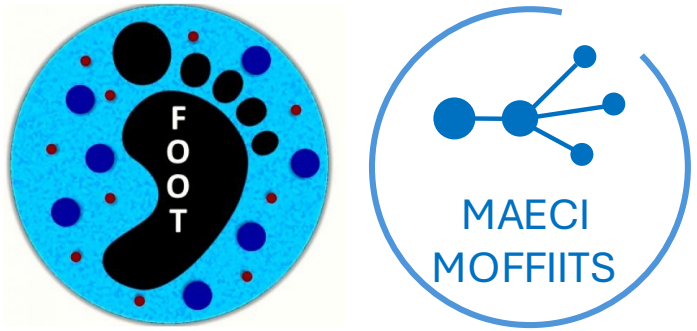
TOF-Wall detector status

Matteo Morrocchi



XVIII FOOT Collaboration Meeting

26-28 /05/2025 Riccione

Calibration status

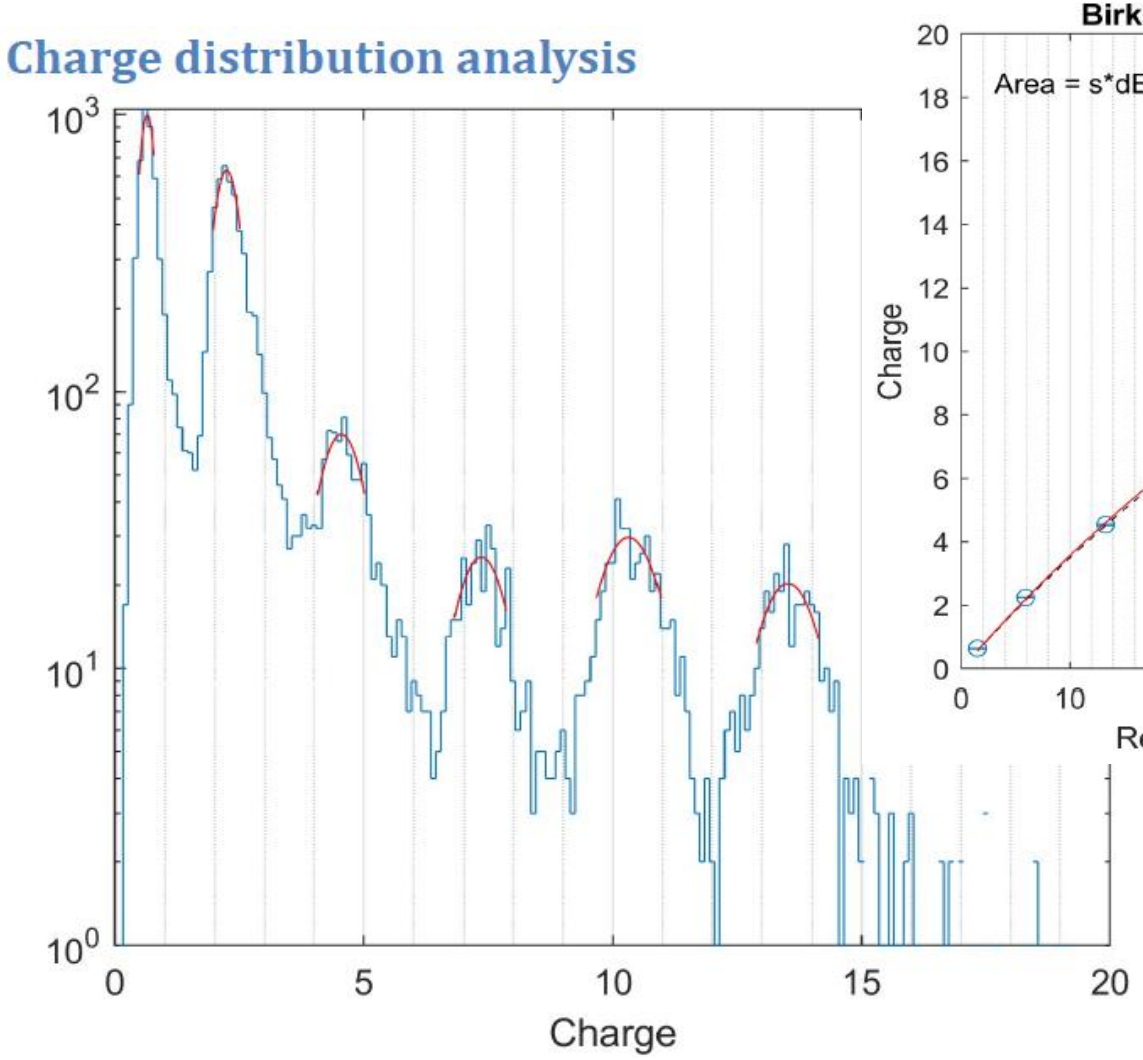
CNAO 2024 calibration is almost concluded

