

Preparing for the MicrOMEGAs hands-on session

In this session we will learn how to use some of the functionalities of the micrOMEGAs dark matter code. After a (hopefully!) short introduction, we will go step-by-step through the process of implementing a simple model in micrOMEGAs: creating the files that describe the model, importing them and, finally, using the code to study phenomenological aspects of our model.

No prior knowledge of the code will be assumed and some of the required material will be provided in order to optimize the session. We will, however, draw notions from other lectures in the school and some familiarity with C (and, to some extent, Mathematica) will be assumed.

In order to prepare for this session please go through the following steps *before* the lecture:

1) Download and install micrOMEGAs. The code can be found in

<https://lapth.cnrs.fr/micromegas/>

under “Download and Install”. Once you unpack the file, go in the main folder and follow the procedure described in the webpage under “General Installation” or in Section 3.2 of the manual (which you can find in the “man” folder). Basically, you just need to type “make” and it should work in most systems, otherwise you might need to modify some compiler options (you can find relevant information on the micrOMEGAs webpage).

Please note that since every system architecture may differ, it won't be possible to troubleshoot all compilation issues during the lecture, so please do take the time to go through this process beforehand.

2) Download FeynRules. The code can be found in

<https://feynrules.irmp.ucl.ac.be/>

You simply need to unpack the file and it should work with a standard Mathematica installation. If you don't have Mathematica installed on your computer it doesn't matter. You can still follow and the most important part of the lecture won't be affected.

3) Download the files: SingletScalarDM.zip and mymain.c from

<https://workshops.ift.uam-csic.es/isapp2020madrid/Hands-on>

No need to do anything with those for the moment, we'll be using them during the session.

For any questions before or after the session please send an email to: andreas.goudelis@clermont.in2p3.fr

See you online!
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