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Asimov comparisons with different dcp values

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Overview

- Asked to study three new Asimov points by OA
- All based on point 1/A but with different values of dcp (see below)
- Energy spectra and Asimov contours with and without RC generated for each point
- All plots shown below marginalise over the two mass hierarchies

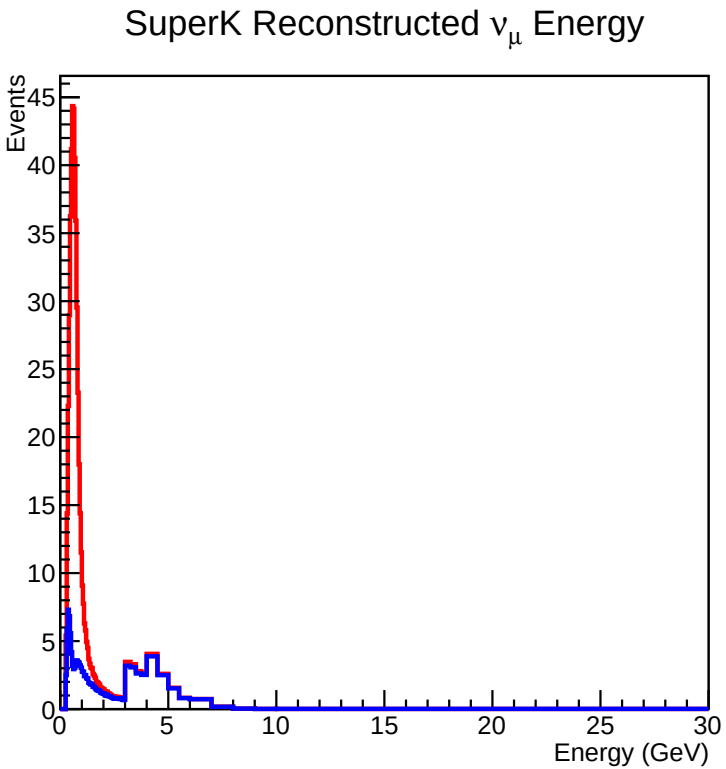
Set	A	C	D	E
$\sin^2(\theta_{12})$	0.304			
$\sin^2(\theta_{13})$	0.0217			
$\sin^2(\theta_{23})$	0.528			
Δm^2_{12}	7.35e-05			
Δm^2_{23}	0.002509			

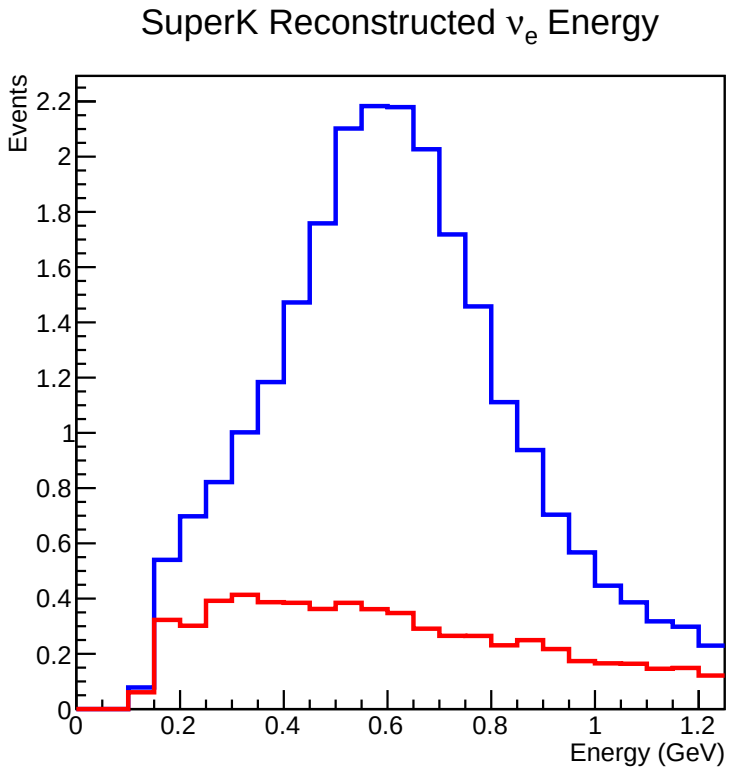
Energy Spectra

Energy spectra - Asimov C ($\delta_{CP} = 0$)