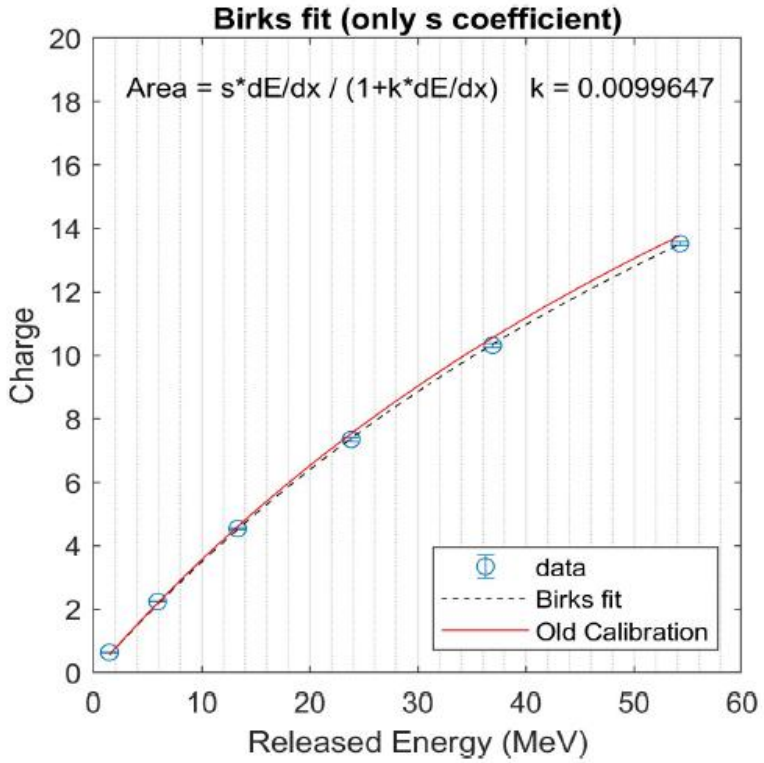
→ A temporary calibration was performed at the end of the last year using CNAO2023 simulations. A new calibration is now available with the updated simulations; some minor tunings may still be necessary.

