Miami talk comments

General comments

- Can afford to lose a slide (~27 mins)
- [x] Conference has very non-neutrino audience → careful with jargon
- [x] General into to osc. experiments → two-detectors
  - Strategy
- [x] A few slides are too much of a wall of text
  - Use spacing and font weights/highlighting to pick out a couple of key points
  - Spacing between bullet points matters
- [x] The bottom red bar is maybe larger than it has to be
- Nice talk overall!

Slide by slide

Slide 1

- [x] Add NOvA logo → white
- [ ] (Capitalise title)
- [x] Show nue and numu

Slide 2

- [x] Too much jargon → re-word to e.g.:
  - Which is the lightest and which is the heaviest of the mass states?
  - What is the muon/tau component in the 3rd mass state?
- [x] May be better to re-arrange theory slides to introduce terms first
- [ ] Could have a jargon explainer slide.
- [x] Start with the "This is NOvA slide"
  - Settled on "NOvA in a nutshell" slide.
- [x] Don't imply that you know there is CP violation → we don't know that there is CP violation in the lepton sector.
- [ ] Personally I like pictures here to tie these things in, probably just say hierarchy or ordering (maybe ordering)

Slide 3 - (1:10)

- [x] Need to fix the distance between text → and equations.
- [x] Commas look like primed symbols
- [x] Footer overlap
- [x] Rogue superscript
- [x] Think how to tie back to previous slide
- [ ] Diagram showing MHs is confusing → no-one has enough time to look at it to be confused.
  - Explain IH rather than showing diagram
- [x] "What we don't know" → change to open Qs

Slide 4

- [x] Can see copy & paste from Alex's slide
- [ ] Put dmsq/ssth23 next to arrows
- [x] Haven't explained that ν_μ beam
  - Intro slide should fix this

Slide 5 - (3:45)

- [x] Audience probably won't know what matter effects are
- [x] Slide is a little dry → could colour code to highlight what you want audience to take away
- [ ] Oscillation diagram: here is the case where you want ν_μ to ν_μ here is the case where you want ν_e to ν_e
  - Erika had some nice graphs
- [x] Tie together with slide 9 (bi-event)
  - Probability formula will change depending on whether nu or anti nu
  - Have two horn current slides straight after bi-event

Slide 6

- [x] New APD pictures
- [x] Move first bullet to intro slide
- [x] Can reduce text
- [x] Technically I think they are separated by 809 km

Slide 7&8 - (5:45)

- Fine

Slide 9 - (8:00)

- [x] This slide could be animated to help flush out these effects, I personally like presenting it this way
- [x] Need to think about how to tell story
- [x] Transition was a bit wierd
- [x] Neutrino beam measure number of events, antineutrino beam number of events → this tells us... about osc. parameters.
- [x] Make a measurement between neutrinos and antineutrinos that allows you to distinguish between these possibilities
- [x] Moving position to after osc params → want to measure params. These params have these features wrt. how nu and antinu appear which is effectively a point in this plot → helps you to distinguish between different oscillation parameter scenarios.
- [x] start with either 1 or 2 ellipses
  - *Rearranged so starting from points*
- [x] Just shown probability equations → tie it back into this
- [x] Arrows and colour coordination would help here

Slide 10

- [x] Big picture!
- [x] You don't choose what is important, the network learns
- [x] Convolution → operating on things that are image-like
- [x] Train on MC
- [x] Advantages:
  - Don't need to do reco before feeding stuff to the network
  - You don't get to decide what is important
  - Image-like stuff

Slide 11 - (10:55)

- Moved to backups*
- [x] Don't use the word tune/tuning → jargon
- [x] Transition is awkward
  - Re-ordered to lead on from 2-detector slide → follows nicely
- [x] Text doesn't help
  - NOvA ND data drives this process
- [x] "Theoretical input..."

  - Means that we do...
  - Don't use Valencia or RPA

- [x] "Data-driven inputs..."
  - Increase DIS
  - Add an additional component for correlated interactions inside the nucleus
  - These jargon-y words won't mean anything to people

- [x] Thing that is missing that will help is a how do you do a long baseline experiment slide → two detector technique

Slide 12

- [x] Drop this slide completely
  - Moved to backups

Slide 13 - (13:10)

Moved to back-ups

- [x] We don't fit the ND MC to the data - I think you said this when explaining the extrapolation
- [x] Think about how best to present this

Slide 15

- [x] HadE "fraction" not resolution
- [x] Don't like flow-chart

Slide 16 - (16:30)

Slide 18 - (18:00)

Slide 19

- [x] I think the nue BDT is only applied to the peripheral sample

Slide 20 - (19:20)

Slide 21

- [x] Fix the observed numbers

Slide 23 - (22:00)

- [x] Do you want to say "detector systs are dominant" - you mean "out of all systs, detector syst are dominant" not "systs are dominant over stats" which is how I first took it

Slide 24

- [x] Slight preference better than "prefer"
- [x] Hierarchy is about 1.8 sigma but not FC corrected

Slide 25 - (23:30)

- [x] I think you can use the updated version of this plot with the nu18 results

Slide 27

- [x] 3 sigma sensitivity to octant of theta23, not value $\rightarrow$ we know it exists
- [x] Antineutrino mode to *early* 2019
- [x] Add spacing between bullets

Slide 28 (26:20)

- [x] Add conclusions!