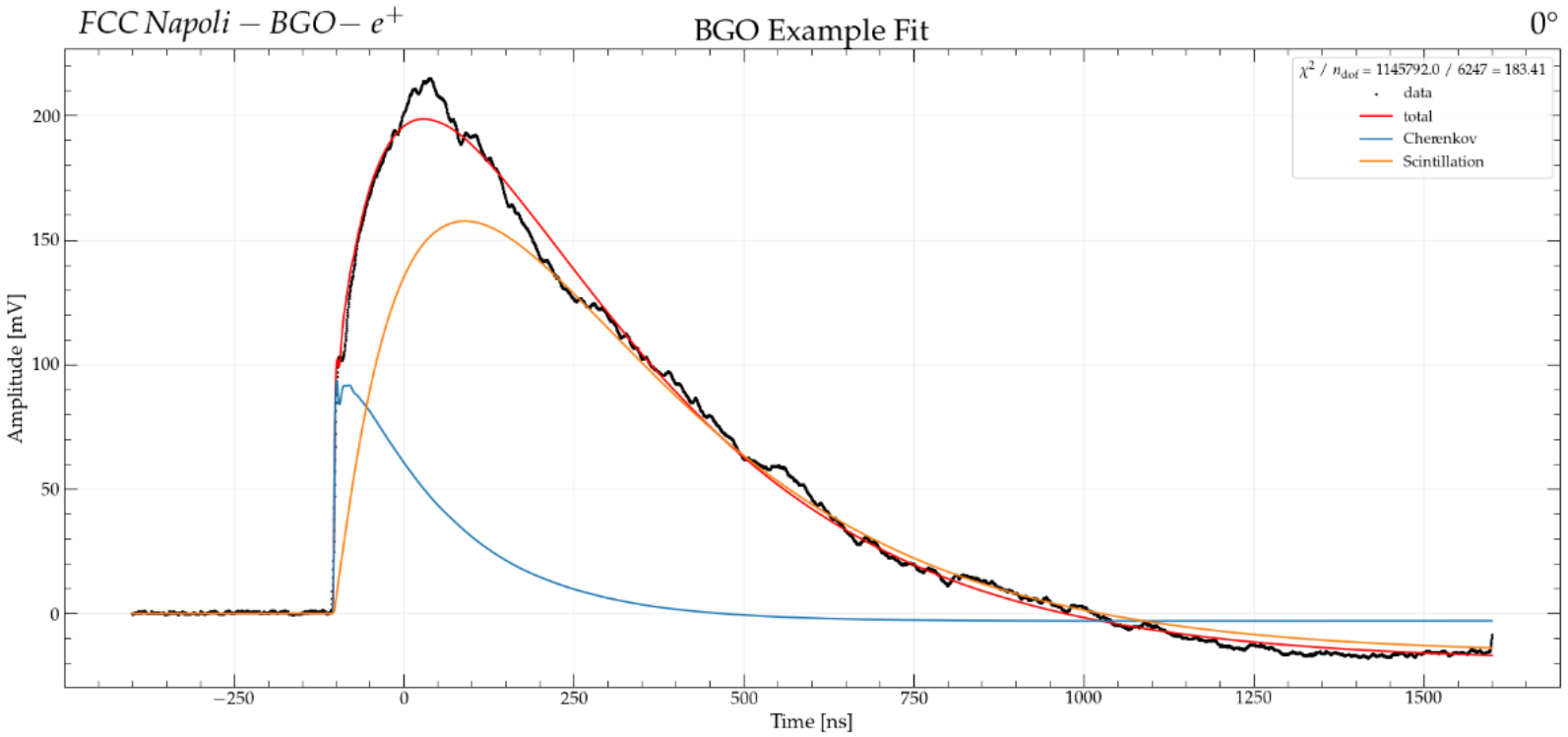
Analysis Test Beam

Giovanni Gaudino – FCC Napoli – 2025, 7th February

An example of fit



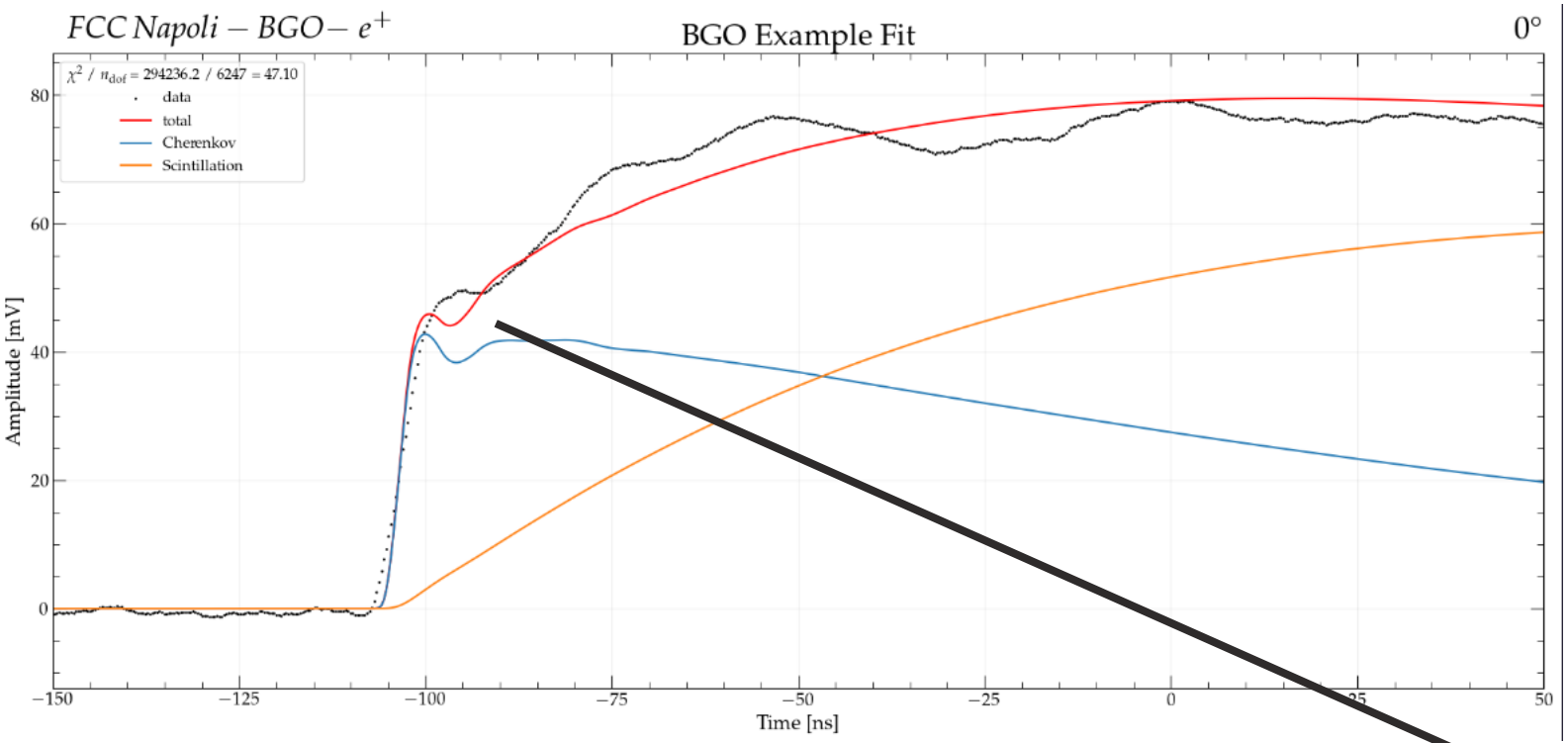
- Čerenkov signal: it is prompt, so same shape as SPR;
- Scintillation signal: from the convolution of SPR with the characteristic crystal time distribution;

Floating parameters:

- normalizations → C and S yields
- Trigger time
- Offset fixed at 0

- The templates follow the decay time of the waveform very well, also for negative values
- We can estimate the Čherenkov yield wrt the scintillation yield

