiv:1405.0301**
- NLO QCD corrections can be included
- Matrix elements of different multiplicities can be combined
 - at LO (CKKW or MLM)
 - at NLO (FxFx or UNLOPS)

Software prerequisites:

- Python 2.6 or 2.7
- Fortran compiler supporting quadruple precision (needed for NLO)
 - gfortran v4.6+ OK
- Optional:
 - gnuplot
 - FastJet (FJcore is included in the tarball)
 - LHAPDF
 - Herwig++ / Pythia8 ← Pythia8.2XX may be needed in the tutorial
 - ...

Where do I get it?

- On LaunchPad: <https://launchpad.net/mg5amcnlo>



MadGraph5_aMC@NLO Generator

marco zaro (marco-zaro) • Log Out

Overview Code Bugs Blueprints Translations Answers

Registered 2009-09-15 by Michel Herquet

MadGraph5_aMC@NLO is a framework that aims at providing all the elements necessary for SM and BSM phenomenology, such as the computations of cross sections, the generation of hard events and their matching with event generators, and the use of a variety of tools relevant to event manipulation and analysis. Processes can be simulated to LO accuracy for any user-defined Lagrangian, and the NLO accuracy in the case of QCD corrections to SM processes. Matrix elements at the tree- and one-loop-level can also be obtained.

MadGraph5_aMC@NLO is the new version of both MadGraph5 and aMC@NLO that unifies the LO and NLO lines of development of automated tools within the MadGraph family. It therefore supersedes all the MadGraph5 1.5.x versions and all the beta versions of aMC@NLO.

The standard reference for the use of the code is: J. Alwall et al, "The automated computation of tree-level and next-to-leading order differential cross sections, and their matching to parton shower simulations", arXiv:1405.0301 [hep-ph]. A more complete list of references can be found here: http://amcatnlo.web.cern.ch/amcatnlo/list_refs.htm

Download:

The latest stable release can be downloaded as a tar.gz package (see the right of this page), or through the Bazaar versioning system, using bazaar branch [lp:madgraph5](#)

Installation:

MadGraph5_aMC@NLO needs Python version 2.6 or 2.7 ; gfortran/gcc 4.6 or higher is required for NLO calculations/simulations.

Getting started:

Run bin/mg5_aMC and type "help" to learn how to run MadGraph5_aMC@NLO using the command interface, or run the interactive quick-start tutorial by typing "tutorial". Some third-party packages can be installed using the MG5_aMC shell command "install". LO generation can also be done

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Configuration Progress

Configuration options

Downloads

- Latest version is 2.2.0
- [MG5_aMC_v2....beta.tar.gz](#) ↓
- [MG5_aMC_v2.2.3.tar.gz](#) ↓

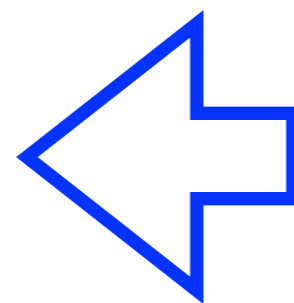


Where do I get it?

- On LaunchPad: <https://launchpad.net/mg5amcnlo>
- `tar -xzf MG5_aMC_v2.4.2.tar.gz`
- `cd MG5_aMC_v2_4_2`
- `./bin/mg5_aMC`

Let's start the tutorial

- On LaunchPad: <https://launchpad.net/mg5amcnlo>
- `tar -xzf MG5_aMC_v2.4.2.tar.gz`
- `cd MG5_aMC_v2_4_2`
- `./bin/mg5_aMC`
- `> tutorial`
- `> tutorial aMCatNLO`
- `> install pythia-pgs`
- `> install MadAnalysis`



Will be needed
in the tutorial