

Comments on the MadDM Tutorial - Maura

April 27, 2020

General: After all the clarifications and your help in the morning, I was able to do both tutorials without any problem.

1 Relic Density

- After the clarification by Chiara I was able to understand the instructions in slide 3 (not the alternative method) and do the generation in slide 16 and 17 without installing pythia8.
- **Slide 7:** I also have the same doubt as Katharina on the "relic density tag equivalent to @DM2SM" statement.
- **Slide 12:** I did "python S3M_ur_NLO.py test_gridscan/output/scan_run_01.txt" and obtained two values "SI maj 9.68721005186e-55 3.91166254384e-55". I don't know if we are supposed to run it on the txt file that we obtained (test_gridscan/output directory) or in the txt that is on the useful_files directory provided.
- **Slide 19:** I didn't have the tools to perform the reduction of loop Feynman diagrams installed. I get a message that recommends the installation of ninja and collier. I don't know if I did something wrong on the previous steps, if not I think you should clarify and ask for this installation. I installed and did the commands without problem and obtained a similar cross section ($1.426 \times 10^{-08} \pm 4.685 \times 10^{-11}$ pb).

2 Colliders

- **General:** Maybe you should make a comment in the slides relatively to 2.7.2 version of MadGraph, because of the error that I obtained in the morning.
- **Slide 29:** On "Initiating a FASTJET ..." I found it a little confusing because you highlighted the "define invisible = invisible 57 -57" and I didn't notice at first that we had to do three previous commands.

- **Slide 33:** I think you could put again the slides with the parameters to change in the cards, just because it is a little bit confusing going to the previous slides since the cuts aren't exactly the same (jet cuts). But I was able to get a similar cross-section.
- **Slide 40:** I received a message to install ninja in order to perform the reduction of loop Feynman diagrams. I installed it and did the generation without any problem.