Un poco di zoom



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Possible improvement

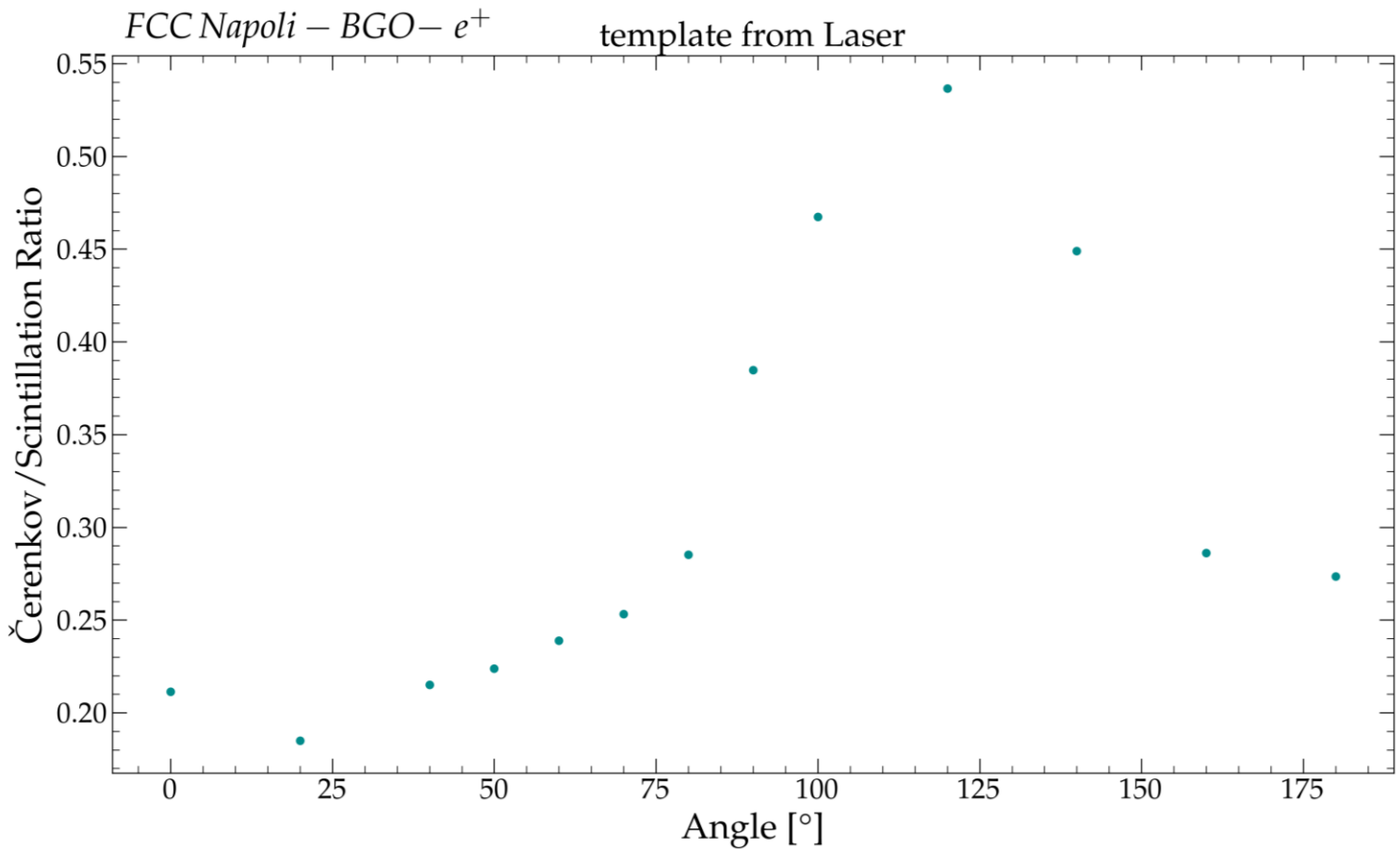
Let float the Čerenkov rising time

Angle Scan – c/s – Channel 2

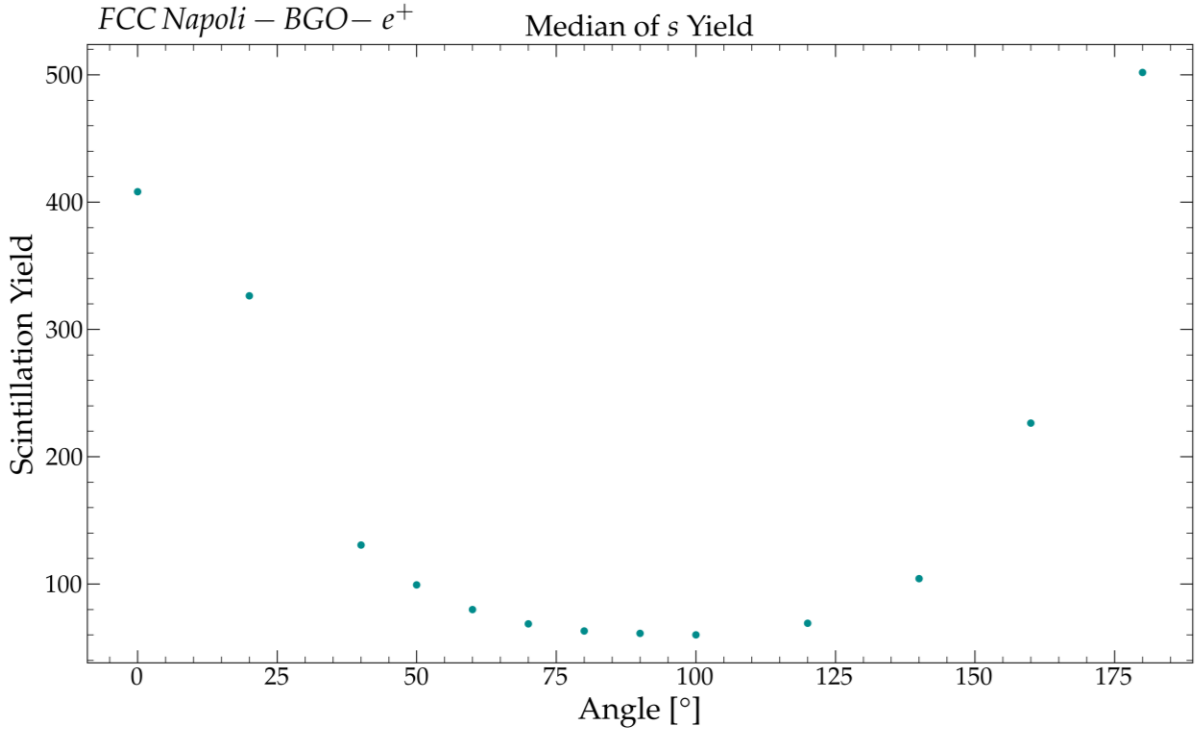
Repeating the fit for all the runs with BGO we obtain the expected shape

