Integration into the KM3NeT Experiment: A Comprehensive Guide for Newcomers

Marouane Benhassi[1]

Abstract:

Welcome to the KM3NeT experiment, a cutting-edge research collaboration dedicated to the study of neutrinos and high-energy astrophysics. As a newcomer to this collaboration, you may have questions about how to integrate into this diverse and dynamic community of researchers. This guide is designed to help you navigate the bureaucratic, technical, and analytical aspects of the KM3NeT experiment, so that you can hit the ground running and make meaningful contributions to this exciting field of research.

In this guide, you will find a wealth of information on how to navigate the administrative and organizational procedures of the collaboration, including the necessary paperwork, communication channels, and collaborative tools. You will also learn about the calibration of the KM3NeT detector, which is critical for accurate measurements of neutrino interactions. Finally, we will provide an overview of the analysis techniques used to interpret the data collected by the KM3NeT detector, and how you can contribute to this effort.

We hope that this guide will serve as a valuable resource for newcomers to the KM3NeT experiment, and we look forward to working with you as we explore the mysteries of the universe together.

[1]marouane.benhassi@unicampania.it, marouanebenhassi2017@gmail.com, webpage https://marouanebenhassi.github.io/marouane.benhassi/index.html

Part I
Create CC-IN2P3 account

1 CC-IN2P3 account

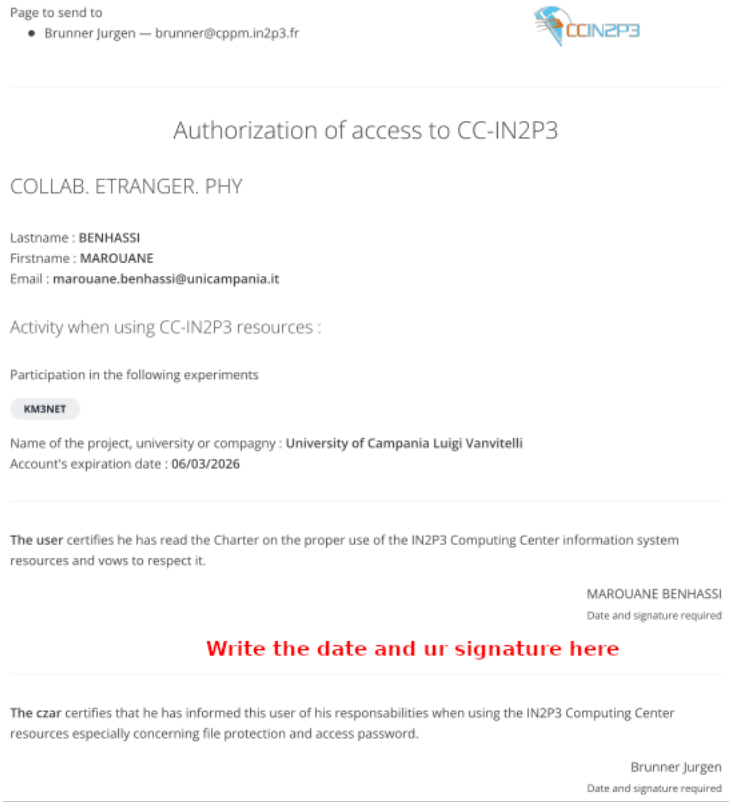
To start doing analysis/calibration with KM3NeT experiment, you have to have a CC-IN2P3 account wich is an account related to a huge cerver in Lion in France. With this account you dont't need to install any software or programming langue because they are already installed in the server. This account hase the following form

letters-refer-to-ur-name@cca.in2p3.fr

These are the needed steps to create this account:

- Go to **https://signup.cc.in2p3.fr/**
- Choose your organisation (name of your university/laboratory), if your organisation does not appear in the list then you can choose **collab. etranger Phys** and give the full name of your university/laboratory
- Use your academic email address
- Choose **KM3NeT** as a **collaboration**
- Clic on **envoyer la demande/send the request**

After clicing on **envoyer la demande/send the request** you can download the form (pdf file) that you have to sign it and send it to Mr Brunner Juergen via his email (**brunner@cppm.in2p3.fr**) as in the following figure.



