

MICE Beam Loss vs Particle Rate Run

5th & 6th Sept 09

Preconditions

- Request ISIS to run at full 50 Hz if possible
- Request ISIS to record beam loss, beam position and beam intensity with their DAQ system, as suggested by CMacW (perhaps checking clock synchronicity against our DAQs)
- Note current position of GVA1 wrt DS and Q4

Run

- Note trigger & prescaler value (just in case)
- Note DATE DAQ gate width
- Enable GVA1, TOF0 and Cherenkovs
- Set optics to pion beamline, as described below
- Enable both DATE and target DAQ systems, checking that they are writing out data
- Set target dip time to some optimum value, record, and then hold constant
- Check beam position with TOF0
- Find 50mV target depth
- Record data with one beam loss setting per run
- Begin at 50mV, then 100mV, then increasing in 100mV steps upto 1V or maximum allowed
- DAQs record data ~ once every 2.5s. Desire a minimum of 10 data points per beam loss setting → need ~30s per setting in theory. Make this ~2mins of running per setting in practice for safety, plus say 2mins to find each beam loss value → (2 + 2) mins * 11 settings = 44 mins. Target dip rate is ~30 pulses per minute → ~1300 pulses per beam loss setting
- If sufficient time and pulses, repeat for proton beam line, described below

Optics

Produced by MA.

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MICE - Beamline Optics - optimised for ***PION*** Transport

Ptgt=336.85 / PD1=333.39 / PD2=330.92 MeV/c

DKsol and Q7-8-9 NOT in use

| | | |
|-------|--------|---|
| Q1 | 71.62 | A |
| Q2 | 130.97 | A |
| Q3 | 80.16 | A |
| D1 | 256.16 | A |
| DKsol | ----- | |
| D2 | 123.96 | A |
| Q4 | 220.38 | A |
| Q5 | 295.54 | A |
| Q6 | 196.06 | A |
| Q7 | ----- | A |
| Q8 | ----- | A |
| Q9 | ----- | A |

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MICE - Beamline Optics - optimised for ***PROTON*** Transport

case A) LOW ENERGY - matched with the PION case at D1

Ptgt=374.37 / PD1=333.39 / PD2=292.71 MeV/c

DKsol and Q7-8-9 NOT in use

| | | |
|-------|--------|---|
| Q1 | 73.51 | A |
| Q2 | 133.27 | A |
| Q3 | 80.86 | A |
| D1 | 256.00 | A |
| DKsol | ----- | |
| D2 | 110.12 | A |
| Q4 | 183.26 | A |
| Q5 | 245.67 | A |
| Q6 | 156.28 | A |
| Q7 | ----- | A |
| Q8 | ----- | A |
| Q9 | ----- | A |

AD