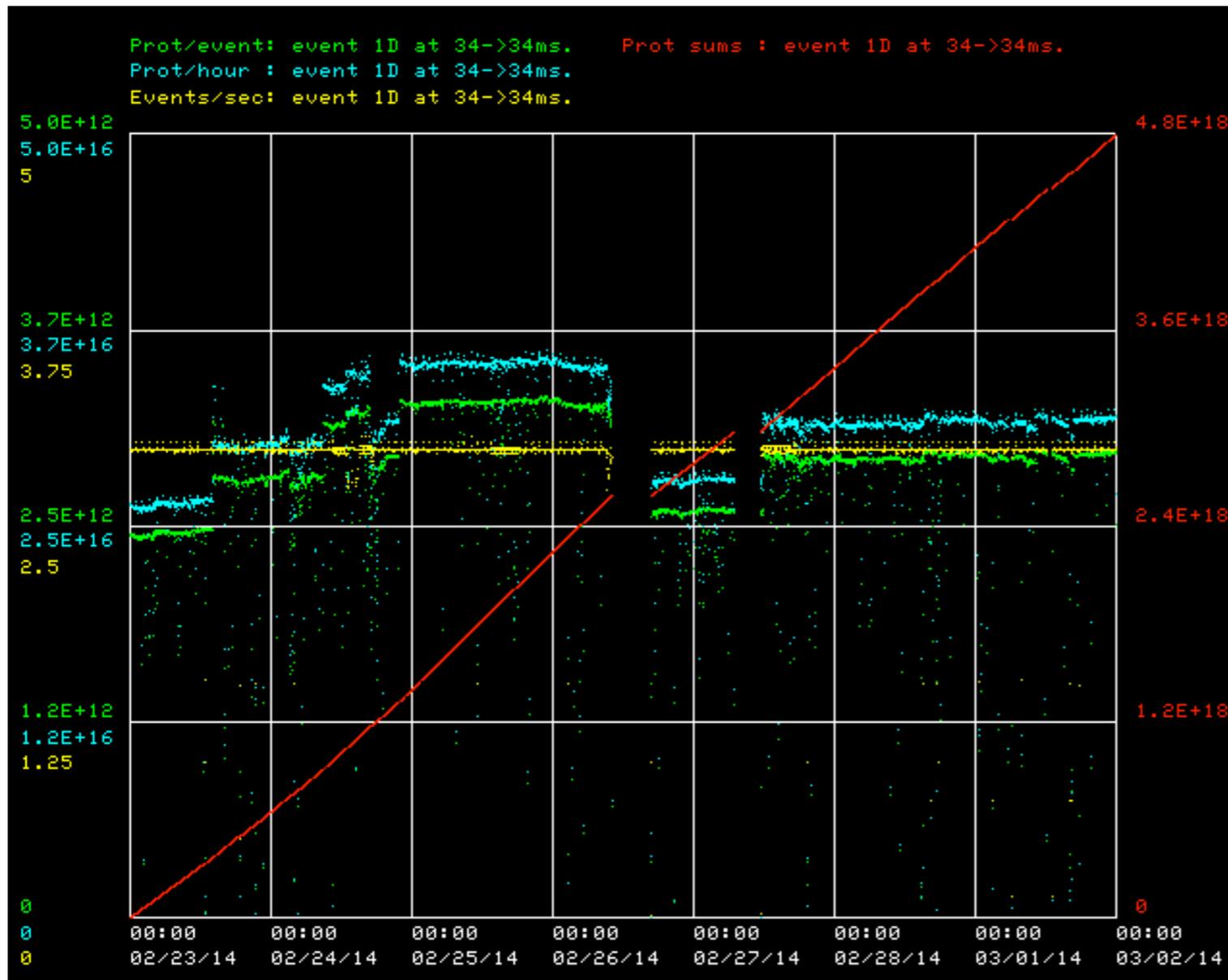


MiniBooNE Beam-Dump run update

Mar 3rd 2014

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for the MiniBooNE Collaboration