Page to send to
- Brunner Jurgen — brunner@cppm.in2p3.fr

Authorization of access to CC-IN2P3

COLLAB. ETRANGER. PHY

Lastname : **BENHASSI**
Firstname : **MAROUANE**
Email : **marouane.benhassi@unicampania.it**

Activity when using CC-IN2P3 resources :

Participation in the following experiments

KM3NET

Name of the project, university or compagny : **University of Campania Luigi Vanvitelli**
Account's expiration date : **06/03/2026**

The user certifies he has read the Charter on the proper use of the IN2P3 Computing Center information system resources and vows to respect it.

MAROUANE BENHASSI
Date and signature required

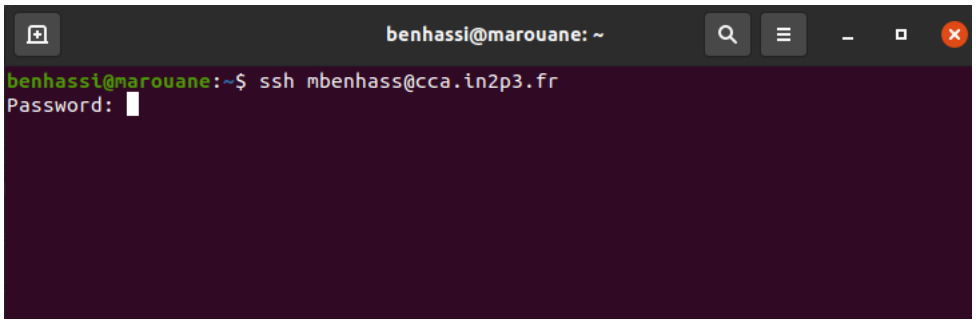
Write the date and ur signature here

The czar certifies that he has informed this user of his responsabilities when using the IN2P3 Computing Center resources especially concerning file protection and access password.

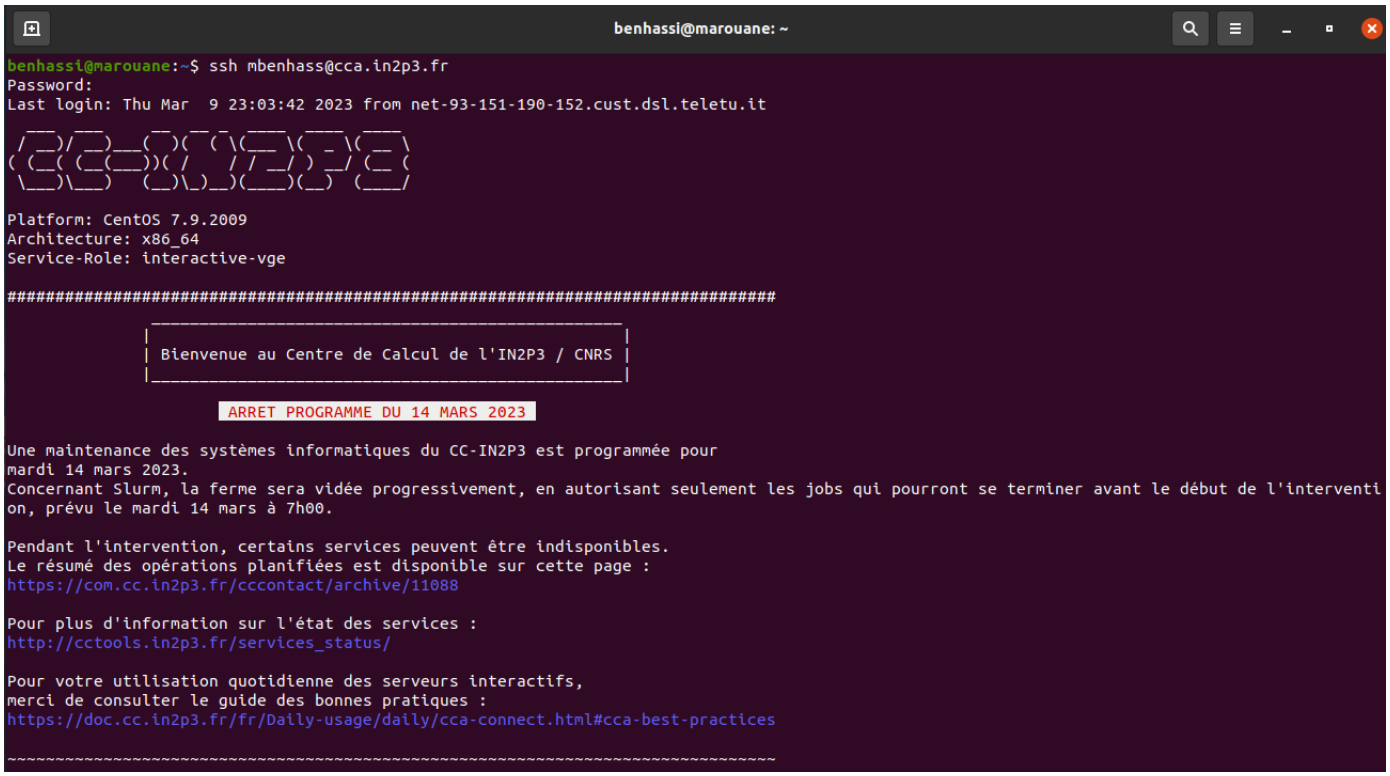
Brunner Jurgen
Date and signature required

