UPDATING STANDARD PLOTS

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LBPWG Meeting

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Discussion

- Last discussion of plot update in LBPWG mtg on 26 September 2016: https://indico.fnal.gov/conferenceDisplay.py?confId=12974

- These slides show proposed content and format for plot updates
  - Assumes CDR optimized beam (do we want to re-do these when engineered beam is available?)
  - Width of bands show impact of external oscillation parameter constraints
  - Staging assumes technically limited beam upgrade schedule
  - Standard exposures are 7, 10, 15 **years** assuming nominal staging
  - Exposure plots are still in kt-MW-years

- November 2016 NuFit has reduced uncertainty on θ_{13} relative to CDR fits (which used NuFit 2014)
  - Policy was not to change any content – just how it is presented. So I have used the NuFit 2014 constraint as in the CDR for the fits. Should rethink label "All 2016 constraints."

- Please send feedback to Elizabeth, Mayly, and Matt by January 15

- Plots will be finalized and released for public talks at January collaboration meeting
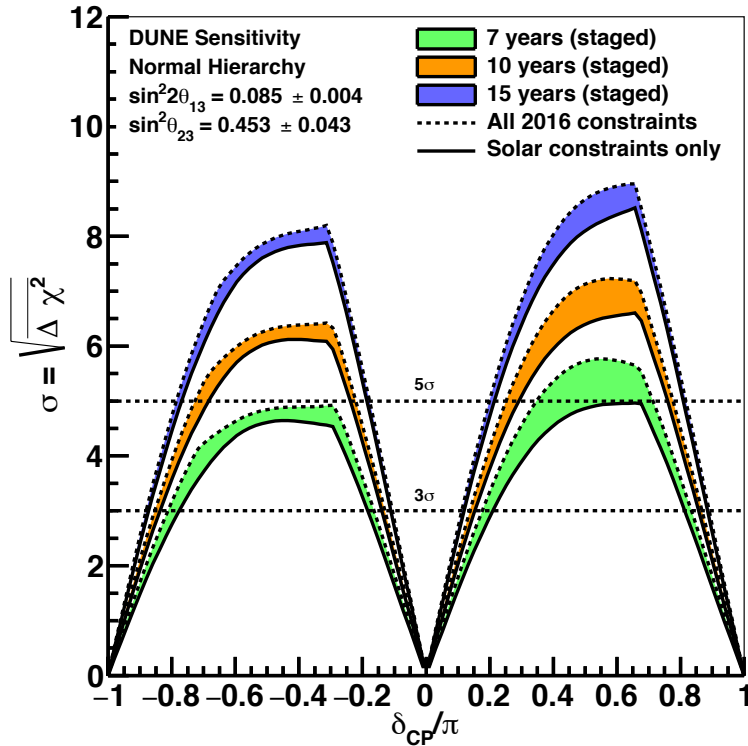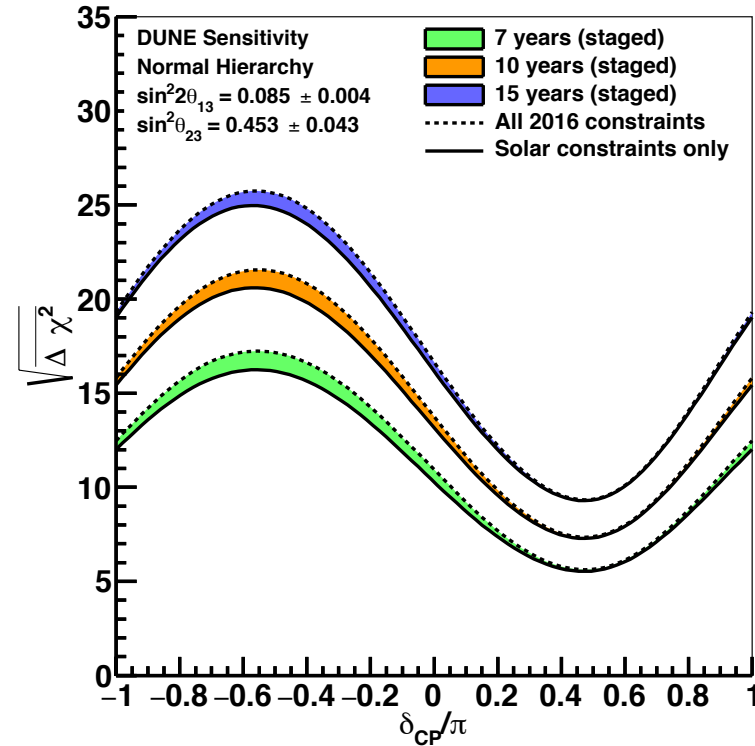
Staging Assumptions

