

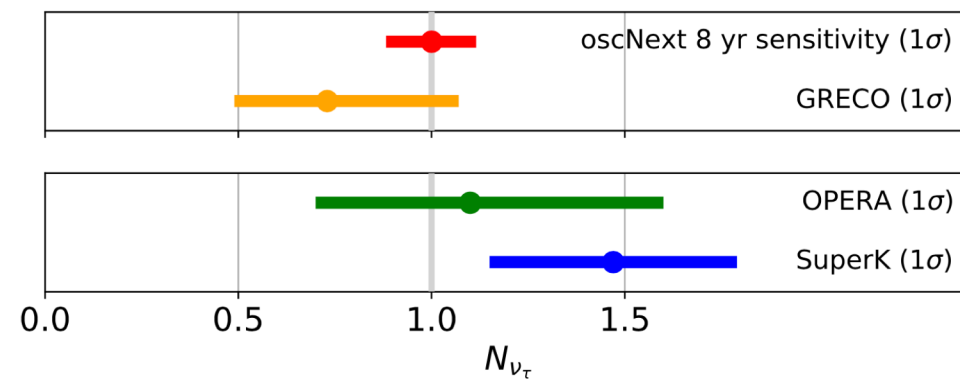
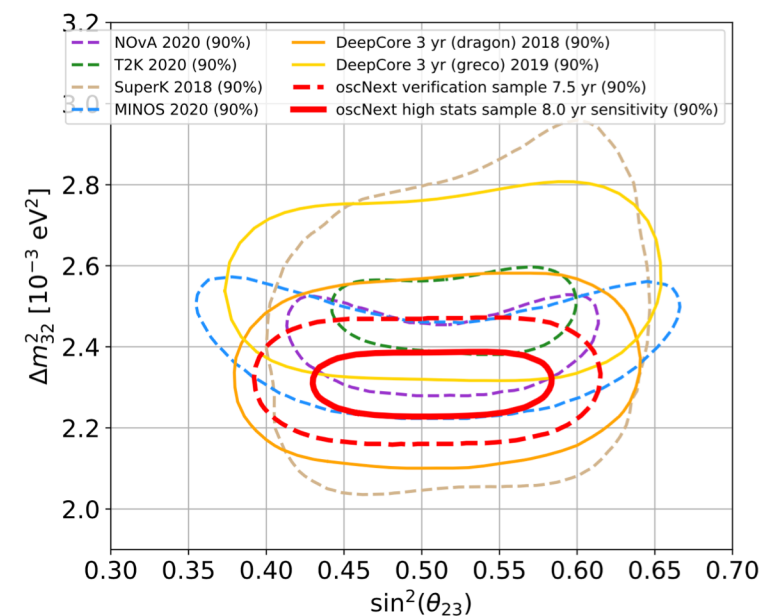


