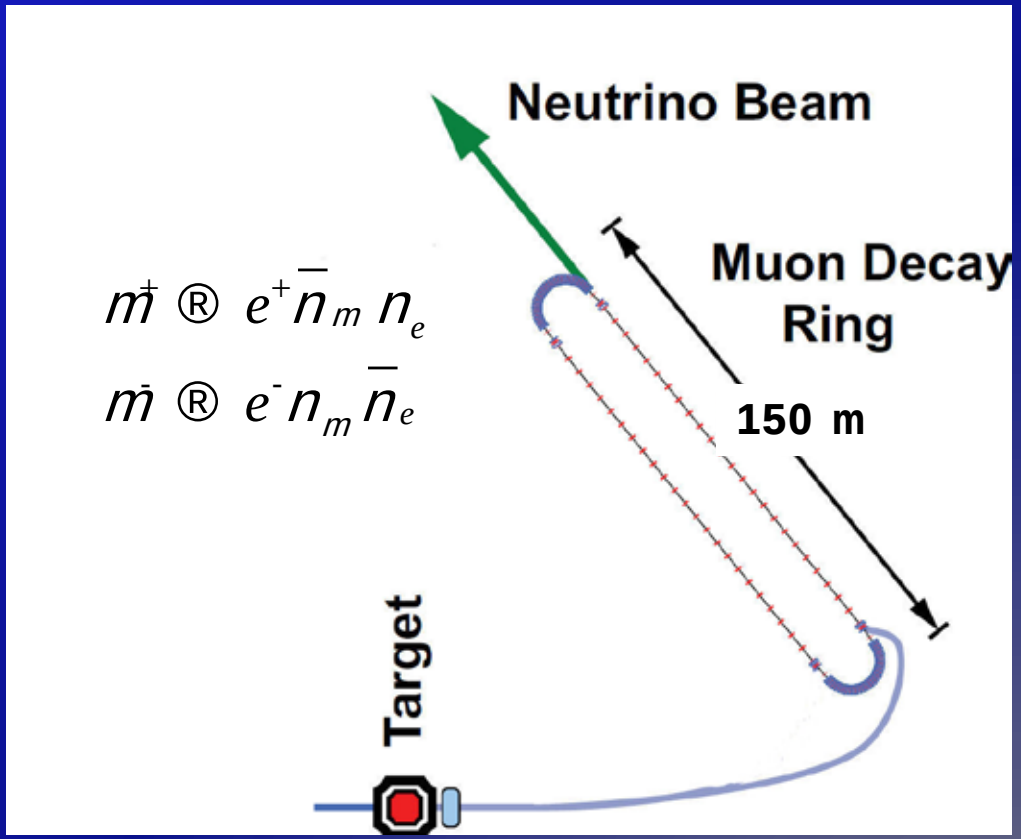
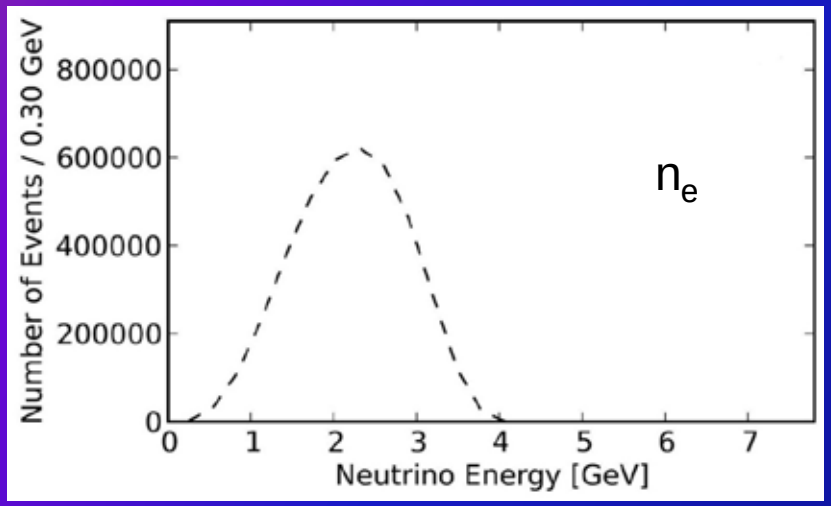
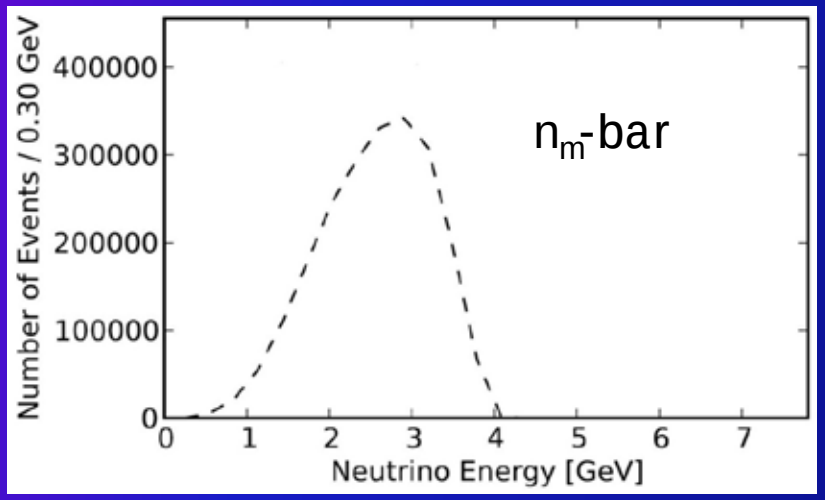
nuSTORM: Facility

- 100 kW Target Station
  - Assume 60 GeV proton
    - Fermilab PIP era
  - Ta target (Heavy metal)
    - Optimization on-going
  - Horn (NuMI) collection
    - Li lens has also been explored
- Collection/transport channel
  - Stochastic injection of p
- Decay ring (3.8 GeV/c)
  - Large aperture FODO
  - Instrumentation
    - BCTs, mag-Spec in arc, polarimeter



E_n spectra (μ stored)





Event rates/100T at ND hall 50m from straight with μ stored

Channel	N_{evts}
$\bar{\nu}_\mu$ NC	844,793
ν_e NC	1,387,698
$\bar{\nu}_\mu$ CC	2,145,632
ν_e CC	3,960,421

nuSTORM: Conclusions

The Physics case:

- Initial simulation work indicates that a L/E » 1 oscillation experiment using a muon storage ring can confirm/exclude at 10s (CPT invariant channel) the LSND/MiniBooNE result
- ν_μ and (ν_e) disappearance experiments delivering at the <1% level look to be doable
  - Systematics need careful analysis
  - Detailed simulation work on these channels has not yet started
- ν physics studies with near detector(s) offer a unique opportunity & can be extended to cover 0.2<GeV<E_ν<4 GeV
  - Could be *"transformational"* w/r to ν interaction physics