- Year 1 (2026): 20-kt FD with 1.07 MW (80-GeV) beam and initial ND constraints

- Year 2 (2027): 30-kt FD

- Year 4 (2029): 40-kt FD and improved ND constraints

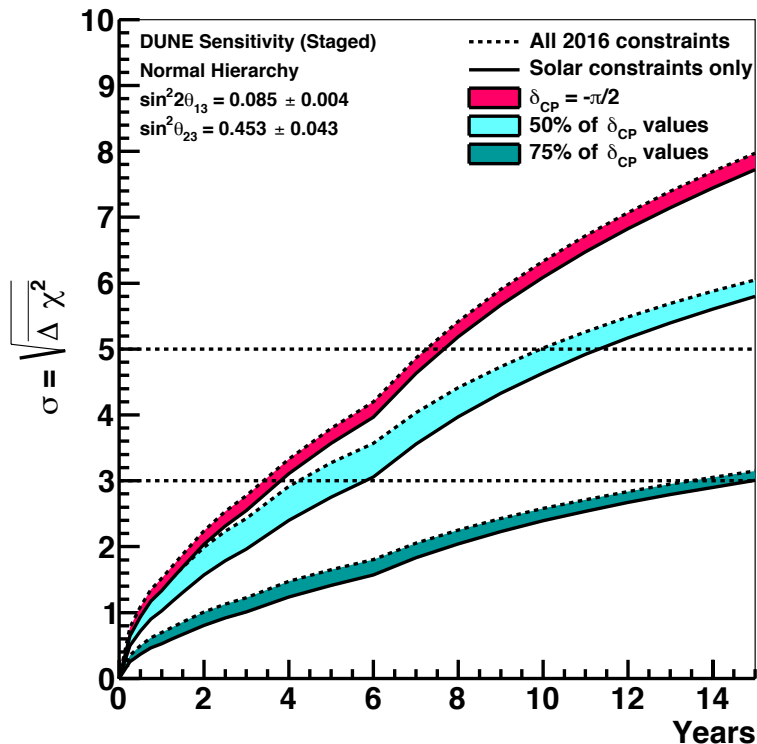- Year 7 (2032): upgrade to 2.14 MW (80-GeV) beam (technically limited schedule)
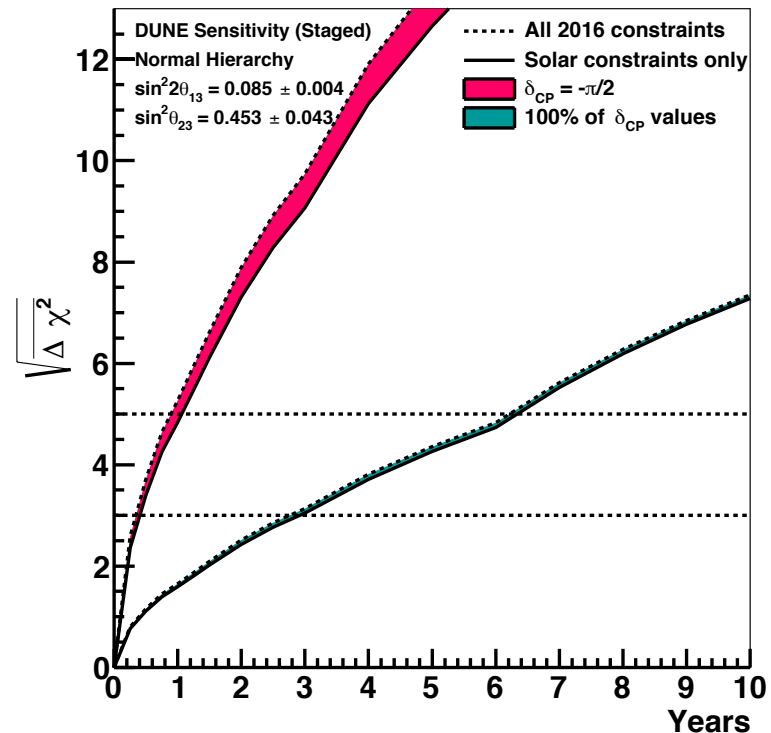
Standard Sensitivity