After signing and sending this form, you will receive a message via your accademic email containing your account and your password. Then you can conect to CC-IN2P3 to update your profile. These are the steps:

- Open a terminal (Ctr-Alt-t)
- Write this command: **ssh letters-refer-to-ur-name.@cca.in2p3.fr** and then type your password as in the following figure (write the password with the keybord and do not use copy-past).



Press enter and you will get something like that:



```
https://doc.cc.in2p3.fr/en/Daily-usage/daily/cca-connect.html#cca-best-practices

################################################################################
Loading km3net_env/1.4
  Loading requirement: xrootd/4.8.1 DataManagement/irods/3.3.1
    Collaborative_Tools/git/2.30.1

Welcome to the KM3NeT software module system
============================================
[Un]load a module with 'module [un]load name/version'
To get an overview: 'module avail' or 'module whatis'!

To see the available software modules, run

    module avail

You can load the standard software environment with

    module load km3net_soft_env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INFO: Jpp/v16.0.1 is installed standalone.
Loading aanet/master
  Loading requirement: eigen/3.3.7 oscprob/1.3
cca010:/pbs/home/m/mbenhass(0)>
```

Now you have to follow these steps to build your profile:

- Enter in this file /sps/km3net/users/ by writing this command: **cd /sps/km3net/users/**
- Give a name to your folder. In my case, my name is Marouane Benhassi, I will choose mbenhassi as a name and the command is **mkdir mbenhassi**. (for example if your name is Lionel Andress Messi, you have to choose lmessi as a name and the command is mkdir lmessi ...)
- Then type this command: **cd** and press enter
- Type this command **emacs -nw .profile** and press enter, you will get something like:

```
benhassi@marouane: ~
File Edit Options Buffers Tools Sh-Script Help
# the proper section as described below.                                      #
#==============================================================================#


alias rm='rm -i'
alias cp='cp -v'
alias mv='mv -v'
alias l='ll --block-size=M'

alias sps='cd /sps/km3net/users/mbenhassi'
alias e='emacs -nw'
alias bp='e /pbs/home/m/mbenhassi/.profile'
alias sbp='source /pbs/home/m/mbenhassi/.profile'




source /pbs/throng/km3net/group_profile

export ANTDSTROOT=/sps/km3net/users/mbenhassi/AntDST/v1r5
export LD_LIBRARY_PATH=${LD_LIBRARY_PATH}:${ANTDSTROOT}/lib:${LD_LIBRARY_PATH}
export aasearch=/pbs/throng/km3net/software/aanet/2.2.5/lib/
export LD_LIBRARY_PATH=${aasearch}/lib:${aasearch}/lib:$LD_LIBRARY_PATH
export KM3NET_THRONG_DIR=/pbs/throng/km3net
export MODULEPATH=${KM3NET_THRONG_DIR}/modulefiles
export TUNEHV_DB_TESTTYPE="HV-TUNING-GAIN-v2"

module load python/3.7.5
module load root/6.22.06
module load singularity/3.5.2
module load jpp/16.0.1
module load aanet/master
module load gseagen/7.0.0
module load mupage/4.1

-=--:----F1  .profile       49% L54    (Shell-script[sh]) ----------------------------
```