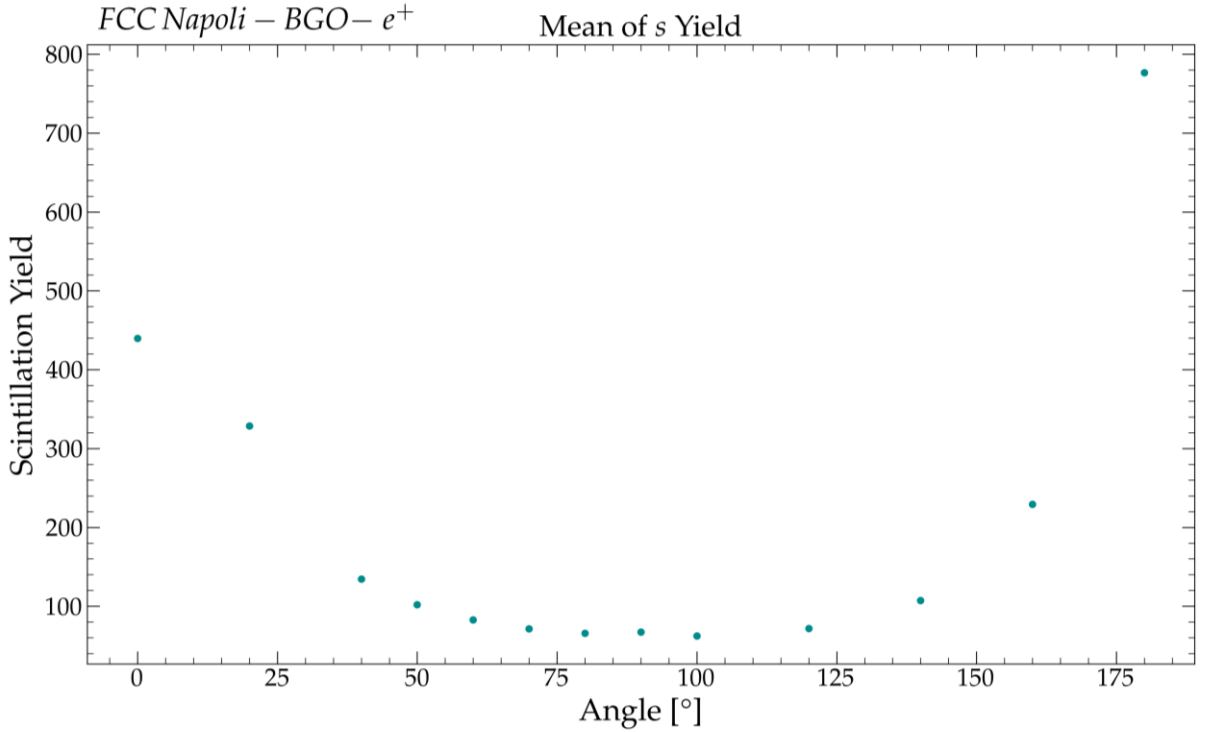
We improved the framework and put all the scripts in a github repo:
FCCNA/fcc-testbeam_analysis