BNB



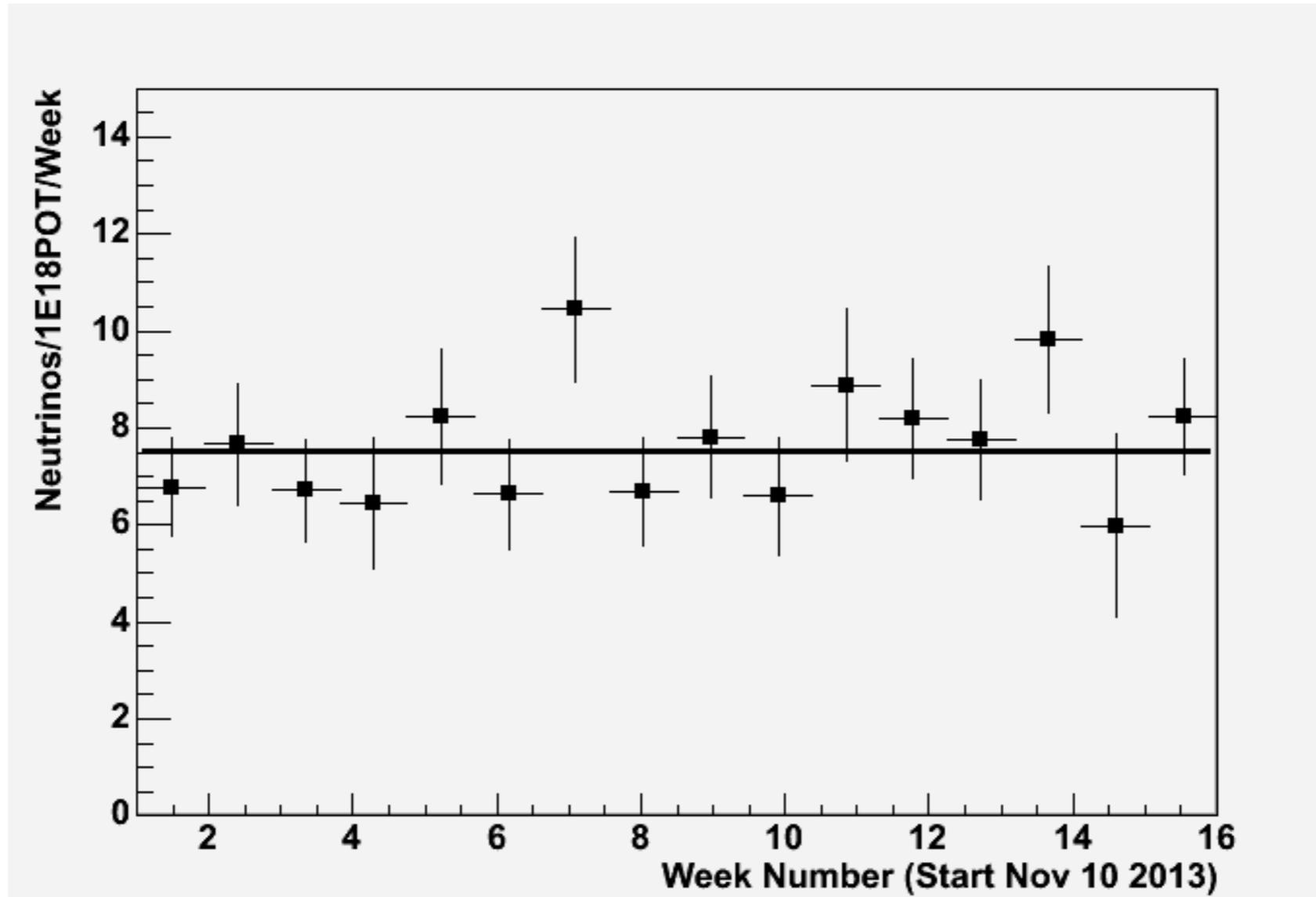
```
Summary for Event 1D
From 23-FEB-2014 00:00:00
to 02-MAR-2014 00:00:00

Percentage up time: 92.7
Total Events: 1704064
Total Protons: 4.76E+18
Average Events/second: 3.04
Average protons/Event: 2.79E+12
Average protons/hour: 3.05E+16
Maximum protons/hour: 3.57E+16 02/25/14
(protons out)/(protons in): .913
(Joules lost)/(1e12 prot): 12.9

Beam on averages of collected data
Prot/event: event 1D at 34->34ms. 2.86E+12
Prot/hour : event 1D at 34->34ms. 3.08E+16
Events/sec: event 1D at 34->34ms. 2.97711
Prot sums : event 1D at 34->34ms. 2.35E+18
```