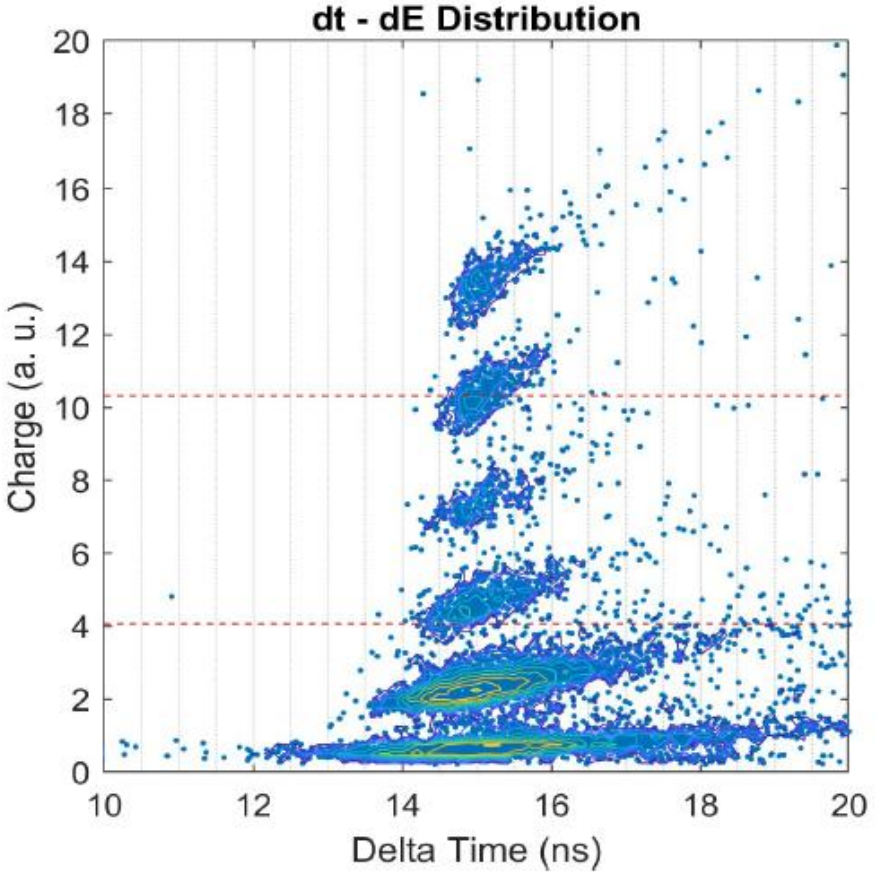
HIT2022 calibration has been implemented

