

Status of STEPI papers

M. Bonesini

Sezione INFN Milano Bicocca

Status of papers

- The 3rd iteration of the draft of the **beamline paper** has been available since the last two weeks. Only minor comments have been received up to now (quite a lot instead for the two previous rounds).
- The **emittance paper** needs some more work . Mark is doing it and a draft to be circulated will be available soon (containing his thesis work)

Main issues of BL paper

- Description of BL hardware (beam issues, detectors, ...) as a reference for future papers [as a “classical technical paper” of a HEP experiment]
- Show performances of BL + detectors
- Do not care about emittance measurement in STEPI [item left to the other paper]

Some plots/figures shown

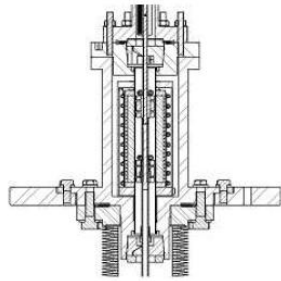


Figure 7. Left: MICE target actuation schematic. Right: Photograph of MICE replica target.

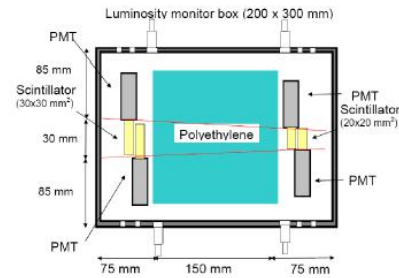


Figure 9. The design of the luminosity monitor features four low noise photo multiplier tubes in sets of two. We measure counts from coincidences of each pair of PMTs, and all four together. A block of polyethylene provides a filter for protons below 500 MeV/c and pions below 150 MeV/c.

Hardware description

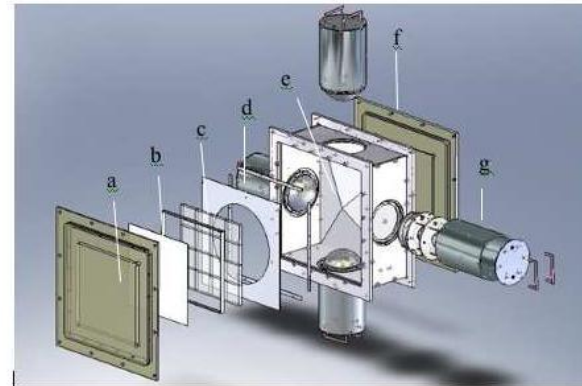


Figure 18. Aerogel Cherenkov counters blowup: a) entrance window, b) mirror, c) aerogel mosaic, d) acetate window, e) GORE reflector panel, f) exit window and g) 8 inch PMT in iron shield.

Some plots/figures shown

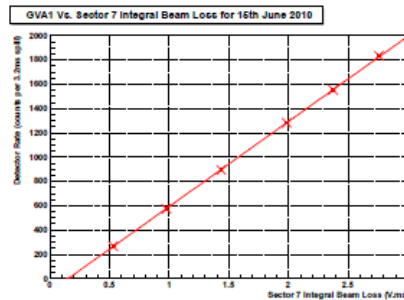


Figure 15. Average GVA1 rate per spill as a function of induced ISIS beam loss, for the positive $\pi \rightarrow \mu$ transport beam with 6 mm rad emittance, with a 1 ms spill gate. Linear fits are also shown giving good agreement with data.

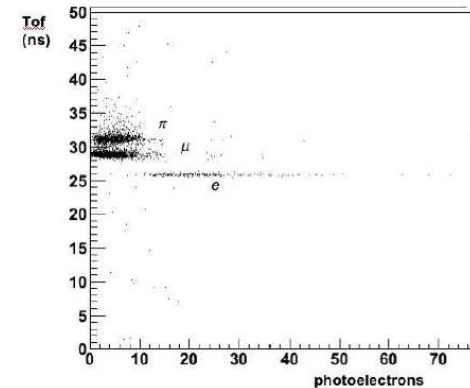


Figure 19. Aerogel Cherenkov counters light yield vs. time-of-flight.