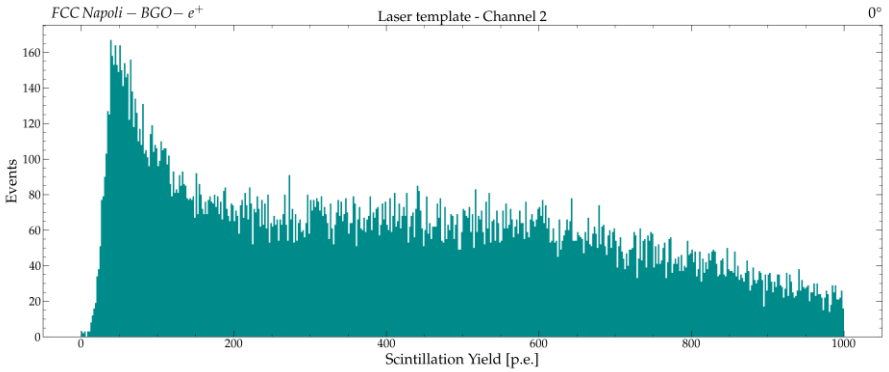
Lucrezia is working on BSO

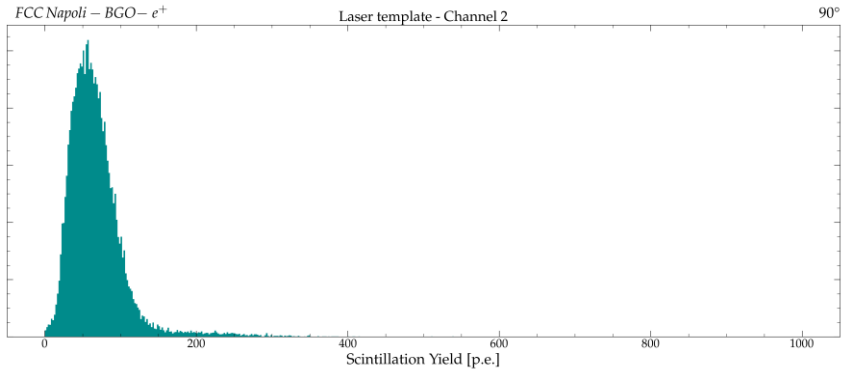


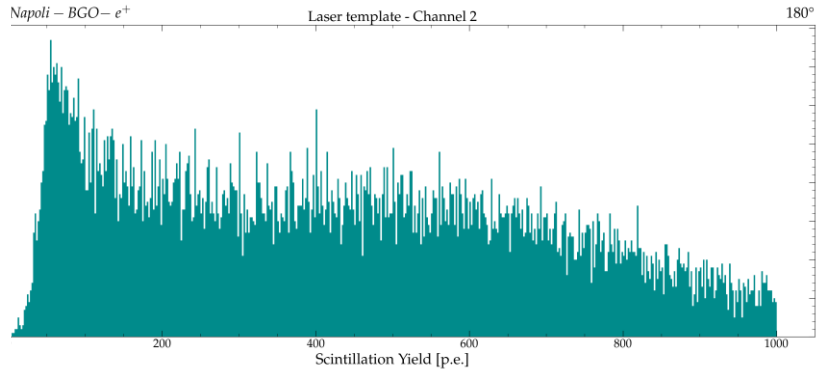
Angle Scan – *s* Yield – Channel 2



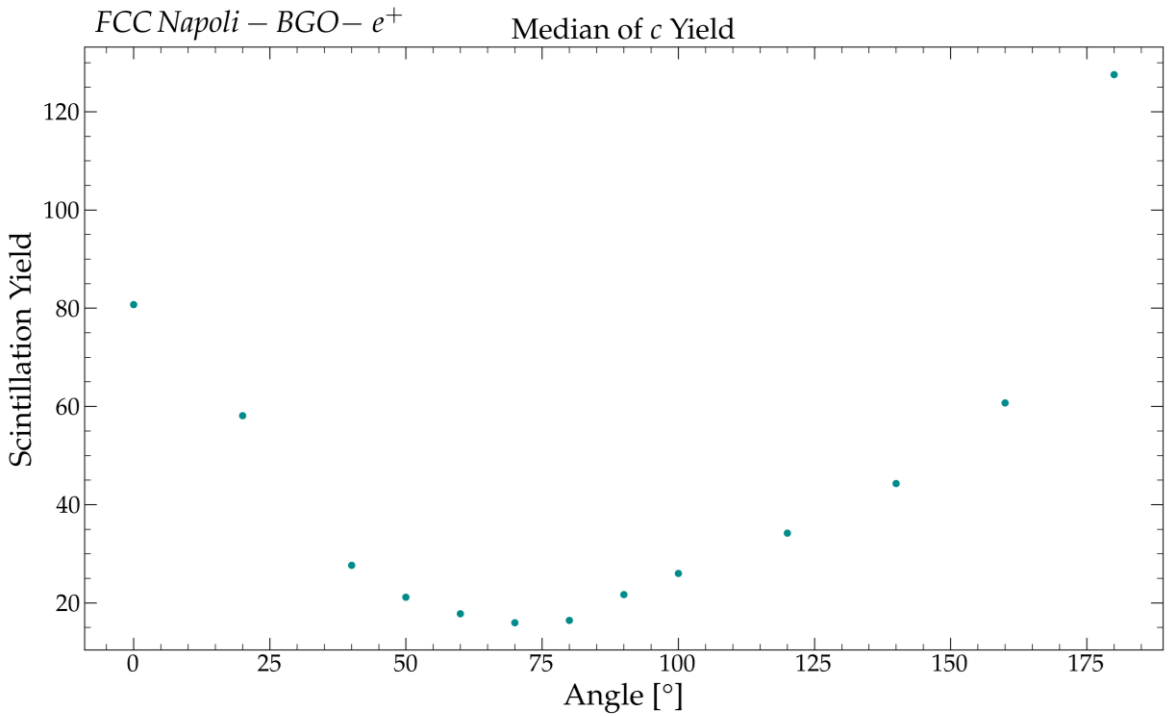