Notes: Width of the band shows the impact of external constraints. Three exposures (7, 10, 15 years) are in staged **years**, assuming the nominal mass and beam staging.
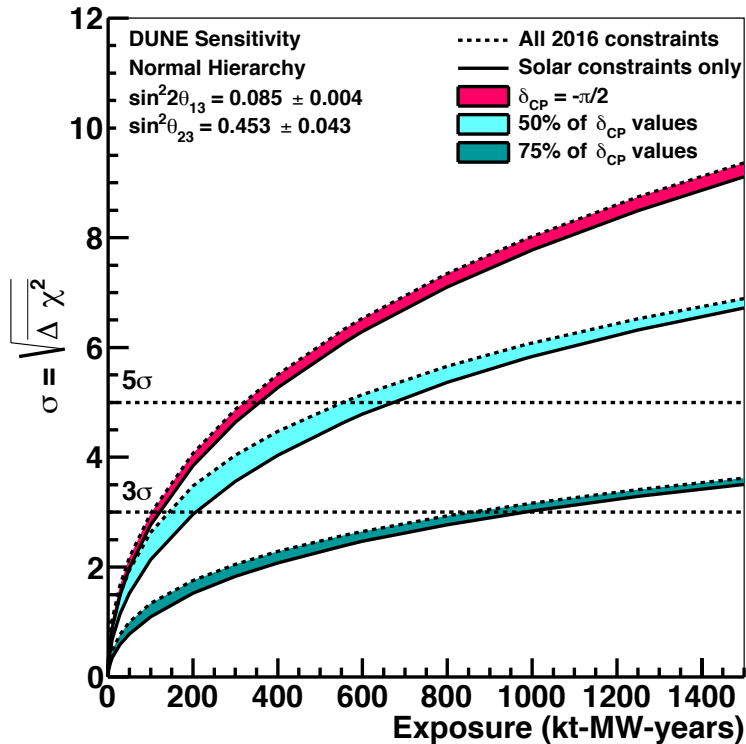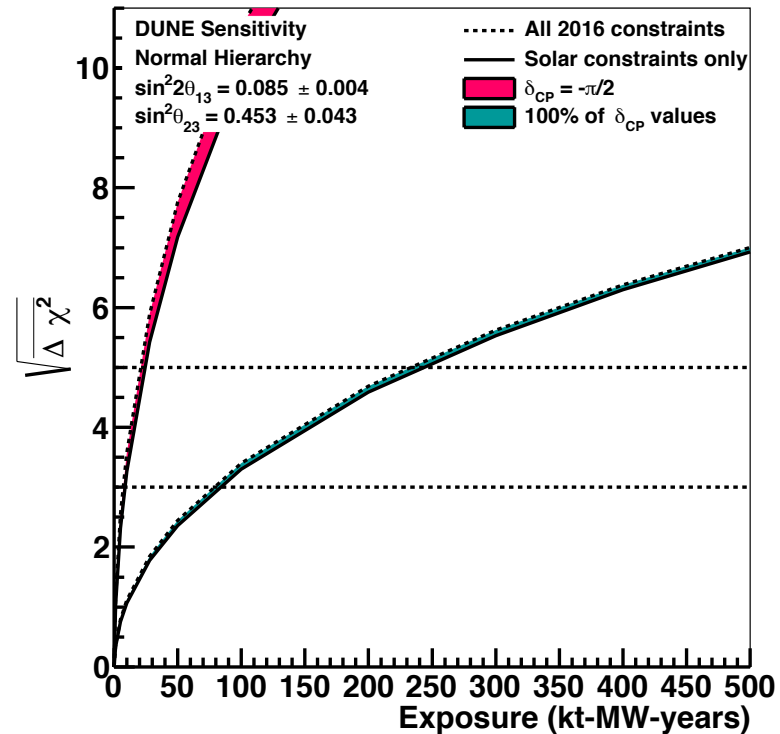
Staging Plots