Now let's use Lionel Andress Messi (the name that we chose is lmessi) as a user to ulistrate what we have to do after.
Follow the last following step:

- Just on the bottom of the of Group section copy and past the texte betwen these two horizontal lines:

---

alias rm='rm -i'
alias cp='cp -v'
alias mv='mv -v'
alias l='ll –block-size=M'

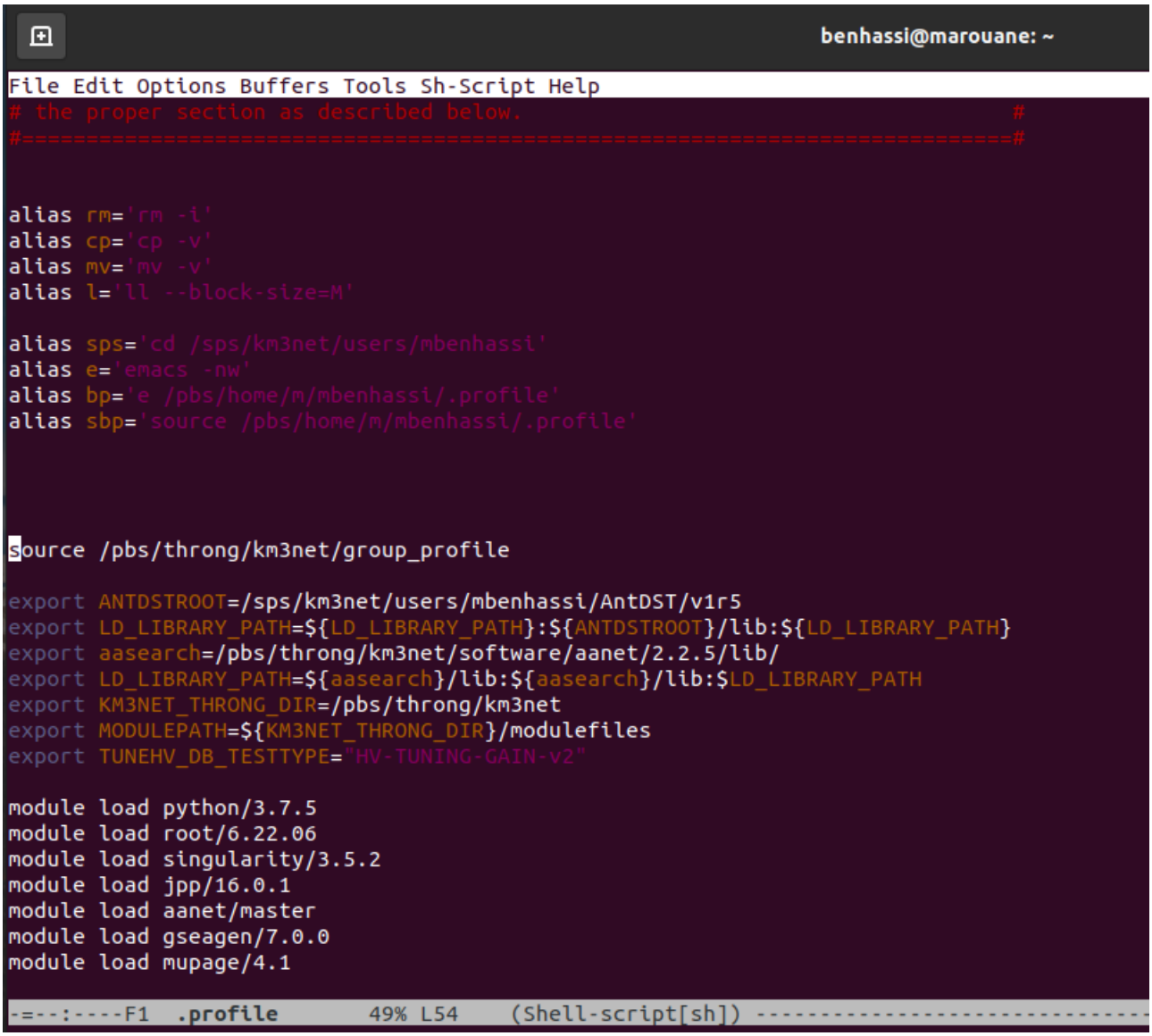
alias sps='cd /sps/km3net/users/lmessi'
alias e='emacs -nw'
alias bp='e /pbs/home/l/lmessi/.profile'
alias sbp='source /pbs/home/l/lmessi/.profile'

