Preparation of the FNAL Test beam

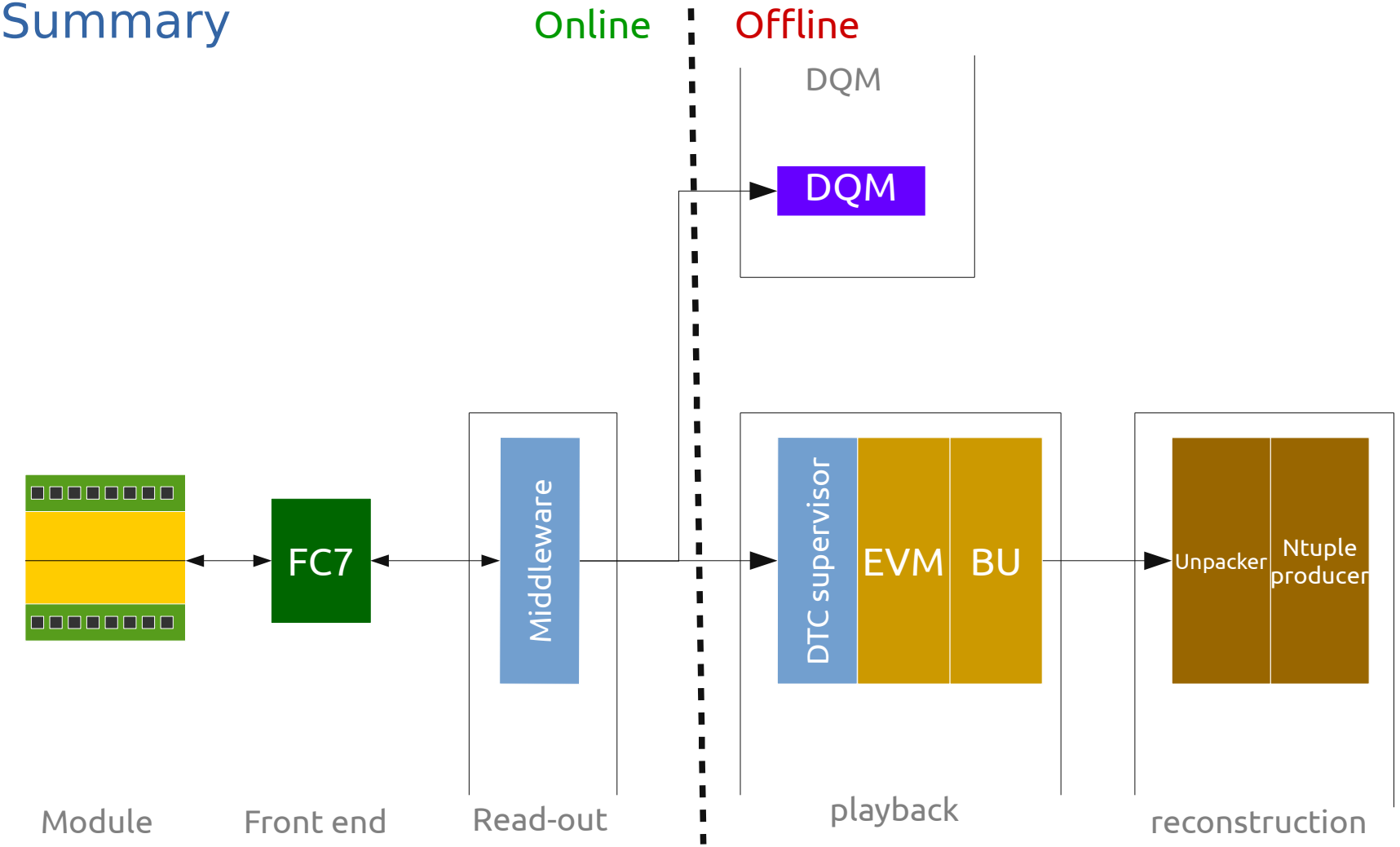
Brief overview

Martin Delcourt and many others

24 November 2017

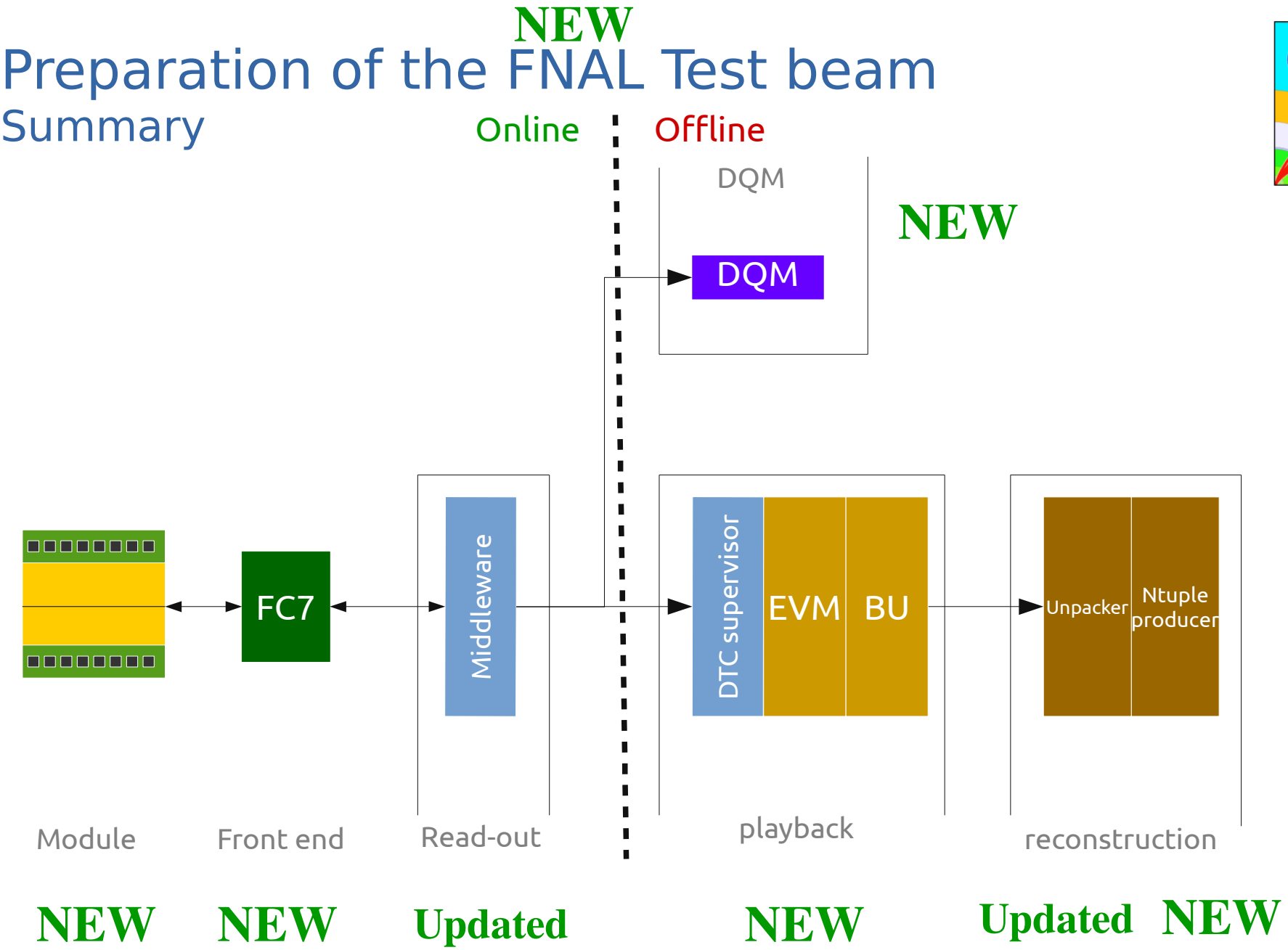
Preparation of the FNAL Test beam

Summary



Preparation of the FNAL Test beam

Summary