- BNB 93% uptime. Total protons for the week = $4.8E18$
- Multiwire at MI10 (MBT875 multiwire) problems, solved after hard reboot and turning on MW sequencers.

MiniBooNE Detector



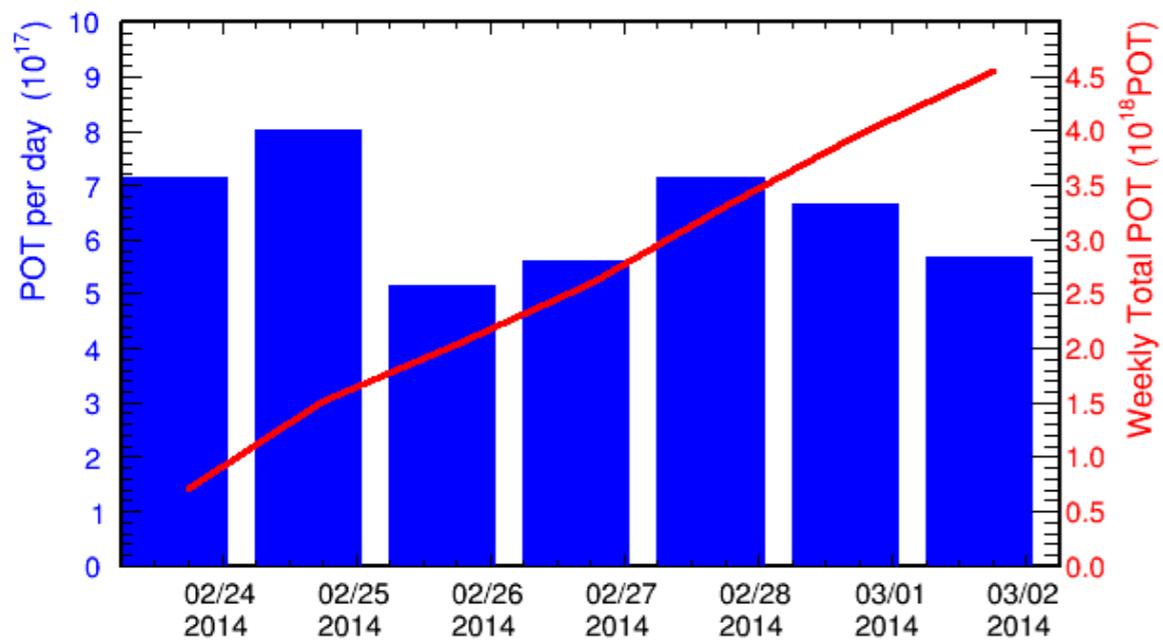
- Detector uptime 100%
- Currently reprocessing data for analysis (0.7E20 POT), previously reprocessed (0.35E20 POT)