Notes: Width of the band shows the impact of external constraints. Exposure is in **years** assuming nominal mass and beam staging. CPV plot shows $\delta_{CP} = -\pi/2$, 50% of δ_{CP} values, and 75% of δ_{CP} values on single plot. MH plot shows $\delta_{CP} = -\pi/2$ and 100% of δ_{CP} values. MH plot has **different** x axis from CPV plot.
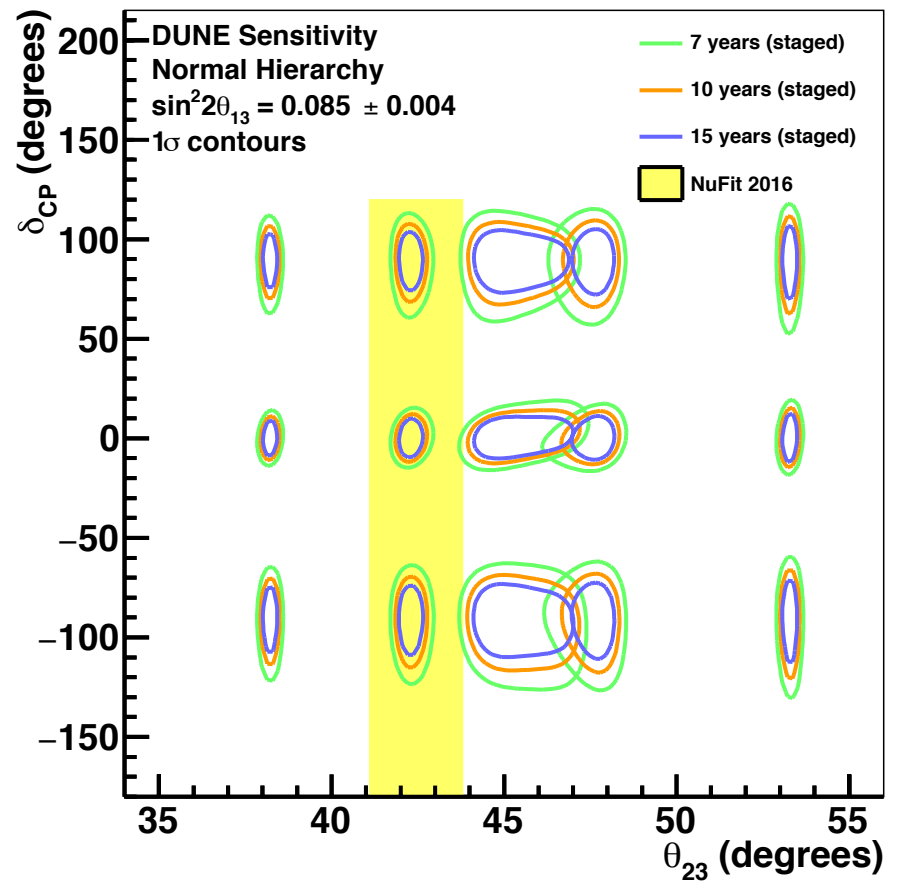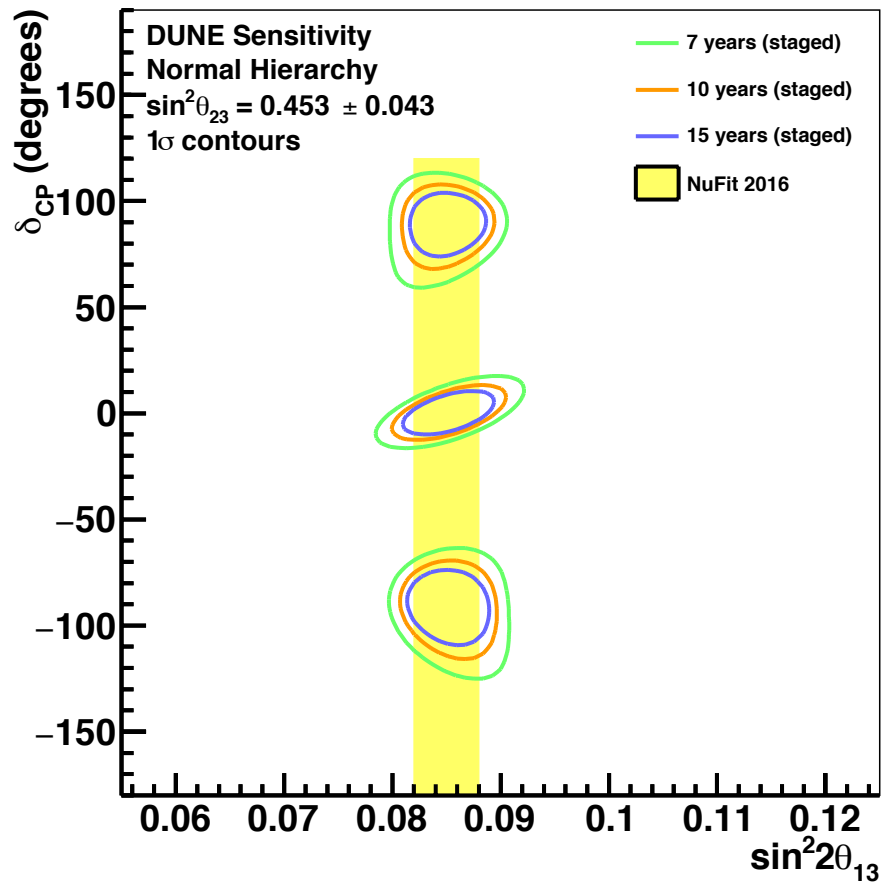
Exposure Plots

CP Violation Sensitivity

MH Sensitivity

Notes: Width of the band shows the impact of external constraints. Exposure is in kt-MW-years as before. CPV plot shows δ_{CP} = -π/2, 50% of δ_{CP} values, and 75% of δ_{CP} values on single plot. MH plot shows δ_{CP} = -π/2 and 100% of δ_{CP} values. MH plot has **different** x axis from CPV plot.

Bubble Plots

Remaining To Do

- A little cleanup to make labeling more uniform
- Implement any feedback
- Make matching IH plots (only NH done so far)
- Same update for octant sensitivity and resolution plots