

TEASER FOR BSM TUTORIAL ON Z' STUDIES FOR FUTURE COLLIDERS

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Goal

- Learn the pipeline: from model to collider analysis
 - Focus on pre-discovery scenarios, as opposed to model characterization

Model whitepaper:

FY, “Di-jet resonances at Future Hadron Colliders: A Snowmass whitepaper” [1308.1077]

- Only preliminary to-do: (most time-consuming)
 - Should install ROOT

root.cern.ch

- Basic programming skills will be helpful
 - And enough hard drive space ($O(10+)$ GB) for MC events

Software tools

Will be covered during tutorial

- MadGraph 5 v.2.6.6

<https://launchpad.net/mg5amcnlo>

Alwall, Frederix, Frixione, Hirschi, Maltoni, Mattelaer, Shao, Stelzer, Torrielli, Zaro [1405.0301]

- Within MG5 (accept all default prompts)

MG5_aMC> install pythia8

<http://home.thep.lu.se/~torbjorn/Pythia.html>

Sjöstrand, Ask, Christiansen, Corke, Desai, Ilten, Mrenna, Prestel, Rasmussen, Skands [1410.3012]

MG5_aMC> install Delphes

<https://cp3.irmp.ucl.ac.be/projects/delphes>

De Favereau, Delaere, Demin, Giammanco, Lemaître, Mertens, Selvaggi [arXiv:1307.6346]

[For automatic NLO QCD:]

MG5_aMC> generate p p > t t~ [QCD]

