

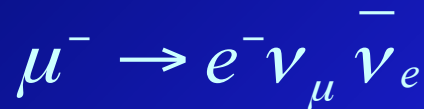
nuSTORM as a Hybrid NF

- We have always stressed that the NF neutrino beam, since it comes from muon decay, is well defined.

Well-understood neutrino source:



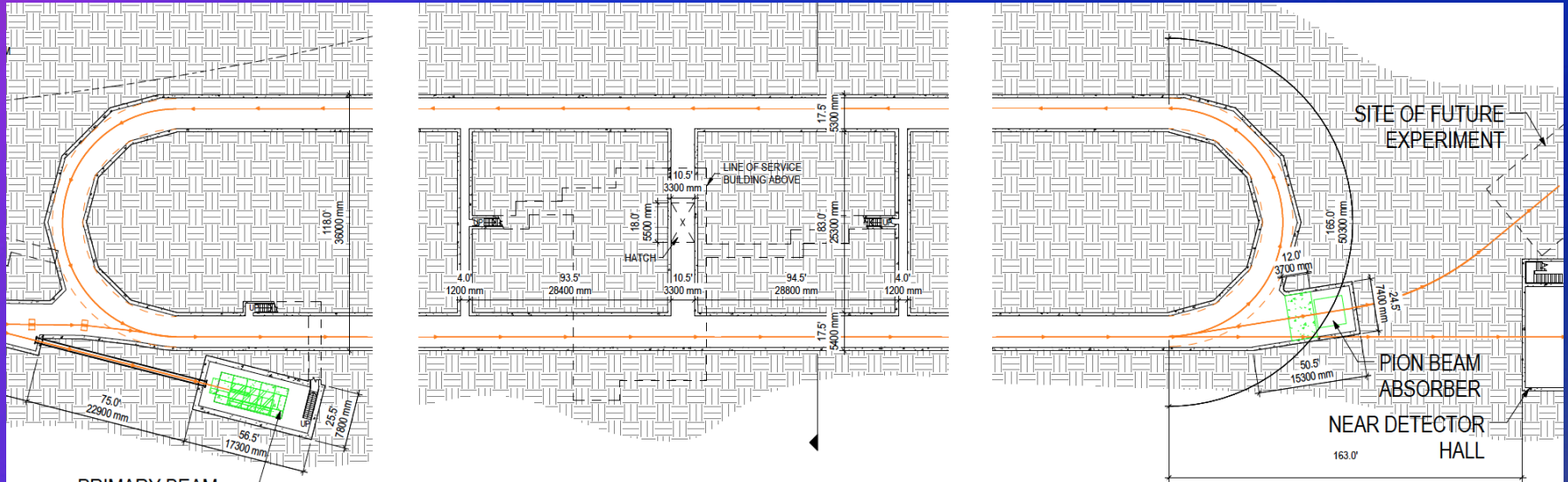
μ Decay Ring:



- The "conventional NF" produces low E pions (300-500 MeV), lets them decay into muons, bunches & phase rotates the μ , cools (sometimes), re-accelerates to the desired E and then injects the μ into the decay ring

nuSTORM

Is not a "standard NF"



Pions are injected into the decay ring
 $5 \pm 1 \text{ GeV}$
 injection produces a ν_μ "flash" from $\pi \rightarrow \mu \nu_\mu$ decay
 along with the ν beam from μ decay
 the ν flux from pion decay is larger

- In nuSTORM, we collect high E pions (5 GeV), transport and inject them into the decay ring, and then the pions decay in the first straight producing muons, some of which are captured by the ring and circulate.
- So there are 3 beams:
 - ν_{μ} from π decay
 - ν_e from μ decay
 - $\bar{\nu}_{\mu}$ from μ decay
- All 3 of these beams produce ν in a useful E range
- Then, in a sense, nuSTORM is a Hybrid NF:
 - Both conventional ν beam & $\bar{\nu}$ beam from μ decay
- But with the nuSTORM pion beam line, it is new: "Neo-conventional"
- We will now learn why.