

16-5-2022 FOOT @ HIT – Minutes

1 – Informations

- a) For the access to the controlled area at HIT, no previous authorization is required. Dosimeters will be provided and the recorded dose must be notified to the home institution.
- b) The map of the experimental room is available. The beam height is 129 +/- 0.5 cm. Distance between the beam nozzle and the isocenter: 101 cm. Distance between the beam nozzle and the wall: 295 cm.
- c) The current beam time allocation is for a total of 37 h, with the first beam expected on July 17th at 11 pm. The access to the experimental room for the installation will be possible from July 15th
- d) The last allocated shift is on July 23rd, but it will be possible to ask for some (undefined) extra time if our physics goals will require it.

2 – Tentative shift schedule

July 17 th – 3pm – 11pm	8 h
July 18 th – 11pm – 4:30am	5.5 h
July 19 th – 11pm – 4:30am	5.5 h
July 20 th – 11pm – 4:30am	5.5 h
July 21 st – 8pm – 4:30am	8.5 h
July 23 rd – 11pm – 6am	7 h
July 24 th – 7am – 3 pm	8 h (to be confirmed)
Total	37 (+8) h

3 – Data takings

1) Calorimeter calibration

Beams: p, 4He, 12C, 16O, several energies.

Target: none

Energies: see table

Run	Particle	Energy (MeV/A)
1-6	p	50, 70, 120, 170, 200, 220
7-13	He	50, 55, 75, 100, 140, 180, 220
14-25	C	80, 100, 120, 140, 170, 200, 230, 260, 300, 340, 380, 420
26-37	O	105, 135, 165, 195, 225, 255, 285, 315, 345, 375, 405, 430

Layout: 1 crystal as close as possible to the isocenter
DAQ: standalone with CAEN V1742 digitizer
Expected duration: 8 h

2) MSD calibration

Beams: 4He
Energies: 50, 55, 75, 100, 140, 180, 220 MeV
Target: ?
Layout: SC, BM, MSDs, TofWall, Calorimeter (5 modules)
Trigger: Start Counter
Rate: 1 kHz
DAQ: global
Expected duration: ?

3) Physics

Beams: 4He
Energies: 200 MeV/A, maybe also 100 or 150 MeV/A
Expected duty cycle: 0.5
Target(s): C, maybe also C₂H₄. What thickness?
Layout: SC, BM, target, TofWall, Calorimeter (5 modules)

Open issue: TofWall position (distance from target)

VTX & MSDs: to be discussed

- if yes, as close as possible to the target (if β resolution acceptable)
- if yes, VTX alignment runs are required (7-8 10^5 evts @ rate < 1 kHz)
- for the MSDs, 3 + 3 layers may be sufficient
- if No VTX, target holder to be built (?)

Trigger: Mbias + TofWall of for the 3 horizontal bars in front of the calorimeter
DAQ: global
Expected duration: until the end of beam availability

Simulation:

- How many Mbias + triggered events required for achieving the desired statistical error? 10^7 primaries, if Mbias
- If possible, priority to C target and different energy of C₂H₄ target and same energy? Present guess: different energy (100 or 150 MeV)

4 – Logistics

People:

To be defined

How many vans? To be discussed

Bologna will pick up the Beam Monitor equipment presently in Trento

Installation sequence:

- To be discussed

Shift list?