→ Aafke will report on this

Just an example… Bar 25

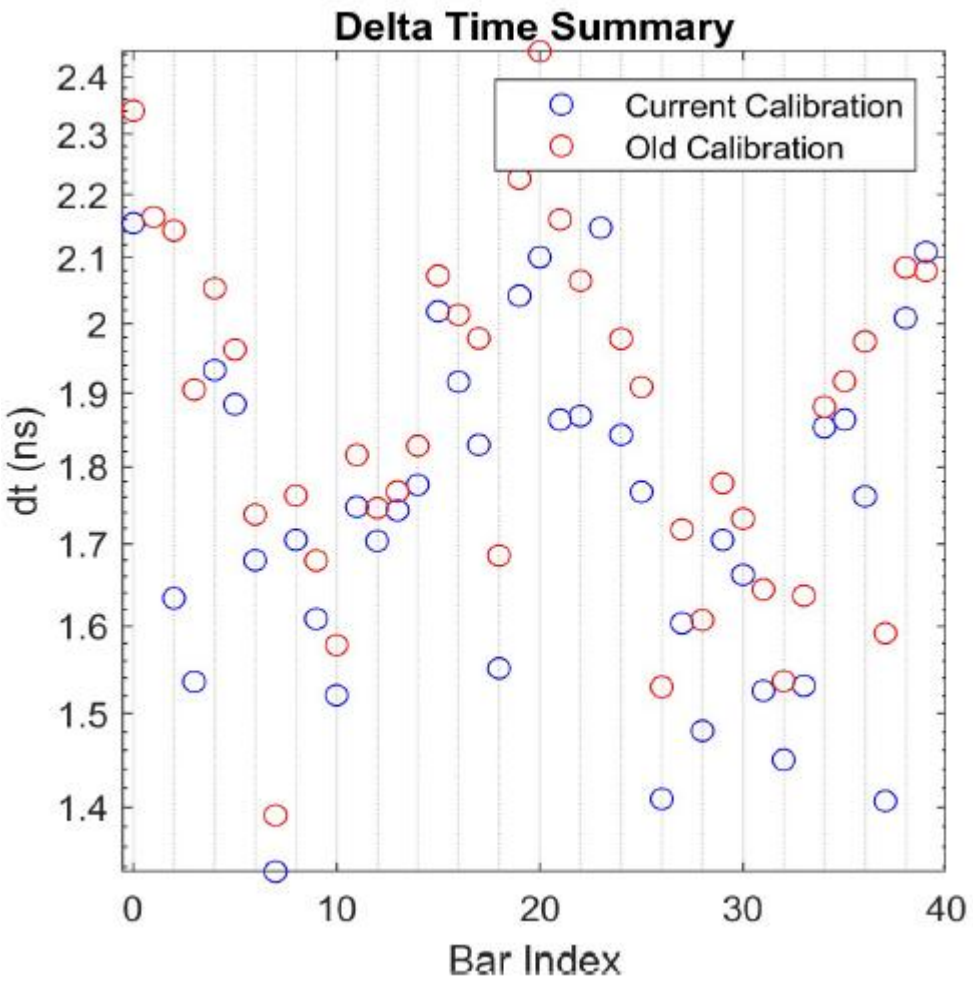


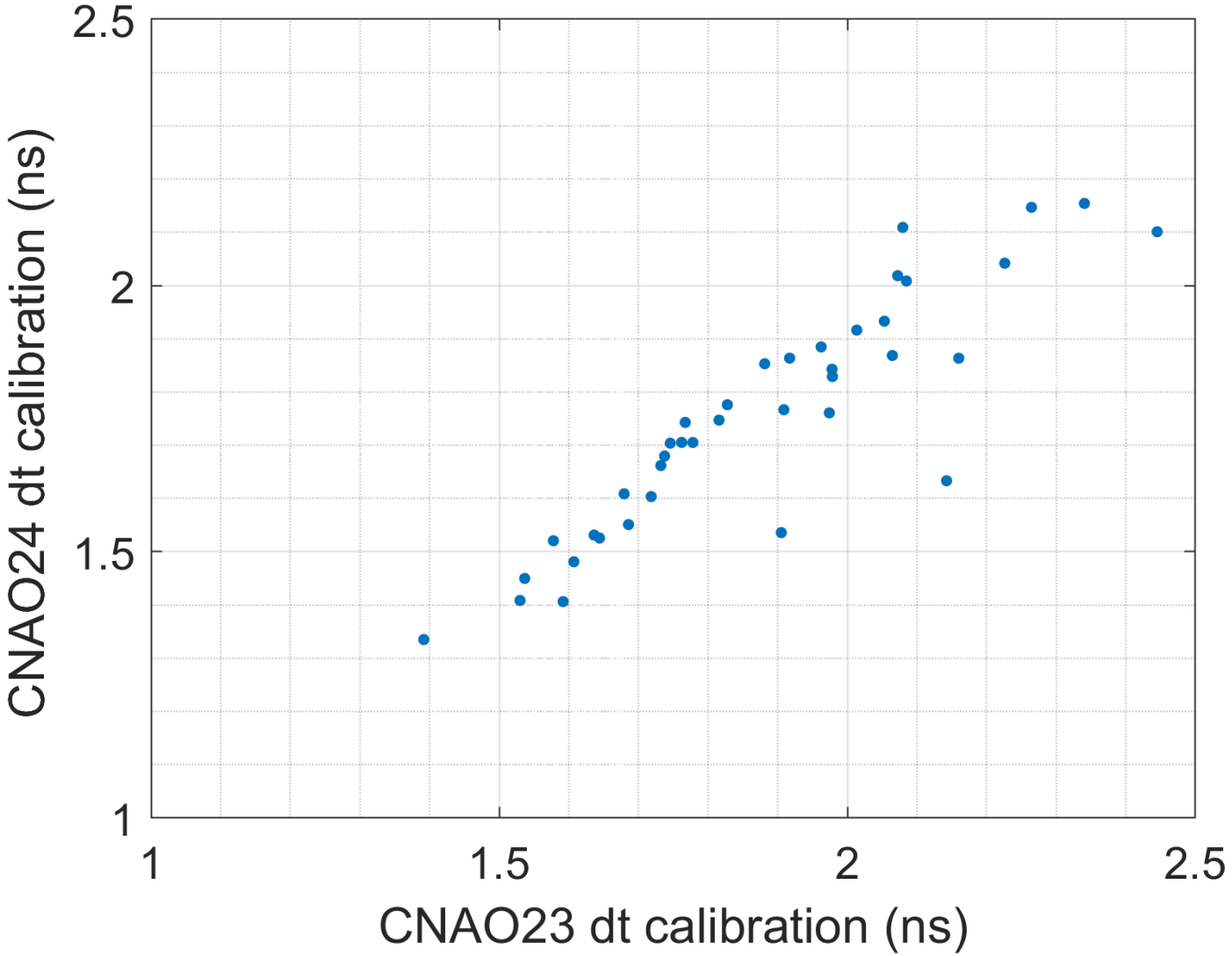




If you are curious, a whole calibration report is available at:
https://drive.google.com/file/d/1UbssOjjVGVdwTClaqOoGf5z3fhPwEpPO/view?usp=drive_link

