MadGraph5_aMC@NLO tutorials@UniMi

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Part 0:
getting familiar with

What is MadGraph5_aMC@NLO?

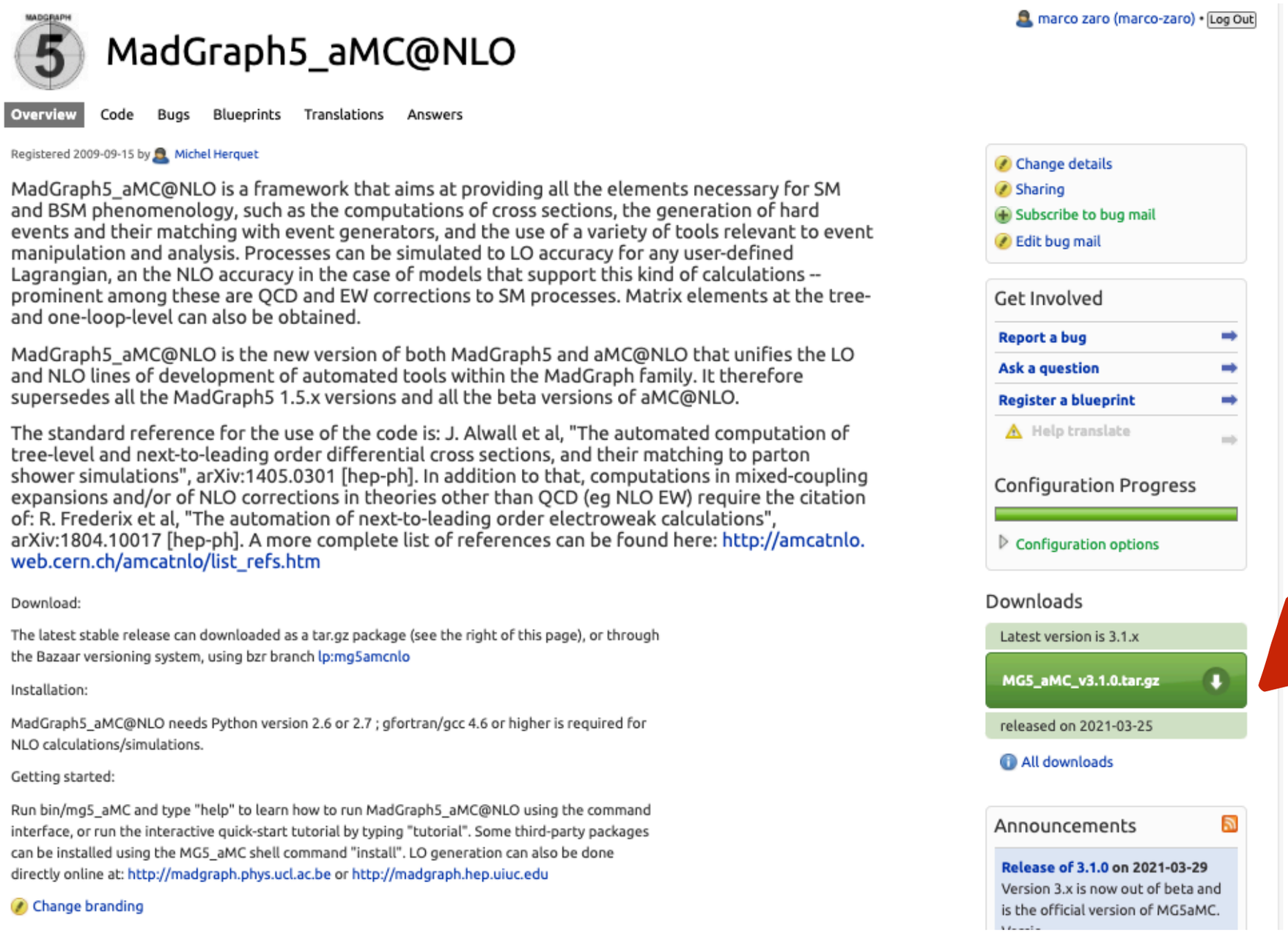
- It is an automatic meta-code that write the code for computing the cross-section and generating events for any process at colliders
- For details: see arXiv:1106.0522, arXiv:1405.03011, arXiv:1907.04898
- NLO QCD and EW corrections can be included
- Matrix elements of different multiplicities can be combined
  - at LO (CKKW or MLM)
  - at NLO (FxFx or UNLOPS)

Software prerequisites:

- Python 3.7+ (still compatible with Python 2.7)
- Fortran compiler supporting quadruple precision (for NLO)
  - gfortran v4.6+ OK
- Optional:
  - gnuplot
  - FastJet (FJcore is included in the tarball)
  - LHAPDF
  - Herwig++ / Pythia8
  - …

Where do I get it?

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



Let's start the tutorial

- On LaunchPad: https://launchpad.net/mg5amcnlo
- `tar -xzf MG5_aMC_v3.4.0.tar.gz`
- `cd MG5_aMC_v3_4_0`
- `./bin/mg5_aMC`
- `> tutorial`

  `> tutorial NLO`
- The code will guide you step by step through the basic commands, making sure that you have a working environment