Detector performances

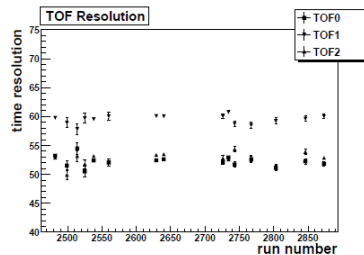


Figure 25. Stability of the time resolution of the TOF stations versus running time. Nominal muon beam data with trigger from TOF1. The covered period is about one month of data taking.

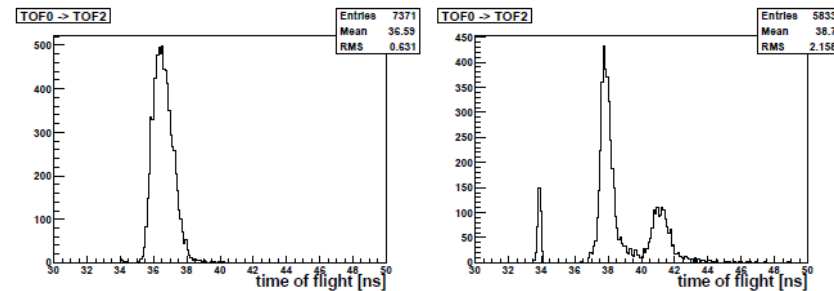


Figure 24. Time of flight between TOF0 and TOF2 for a muon beam (left) and an electron beam (right).

Some plots/figures shown

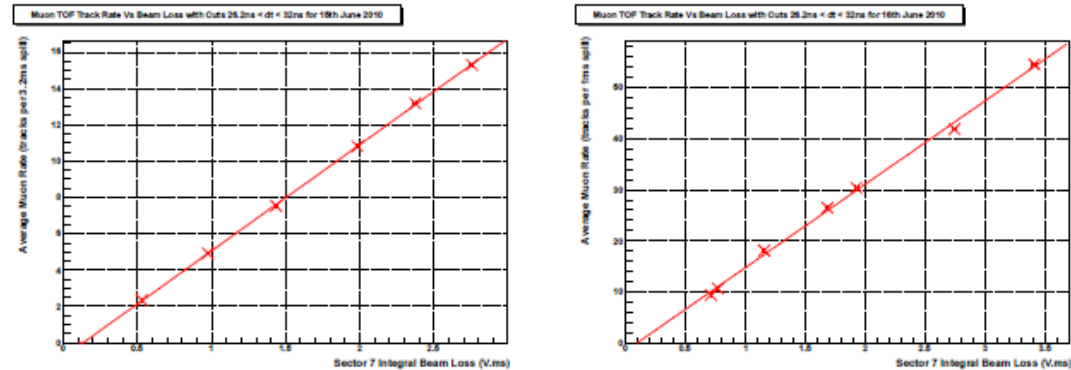


Figure 34. Average muon TOF track rate per spill as a function of induced ISIS beam loss for a negative $\pi \rightarrow \mu$ beam, with a 3.2 ms spill gate (left), and for a positive $\pi \rightarrow \mu$ beam, with a 1 ms spill gate (right). The tracks are reconstructed between the TOF0 and TOF1 detectors. The cuts applied to the TOF spectrum to isolate the muon tracks are $26.2 \text{ ns} < \Delta t < 32 \text{ ns}$. Linear fits are also shown giving good agreement with data.

Results: mainly on muon rates

Issues/problems

- Authorlist still to be worked out
- Some figures still need editing (axis labels, ...)
- Results on PID are for single detectors (no global PID available yet)
- By the way: detectors are working well and BL is working

Conclusions

- Paper on BL circulated as draft 3: may we go to submit it to JINST ?
- Paper on emittance needs some further work