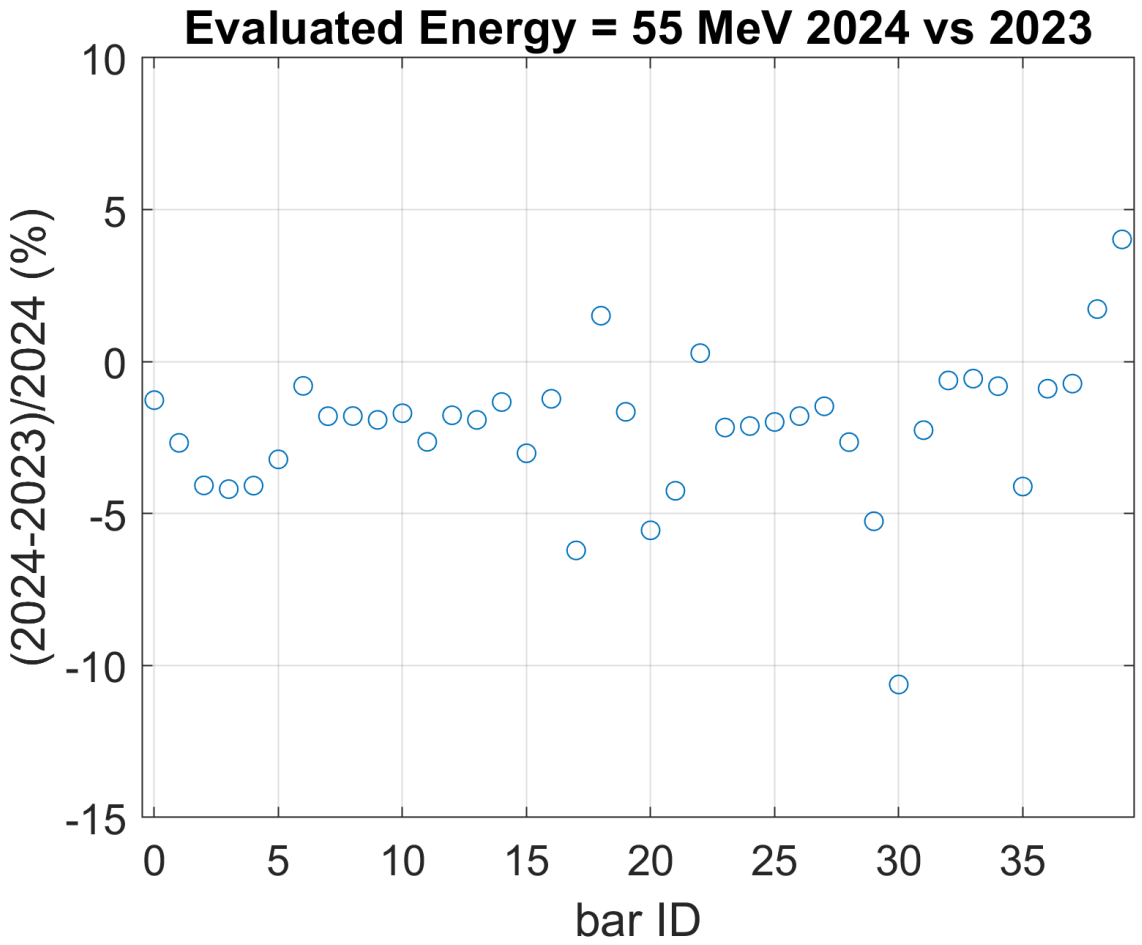
CNAO2024 time calibration

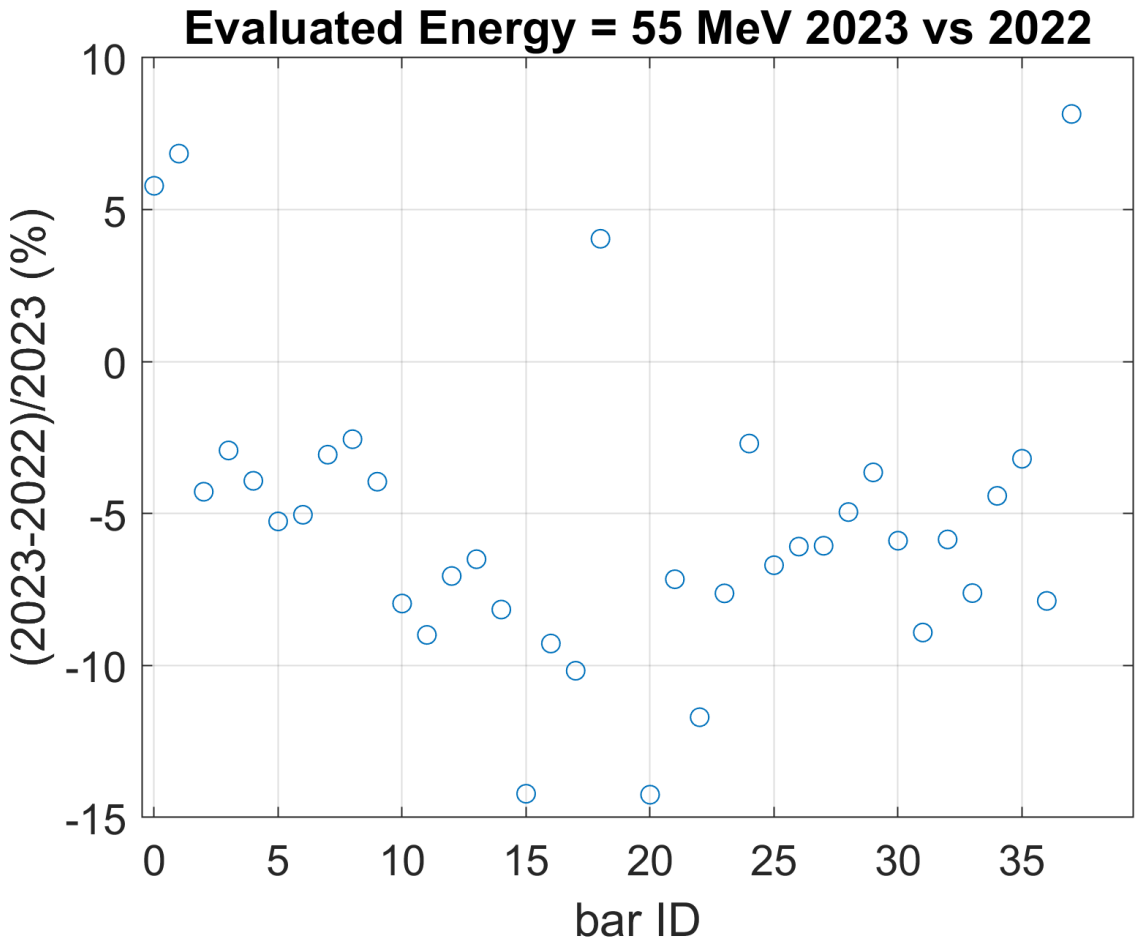




CNAO2024 energy calibration