Summary

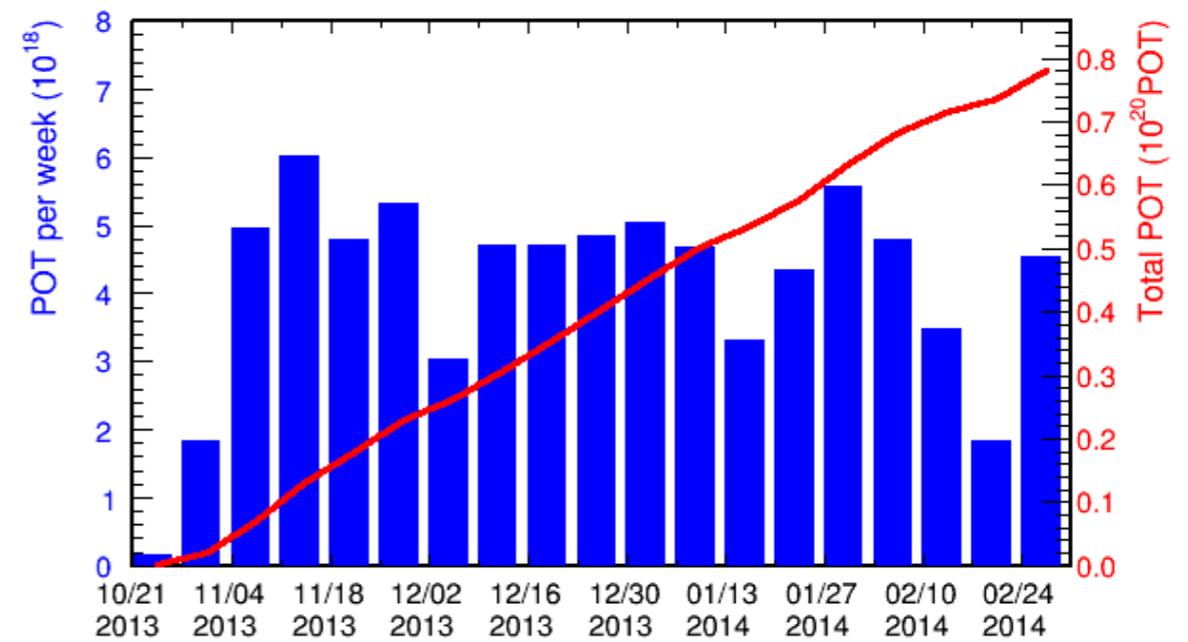
No issues to report

Stable running at the detector.

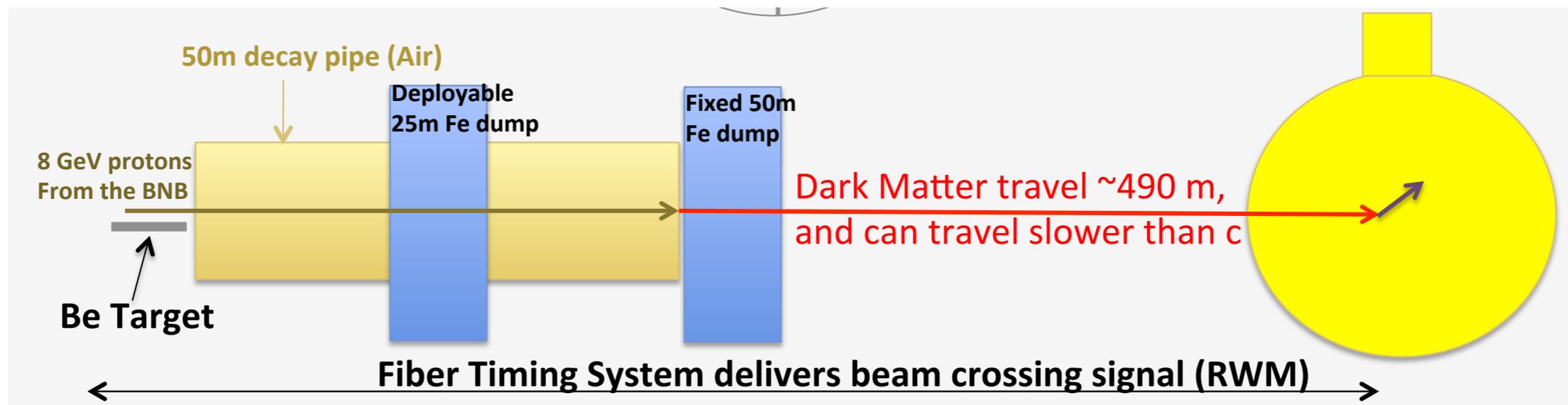
Last week



Total beam-dump run



Neutrino rate reduction in beam-dump mode



- Neutrinos from proton-air interactions. Not constrained by HARP, hence large systematic error in prediction.
- MC prediction (neutrino mode/beam dump) = **67 (large systematic errors)**