Preparation of the FNAL Test beam
Summary

New modules

New Front-end

Updated middleware

New DQM

New playback chain

Updated unpacker/ntuple producer

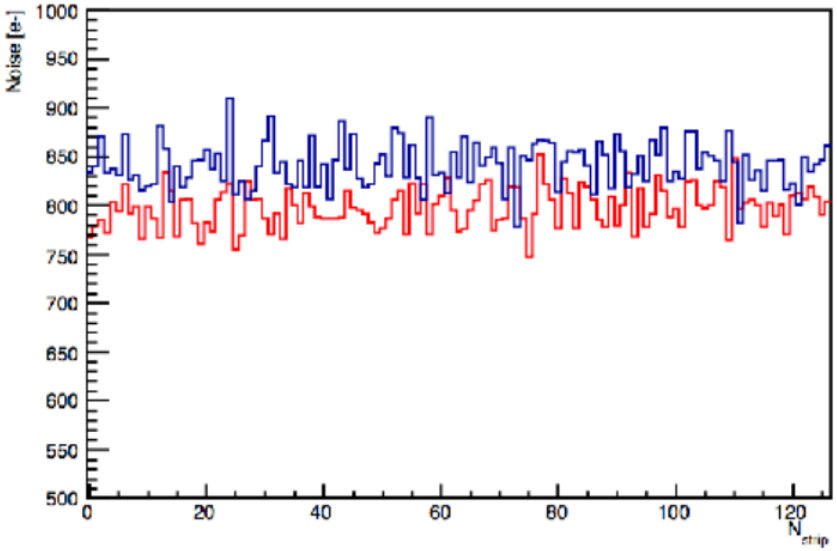
New beam area

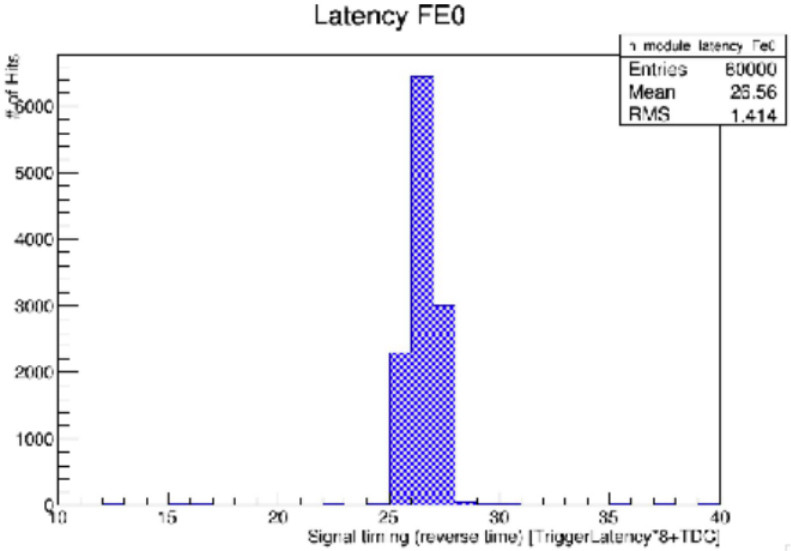
Preparation of the FNAL Test beam
Modules

- **New** modules (details here)

- We will be testing 2x**CBC3** mini-modules
  → Infineon sensors
  → Two mini-modules are ready to be tested

- Modules were already tested with a source @ CERN





Preparation of the FNAL Test beam
Firmware

- **New** firmware (details here)