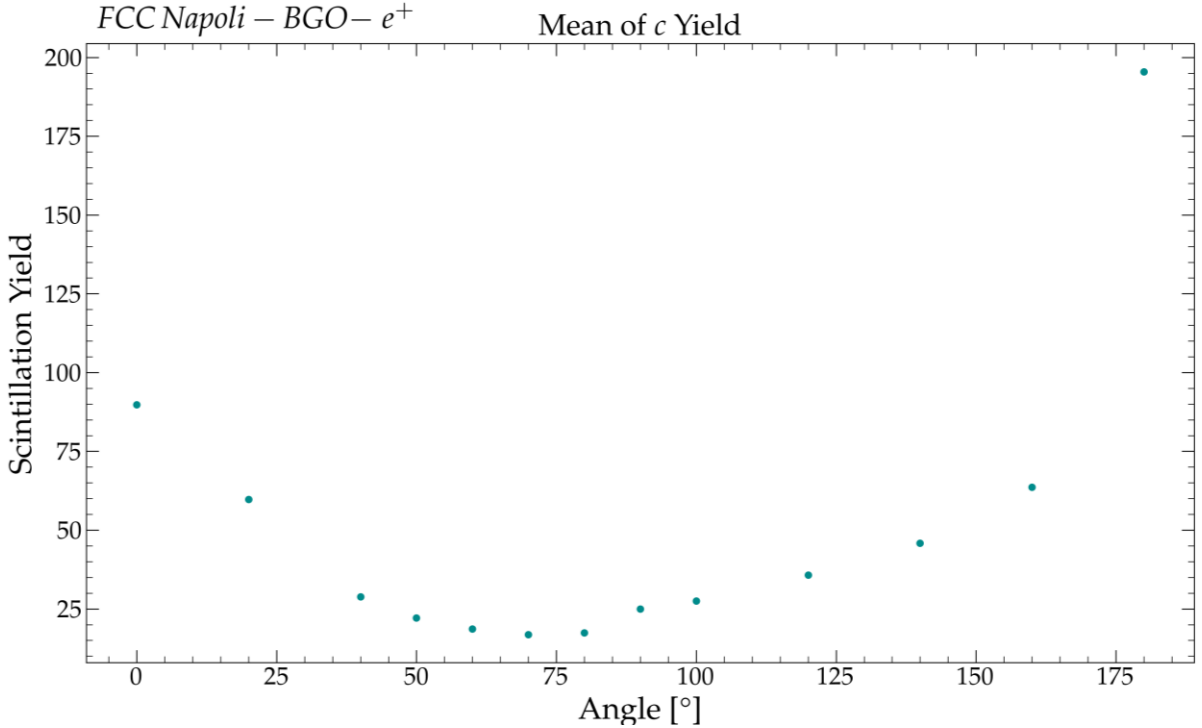


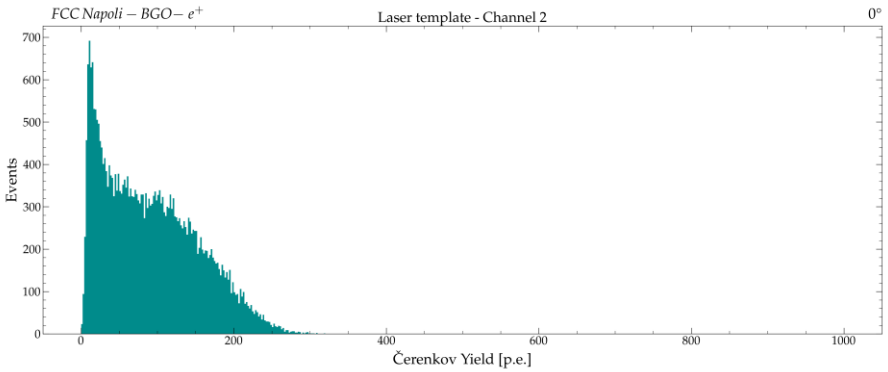


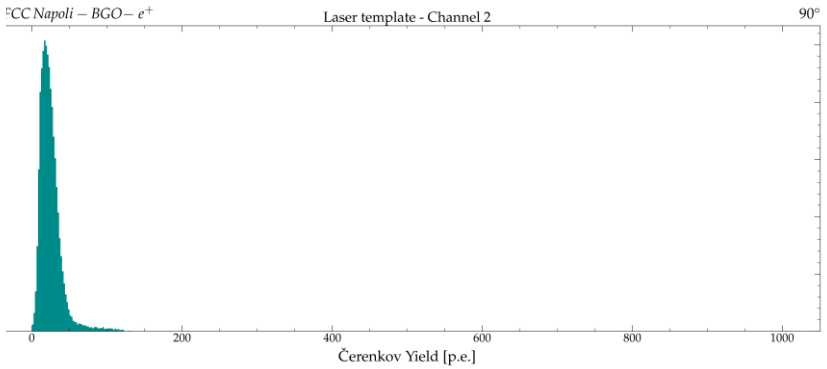


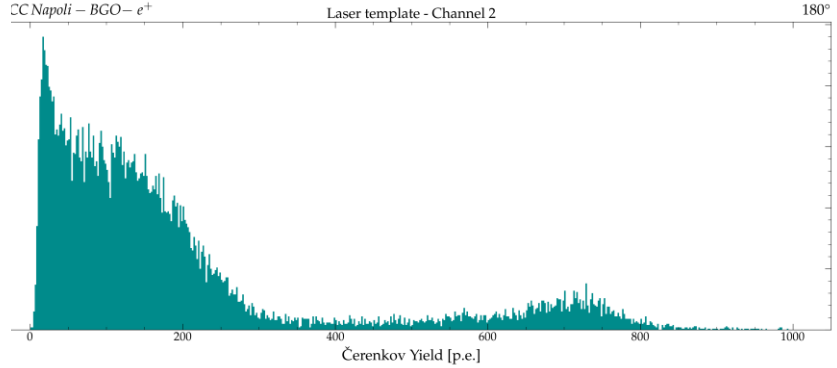
Angle Scan – c Yield – Channel 2



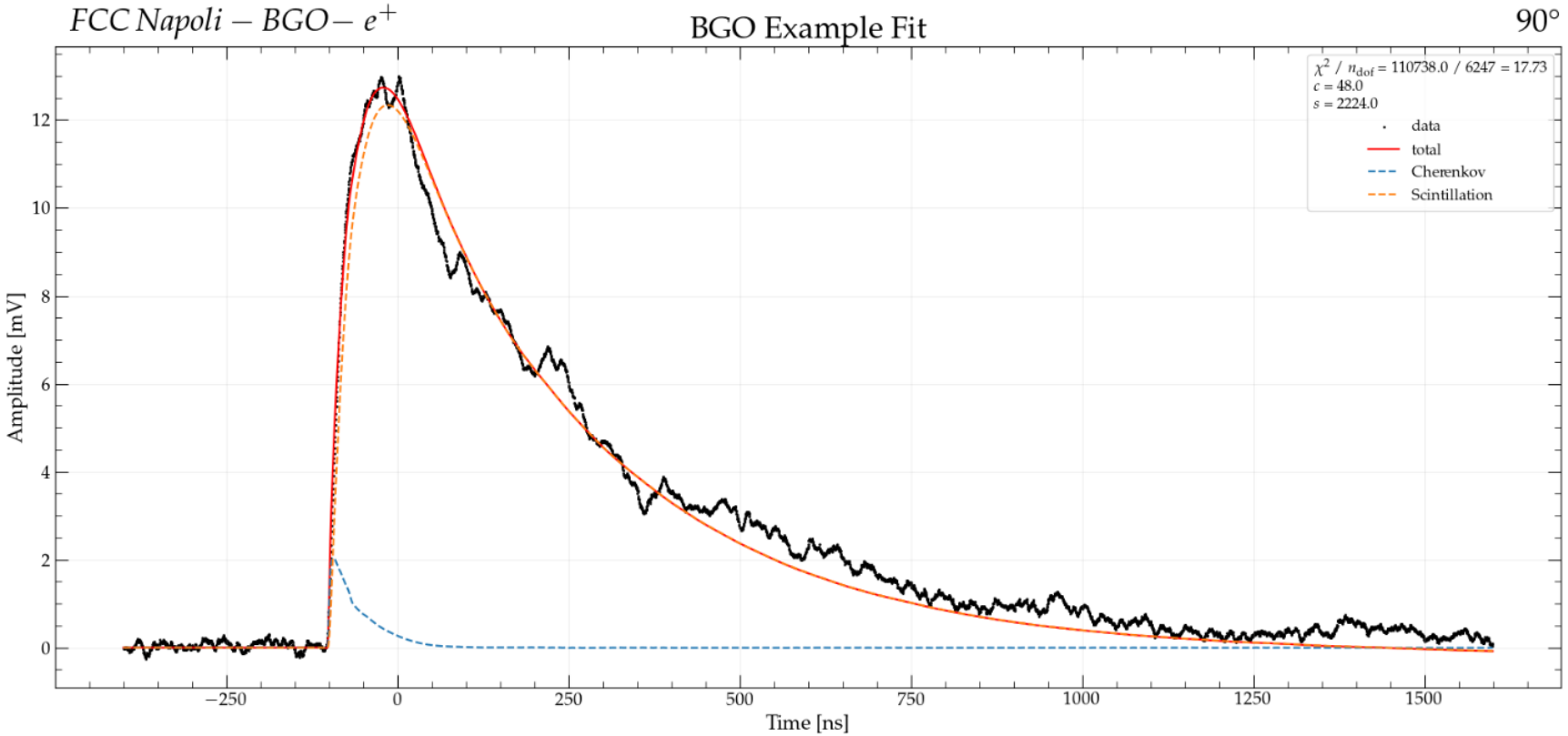