unoscillated

oscillated

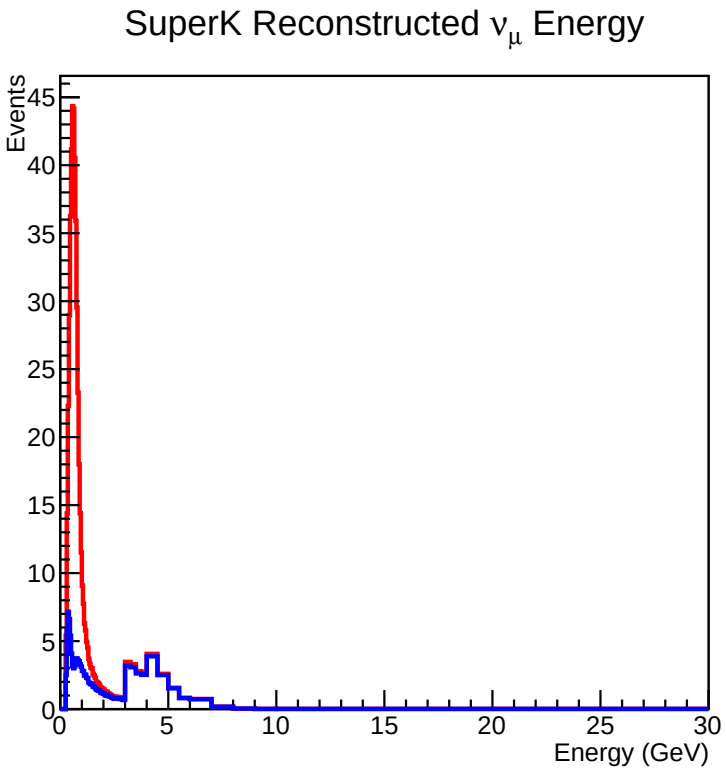


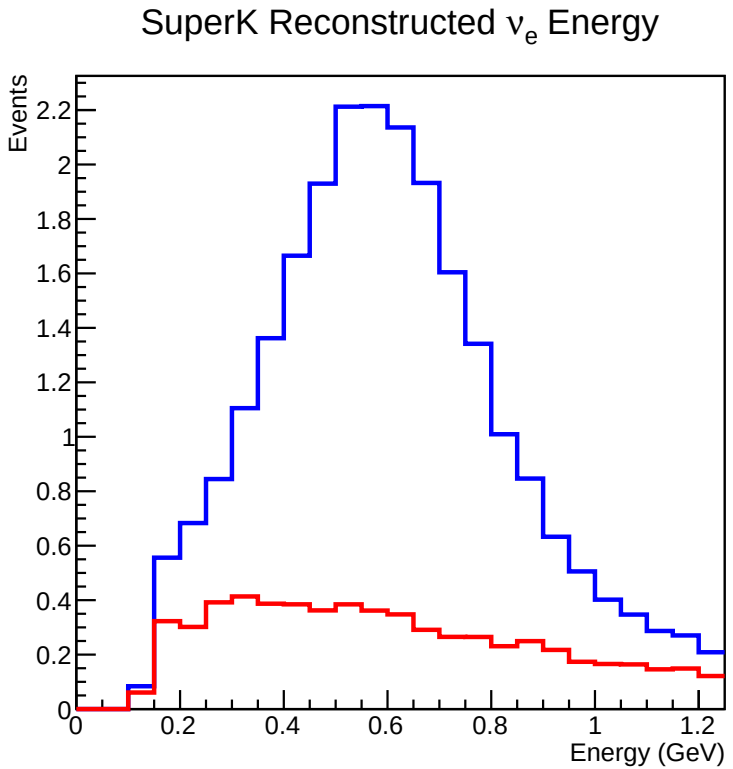


Energy spectra - Asimov D ($\delta_{CP} = \pi$)