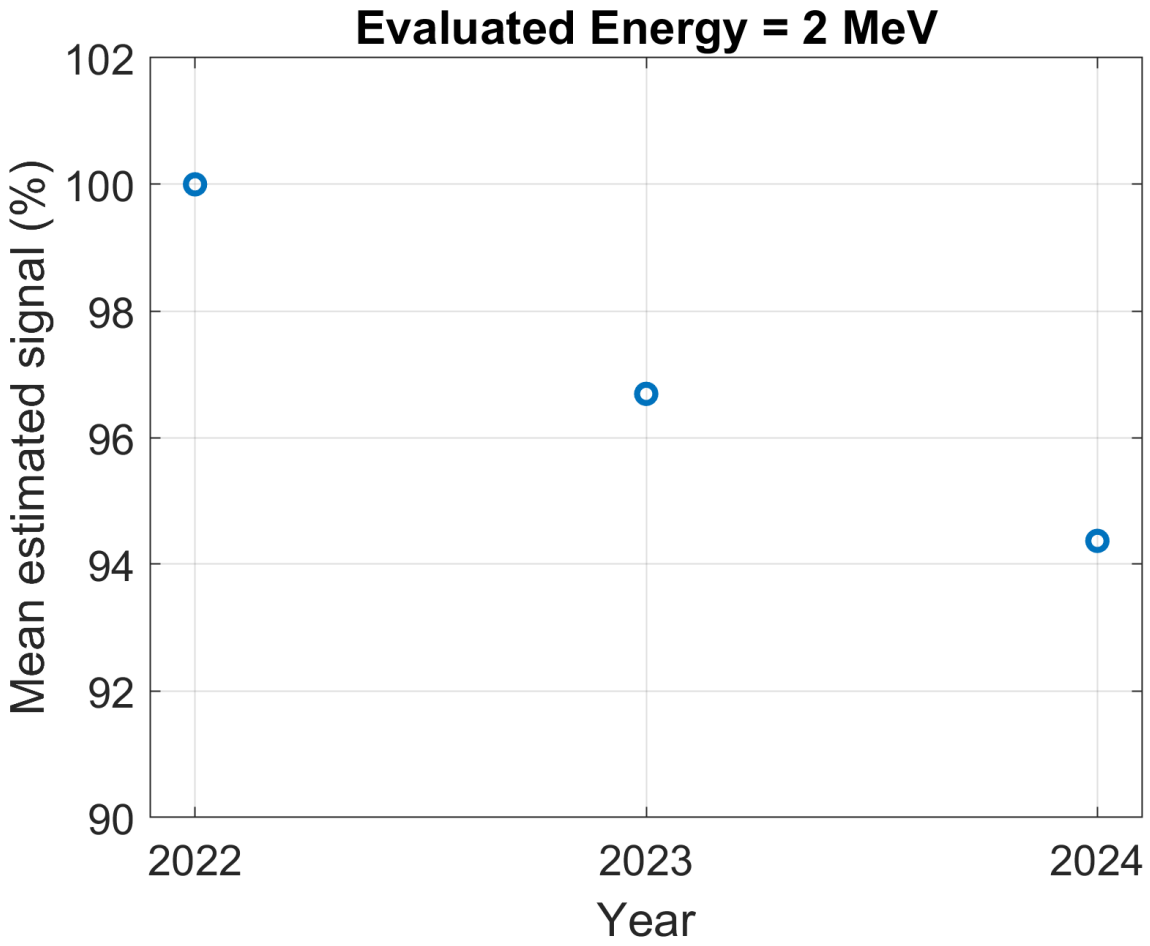
Year by year the amount of collected signal is slightly reducing, more evident in 2023 than in 2024