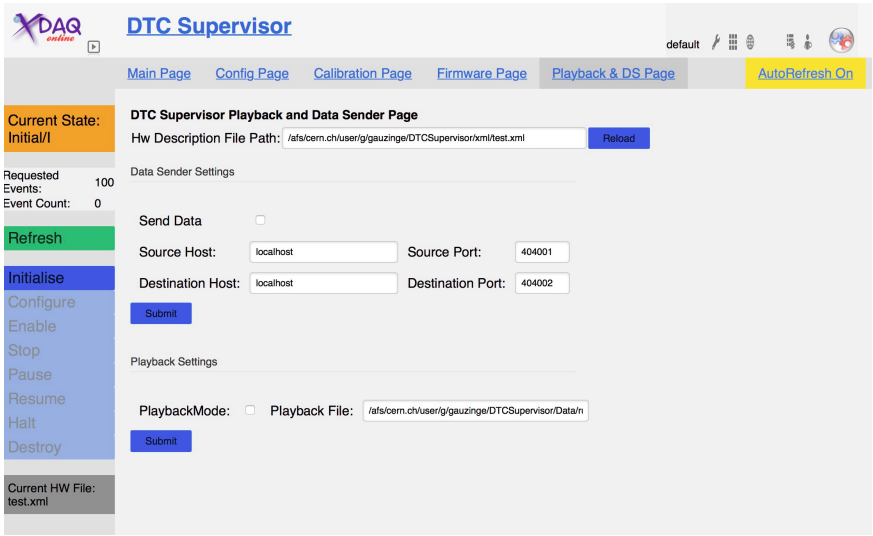
- We will be using the d19c firmware
  - → Running on an FC7
  - → New features (CBC3, self triggering, ...)
  - → Successfully tested in the lab @ CERN

Preparation of the FNAL Test beam
Middleware

- **Updated** middleware (details here)

- Ph2_ACF has significantly changed since last BT
  - → Updated for new FW data format
  - → Now handling CBC3 data
  - → Now directly writing “Slink” dataformat
  - → Integrated in OTSDAQ
  - → Using new DTC Supervisor
  - → …

- Tested in the lab @ CERN

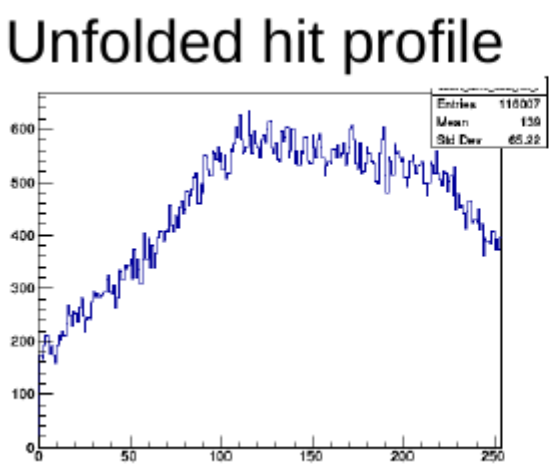


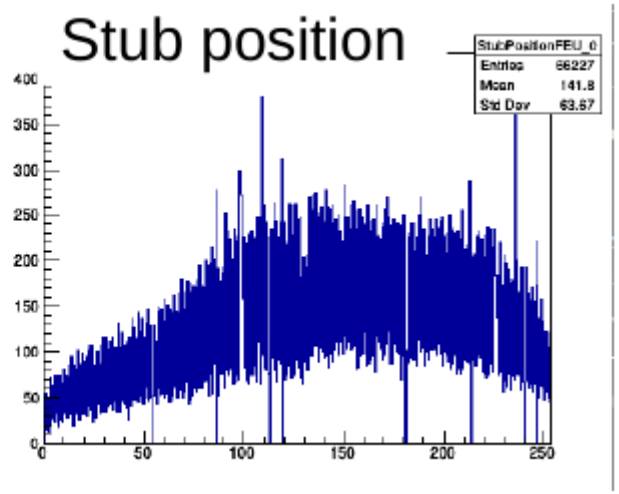
Preparation of the FNAL Test beam
DQM

- **New** DQM (details here)

- DQM will now be running on “SLink” data
  → HW configuration read from data
  → “Universal”
  → Less subject to change

