EXO-PLANETS INTERIORS & ATMOSPHERES (EIA2020)

INSTRUCTIONS TO DOWNLOAD THE MESA CODE

INTRODUCTION

During the labs, you will use the MESA code (Paxton et al. 2013) to simulate low mass planets (with an envelope made mostly by H and He) interiors and evolution. MESA is a toolkit that was originally built to study interior and evolution of stars and was extended to planets in the last ~7 years. Here we provide instructions to download the code. We will use the MESA version from 2018. If you want to know more about MESA, check the website (http://mesa.sourceforge.net/).

INSTRUCTIONS

1. Download the SDK (http://www.astro.wisc.edu/~townsend/resource/download/mesasdk/old/mesasdk-x86_64-linux-20180822.tar.gz), and uncompress it (make sure you have 15 GB at least of space).
2. Download MESA (https://sourceforge.net/projects/mesa/files/releases/mesa-r10398.zip/download), put the mesa folder into the SDK folder
3. In your shell profile file in your home directory set your environment variables by putting these two lines (this will depend on what shell you are using).
   For Bash it is:
   ```
   export MESA_DIR=/path_to_your_mesa_folder/mesa-r10398
   export MESASDK_ROOT=/path_to_your_SDK_folder/mesasdk
   ```
4. Once the paths are set up, restart the terminal and type:
   ```
   source $MESASDK_ROOT/bin/mesasdk_init.sh
   ```
5. In the same terminal navigate to the mesa directory by: `cd $MESA_DIR`
6. Type `./install` .If this fails, you should clean before trying again. To clean it using `./clean`)
7. 7. Now navigate to the Labs folders and you should be able to `./clean` and `./mk` them appropriately to the task.

IMPORTANT NOTE

Don't wait until the practical session to install MESA. Try this instructions BEFORE, so if you run into difficulties the TAs can help you during the practical session.

REFERENCES

Paxton, B., Cantiello, M., Arras, P., et al. 2013, ApJs, 208, 4