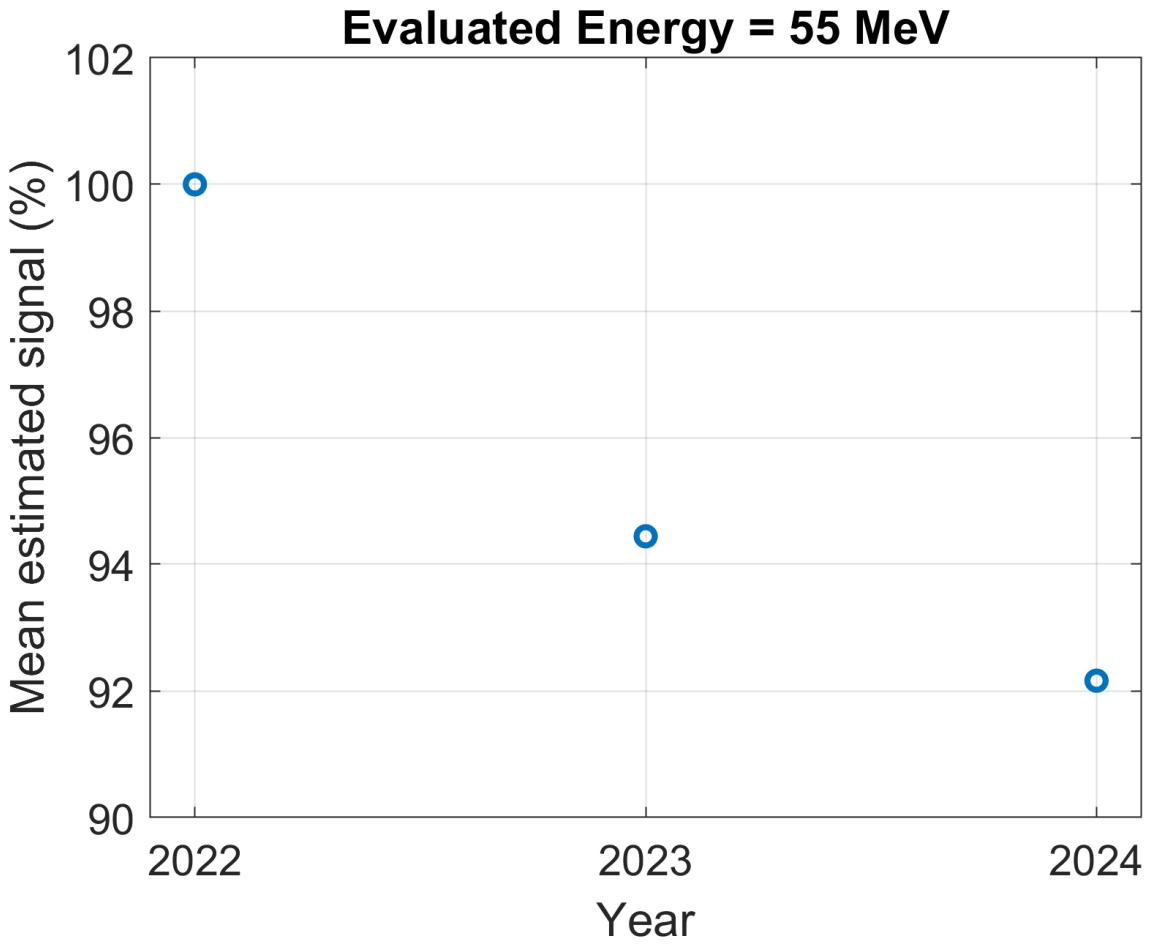




CNAO2024 energy calibration

Mean value normalized to the 2022 calibration of the expected signal using the obtained calibration for two different energies (p and C) considering only the 12+12 central bars.





To summarize

A slightly degradation of the TW signal over the years is visible

→ Given the magnitude of the variation, this does not seem a problem up to now, however it can slightly affect the resolution of the detector and the efficiency with protons.

→ It would be interesting to explore different configurations (OV / WDQ gain) to better match the WDQ dynamic range and verify if there is an impact on the results.

What's next

DETECTOR

TW is in CNAO since the last data taking, since it is the first time that it is held vertically for so long, it would be useful to perform a brief detector scan to check that everything is fine.

→ We expect to irradiate the whole area of the detector (at least with protons) in the next TOFpRad data taking (7-8 June)

DAQ

We are procuring a spare switch (procedure is ongoing, it will arrive soon).

After the TOFpRad data taking, the WaveDAQ system will be left in Bologna, we expect to be there June 9th (to be defined).