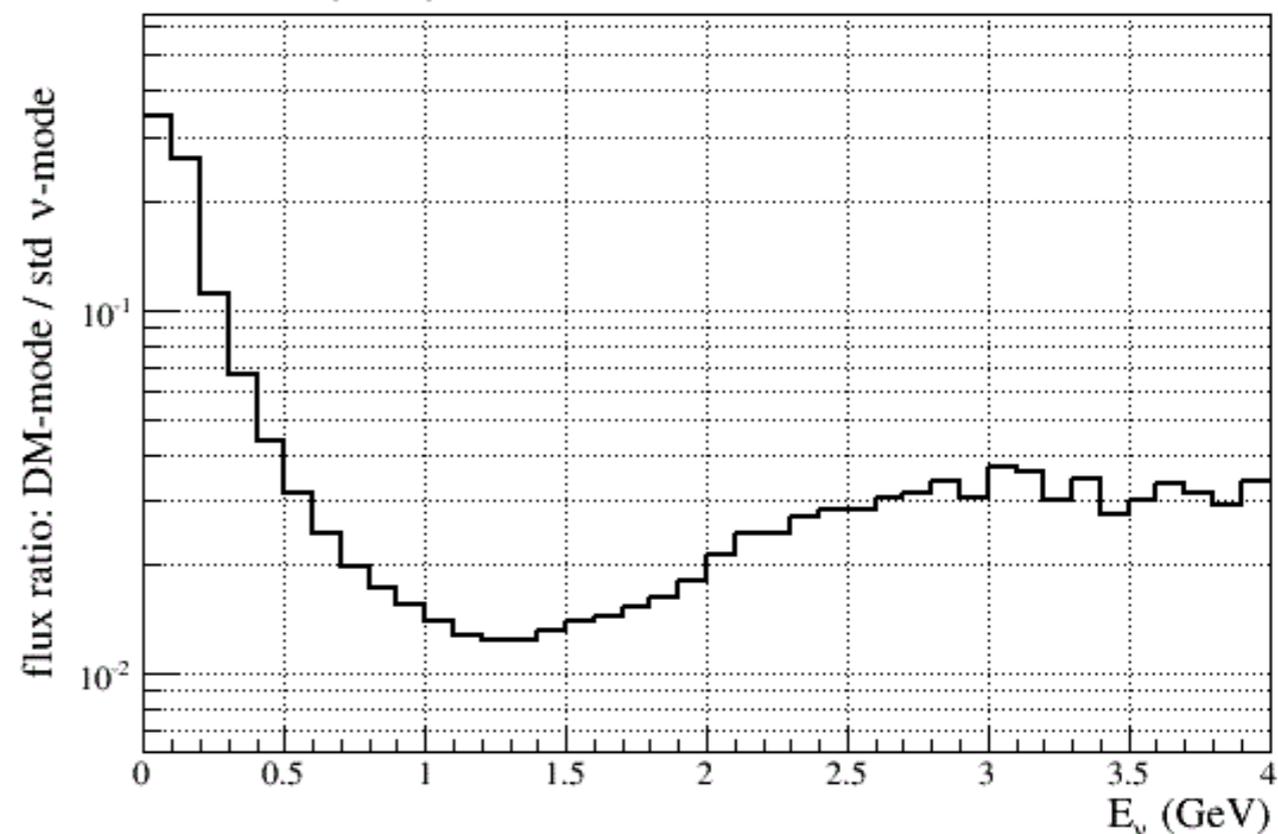
Use data to infer the rate reduction

CCQE muon (neutrino mode/beam dump) = **44 +/- 3**
 NC pi0's (neutrino mode/beam dump) = **47.5 +/- 10.3**

Kinematic distribution: Shape agrees, normalization different.