unoscillated

oscillated



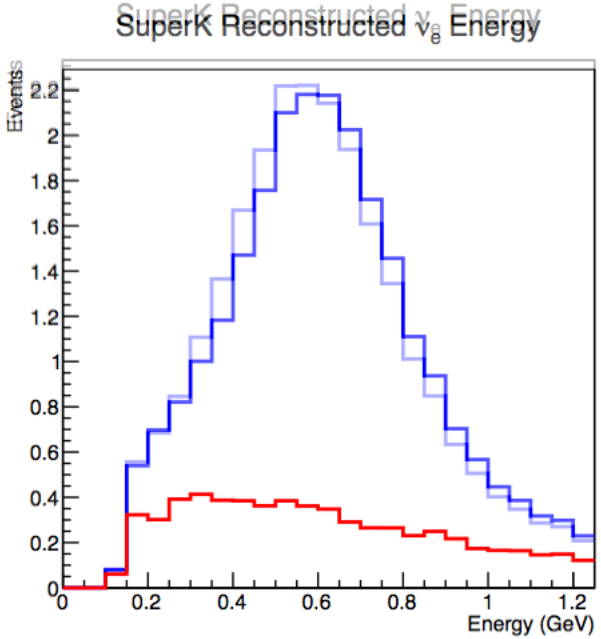


Energy spectra - CP conserving (C and D)

unoscillated

oscillated $\delta_{CP} = 0$

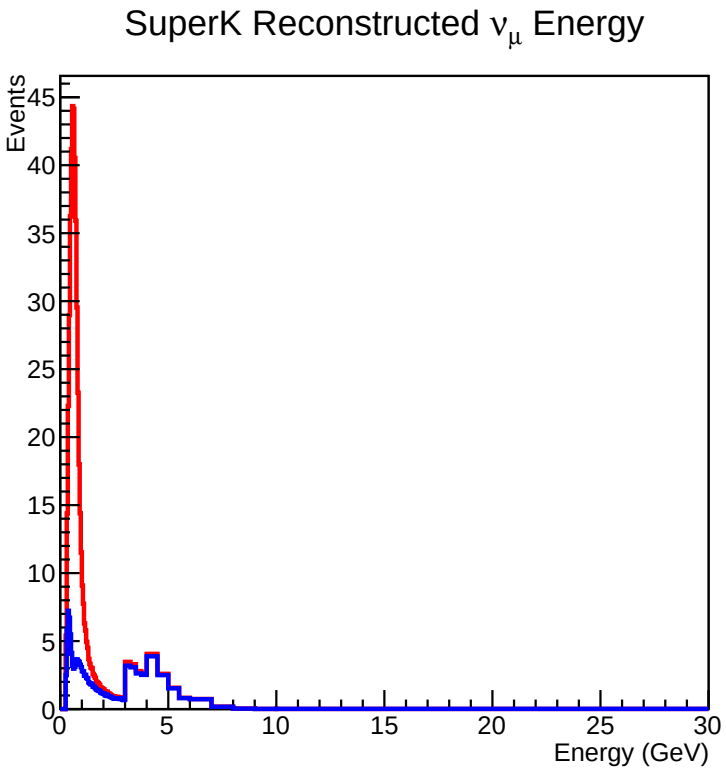
oscillated $\delta_{CP} = \pi$

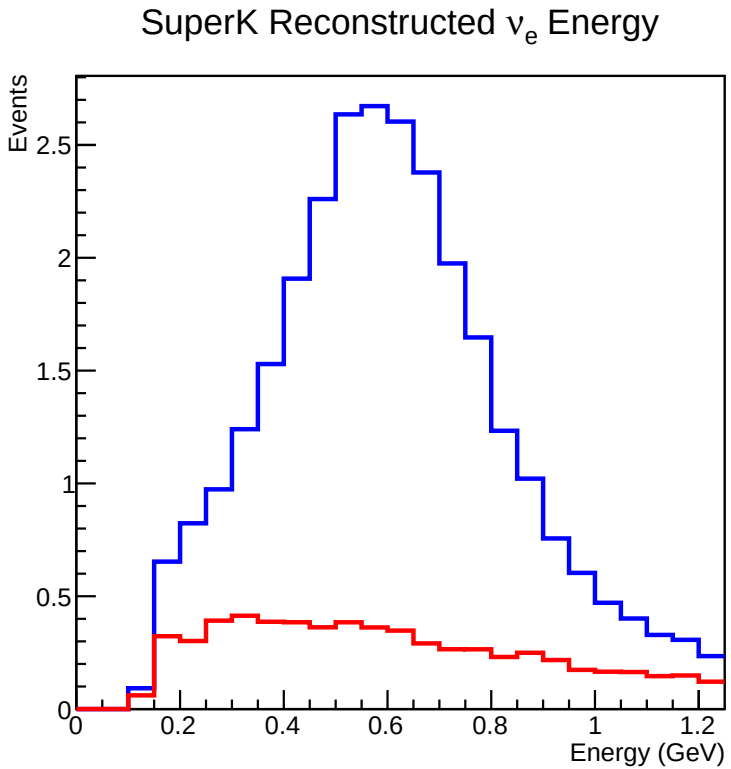


Energy spectra - Asimov A ($\delta_{CP} = -1.601$)