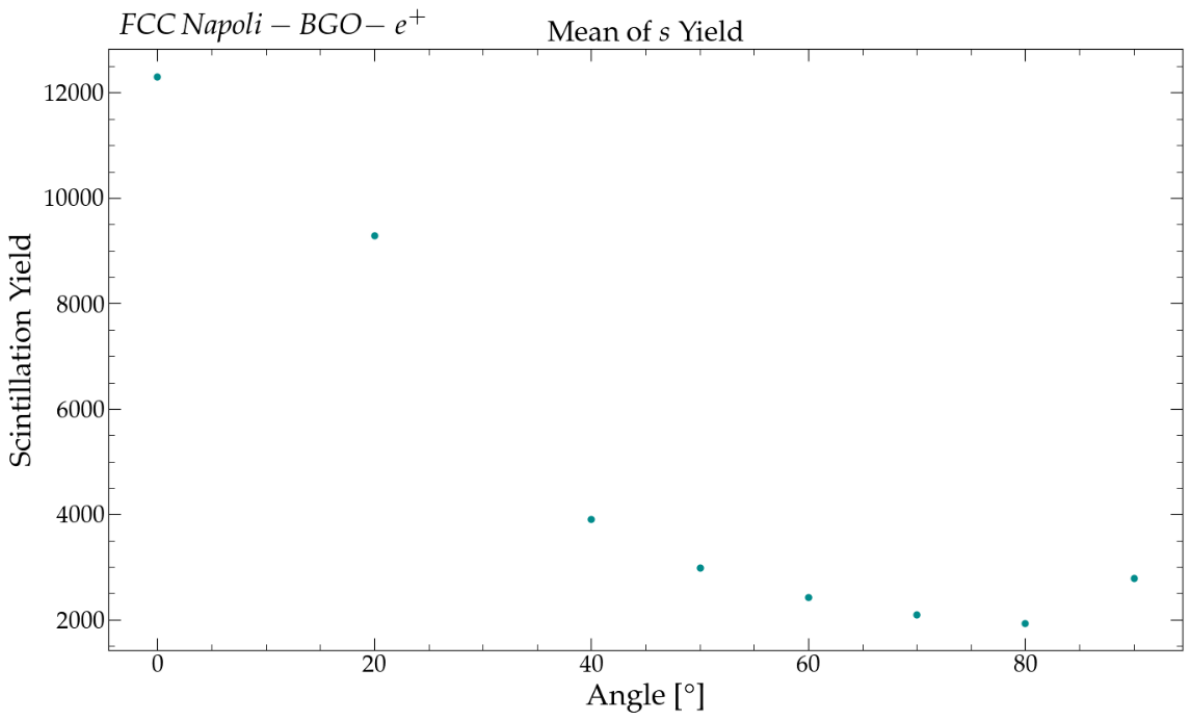
An example of fit in the s side

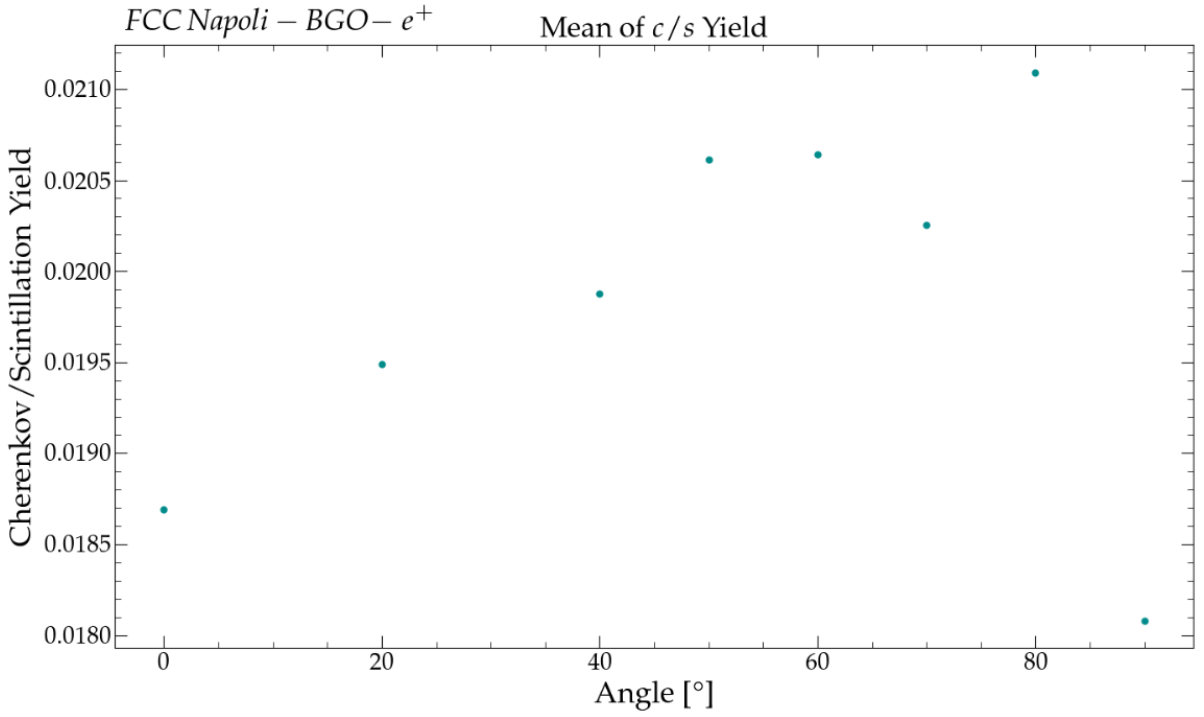


An example of the fit on the scintillation side.

I repeated the fit in (almost) all the angles, same configuration of the Cherenkov side

Angle Scan – Channel 1





- The c/s Yield is very low (2%), and it looks to be constant → a first hint of a systematic uncertainty
- Not trivial how to compare Channel 1 result with Channel 2