# Current and near future plans

Tom Stuttard

# oscNext

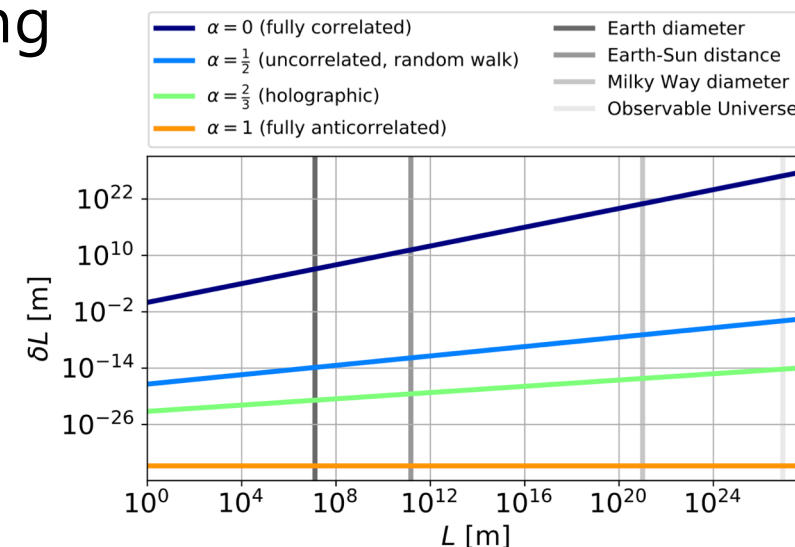
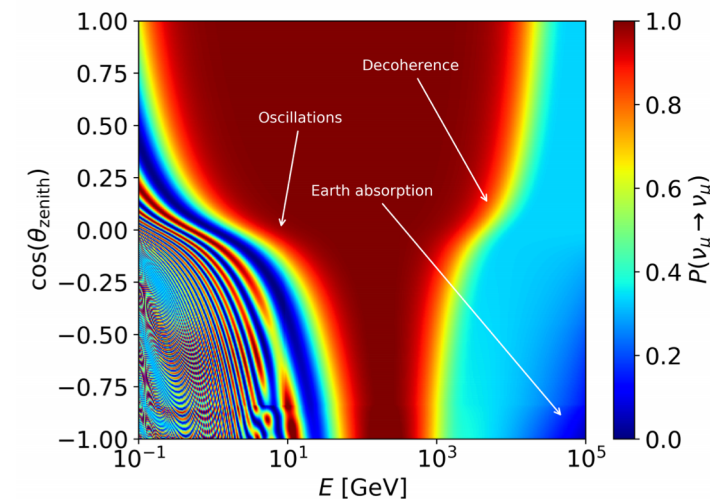
- Next generation neutrino oscillation measurement
  - $\geq$  long baseline accelerator  $\nu_\mu$  disappearance precision
  - World's best  $\nu_\tau$  appearance precision
- Event sample finalised  $\rightarrow$  review underway ([docs](#))
- Now finalising analysis:
  - Systematics
  - Muon template
  - Analysis tests
- Aiming for blind fits in coming weeks
- SPE template issue in MC GCD is a concern