Predict NCE rate based on other channels.

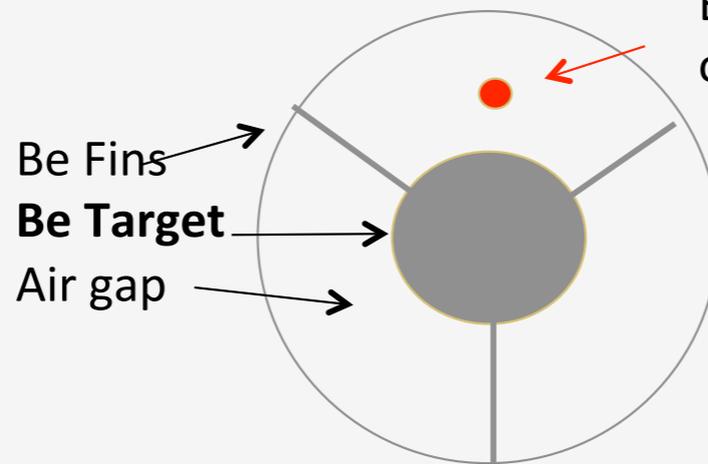
$(\nu_\mu + \bar{\nu}_\mu)$ Flux Ratio: DM-mode / Std ν -mode



Neutrino flux reduction in beam-dump mode relative to neutrino mode as a function of neutrino energy.

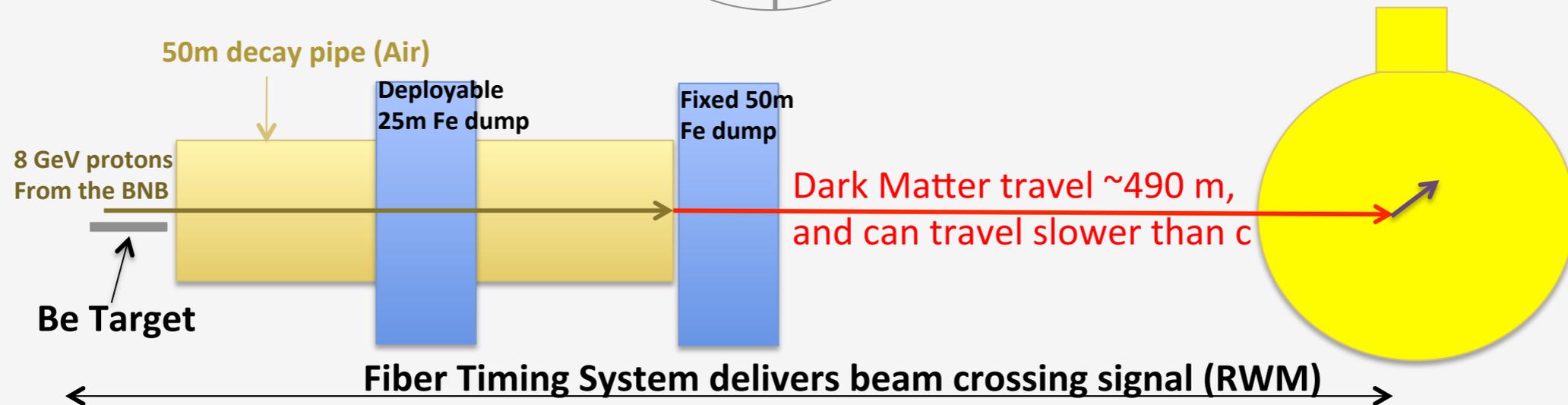
Beam Off Target Running (Beam-Dump Mode)

MB has the capability to steer the protons past the target and onto the 25m or 50m iron dump



Beam spot position in beam off target mode (~1 mm spread)

- Target is 1 cm diameter
- Air gap between target and horn inner conductor is ~1 cm



- π^0 and η produced by protons in the Fe quickly decay producing dark matter.
- Charged mesons are absorbed in the Fe before decaying, which significantly reduces the neutrino flux (still some production from proton-Air interactions).