source */pbs/throng/km3net/group_profile*
export ANTDSTROOT=/sps/km3net/users/lmessi/AntDST/v1r5
export $LD\_LIBRARY\_PATH = \${LD\_LIBRARY\_PATH}:\${ANTDSTROOT}/lib : \${LD\_LIBRARY\_PATH}$
export $aasearch = /pbs/throng/km3net/software/aanet/2.2.5/lib/$
export $LD\_LIBRARY\_PATH = \${aasearch}/lib : \${aasearch}/lib : \$LD\_LIBRARY\_PATH$
export $KM3NET\_THRONG\_DIR = /pbs/throng/km3net$
export $MODULEPATH = \${KM3NET\_THRONG\_DIR}/modulefiles$
export $TUNEHV\_DB\_TESTTYPE = "HV - TUNING - GAIN - v2"$

module load python/3.7.5
module load root/6.22.06
module load singularity/3.5.2
module load jpp/16.0.1
module load aanet/master
module load gseagen/7.0.0
module load mupage/4.1

Here the letter l refers to the first name, in our example Lionel.

The figure bellow shows my personal profile (Marouane Benhassi: mbenhassi):


benhassi@marouane: ~
File Edit Options Buffers Tools Sh-Script Help
the proper section as described below.
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alias mv='mv -v'
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alias bp='e /pbs/home/m/mbenhassi/.profile'
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source /pbs/throng/km3net/group_profile
export ANTDSTROOT=/sps/km3net/users/mbenhassi/AntDST/v1r5
export LD_LIBRARY_PATH=${LD_LIBRARY_PATH}:${ANTDSTROOT}/lib:${LD_LIBRARY_PATH}
export aasearch=/pbs/throng/km3net/software/aanet/2.2.5/lib/
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export KM3NET_THRONG_DIR=/pbs/throng/km3net
export MODULEPATH=${KM3NET_THRONG_DIR}/modulefiles
export TUNEHV_DB_TESTTYPE="HV-TUNING-GAIN-v2"
module load python/3.7.5
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module load jpp/16.0.1
module load aanet/master
module load gseagen/7.0.0
module load mupage/4.1
-=--:----F1 .profile 49% L54 (Shell-script[sh])

Part II
Data-Base account

You have to create an account to access to the Data-Bast (DB), so contact the administrators (dbadmins@km3net.de) to get the access to DB servise (https://km3netdbweb.in2p3.fr/default.htm). Inthe end of this step you will have an email as mbenhassi@km3net.de and you can follow the activities in the DB like shifting. This is a photo to the DB service webpage: