

The TrackFitter

TrackFitter: environment

The same environment provided by the [guide](#) is suitable.

TrackFitter: building the code

The source code for the TrackFitter is stored in [Baltig](#).



Since the source code of the TrackFitter can be downloaded only by the authorized developers, credentials for Baltig are necessary.

The simplest way is using RSA keys, the public key must be uploaded into Baltig and the private key must be saved into $\$(HOME)/.ssh/id_rsa$

Once git client has been correctly configured the commands are:

```
git clone git@baltig.infn.it:muontomography/trackfitter.git
cd trackfitter
```

Branch `altea` is the most updated:

```
git checkout altea
```

The commands to build the code are:

```
cmake3 <path-to-source>
make
```



<path-to-source> is the path to the CMakeLists.txt file in trackfitter directory, example: `/home/centos/trackfitter`

The executable is found in the directory **run/**

```
cd run
```

TrackFitter: running the code



In the `run/` directory the parameters needed to run the TrackFitter must be set in the configuration file **config.ini**. More info can be found in the README.

Preliminary settings: the datasets

The TrackFitter can be run with different datasets:

- Data acquired in Legnaro with the prototype `ch64` (64 drift tubes) insterted in the muon tomography demonstrator. A list of the available runs can be found here: [Logbook](#).
- Simulations of the prototype `ch186` (186 drift tubes): in this case you can choose to analyze one detector at a time (by choosing "ch186" as detector option in the config.ini file) or two detectors at a time (by choosing "2ch186" as detector option).

Preliminary settings: running mode

The TrackFitter can be run in two configurations:

- Event display mode: the track reconstruction is shown one event at a time.
- Histograms mode: the entire dataset is analyzed, and the results are saved in a `.root` file. A preview of the histograms can be displayed on screen at the end of the execution and eventually saved in `.pdf` format.

Example of configuration file

The following is the proper configuration to run the reconstruction of a Castor MC simulation (run number = 18, detector ID = 0, using true drift times) in the Event display mode.

```

# -----
#           General information
# -----
runNumber          0018
rawDirName          /home/centos/mc-muCastor
rawFileName          muCastorMC_2020-07-16-18-21-28_18
outputDirName        ../output
outputFileName        run0018_det0_trueDT
maxEventNumber        5000
# -----
#           Display mode
# -----
display            1
wait                1
# -----
#           Histograms mode
# -----
histos              0
showHistos          0
# -----
#           Debugging
# -----
debug                0
# -----
#           Prototype
# -----
detector            chl86
# -----
#           Castor MC
# -----
is_CastorMC          1
detID                 0
use_trueDriftTimes    1
use_DIGIhits          1
# -----
#           Stand Chambers
# -----
isThere_StandData     0
standChFilename        Radmufit
sample                 0
ch_num                 0
view_num               0
# -----
#           Drift Time fit config
# -----
bestTg                1
fitType                0
# -----
#           DAQ
# -----
ros                    0
# -----
#           Calibration parameters
# -----
calibX                 0
calibY                 0

```

Ready to run

After having set the proper configuration just type:

```
./runTF
```



If you are running in the Event display mode, just hit a key to update the monitor. To end the visualization: **ctrl+C**.