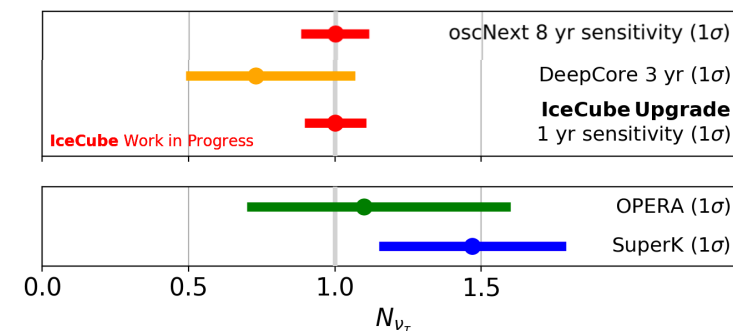
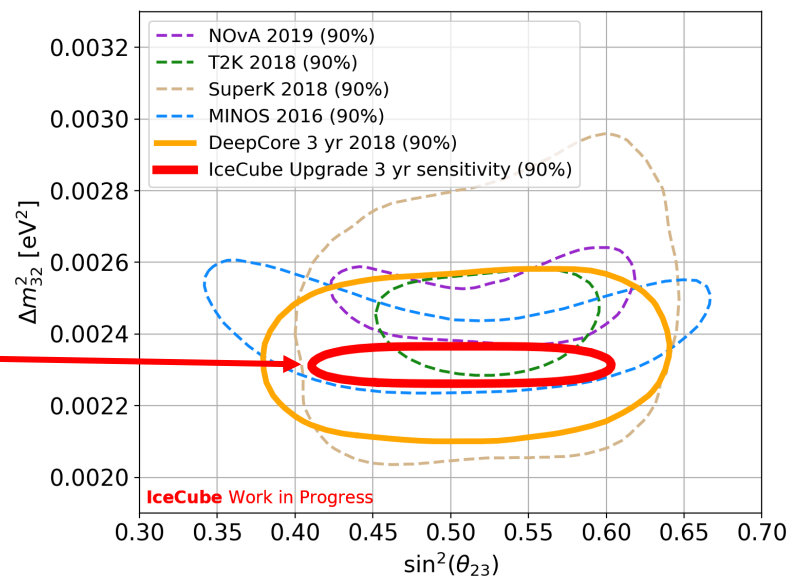
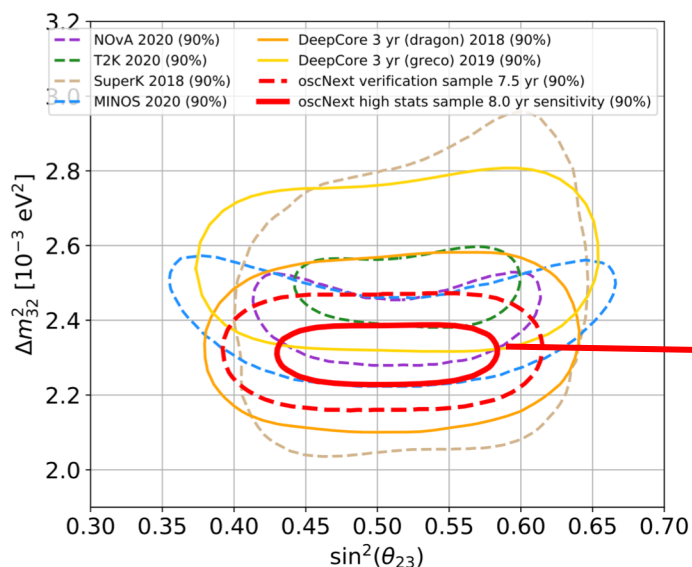
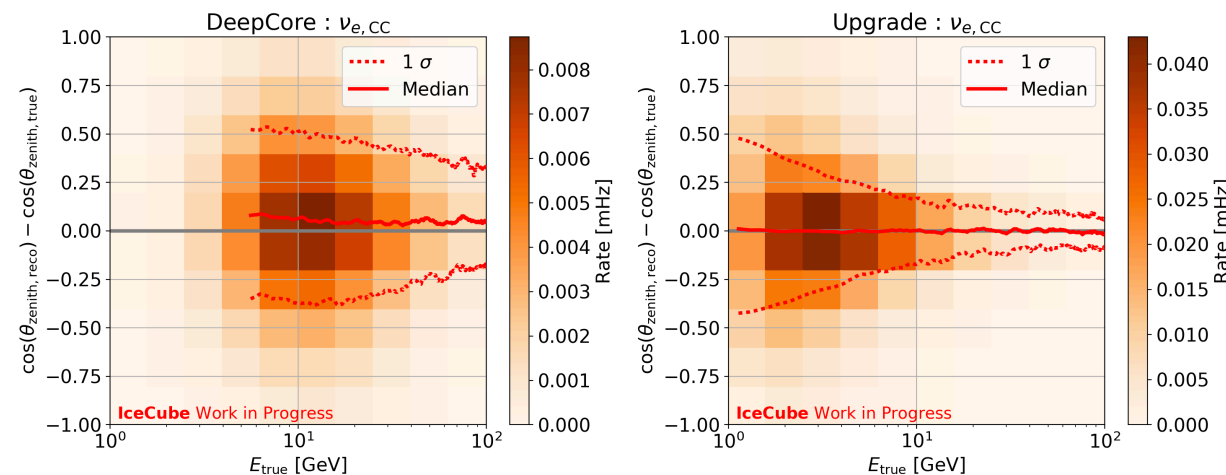
## BSM physics

- Will measure neutrino decoherence with oscNext once oscillation analyses unblinded
  - Also with MEOWS (collab. with UTA)
- Writing theory paper on decoherence from lightcone fluctuations
- Looking at other potential BSM scenarios in coming weeks ahead of grant applications this year
  - Quantum entanglement
  - CPT violating oscillations
  - Directional Lorentz invariance violation



# Upgrade

- Two main goals (by Summer):
  - Updated oscillation sensitivities
  - “As designed” detector MC
- Key needs:
  - Working track+cascade reco
  - Better OM/readout simulation
  - Analysis updates





# Publications/milestones

- Funding applications start in Spring
  - DFF Sapere Aude + Project 1
  - Villum YI
  - ERC YI
- Upgrade work → Summer
- Planned publications this year:
  - oscNext disappearance
  - oscNext appearance
  - oscNext+MEOWS decoherence
  - Lightcone fluctuations phenomenology
  - Upgrade physics potential
  - Low energy reconstruction in IceCube/DeepCore
  - Seasonal variations of the atmospheric neutrino flux?