- Ready to be integrated

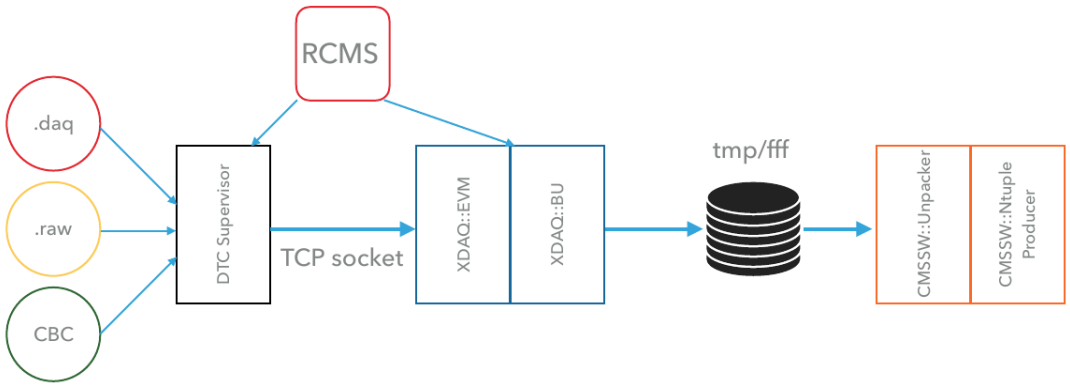




Preparation of the FNAL Test beam
Playback chain

- **New** playback chain (details here)

- Fresh playback chain installation
  → Now “only” using EVM and BU
  → Running with the DTC supervisor
  → Currently on VM @ CERN, tested with real data



Preparation of the FNAL Test beam
Unpacker and Ntuple producer

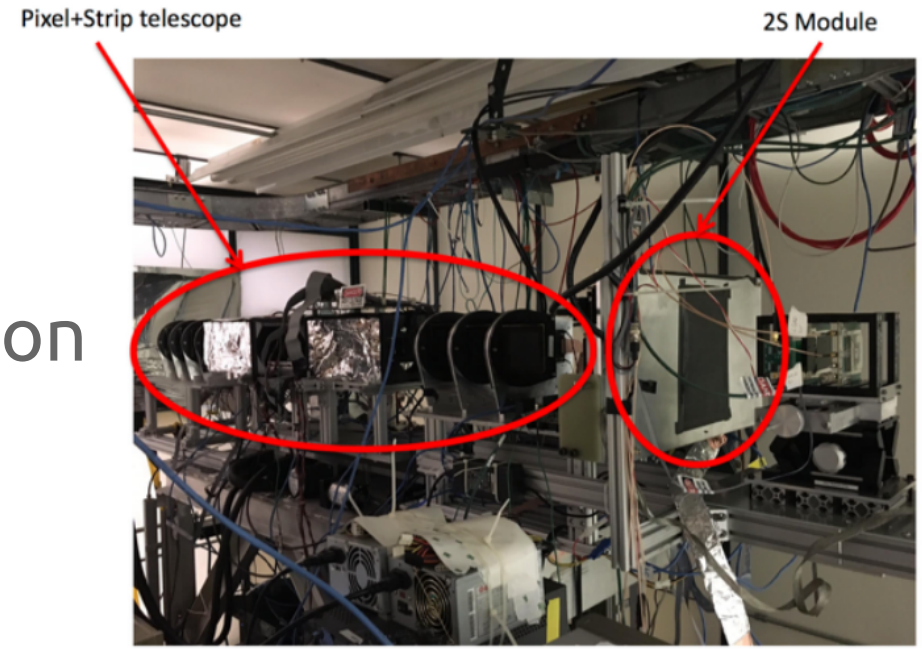
- **Updated** unpacker and Ntuple producer (details here)

- Adapted to store extra information
  → More complete header information
  → Full stub readout

- Tested on real data
  → Remotely installed for the moment
  → Will integrate everything at FNAL next week

Preparation of the FNAL Test beam
Beam area

- The experimental area (details here)
- Primary beam : 120GeV protons, bunched @ 54MHz
- Two telescopes on sight
  → "Phase 0" CMS pixels
  → Strip-based telescope
- We can expect ~5μm resolution
- Dataformat agreed to easily integrate with final Ntuple



Preparation of the FNAL Test beam
Conclusion

- Everything seems to be converging nicely
- Next weeks should be “fun”!

Thank you for your attention