unoscillated

oscillated

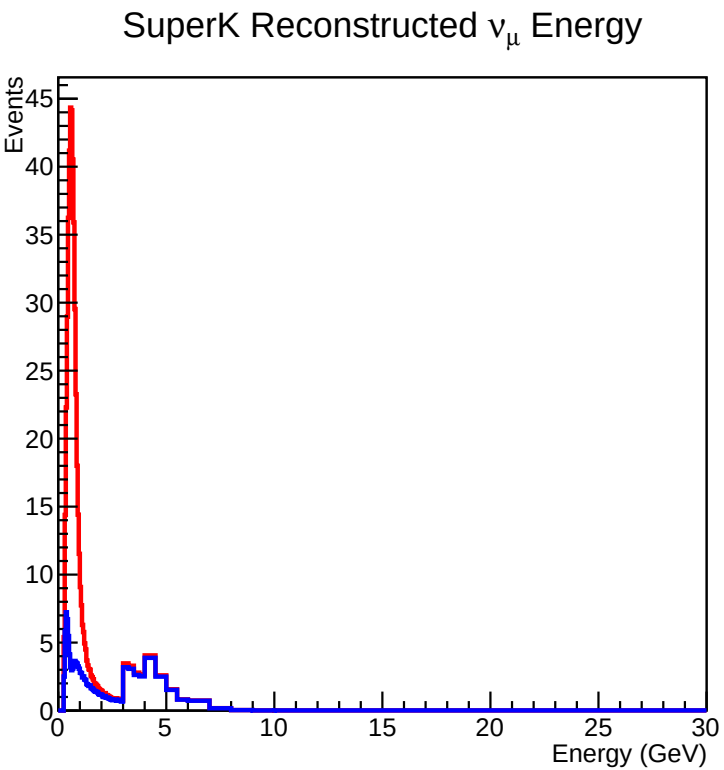


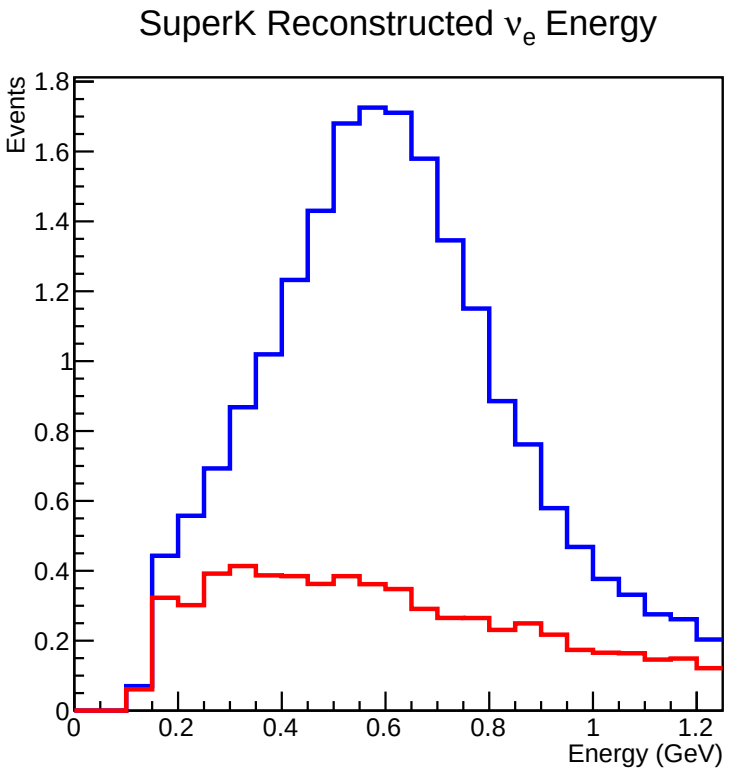


Energy spectra - Asimov E ($\delta_{CP} = \frac{\pi}{2}$)

unoscillated

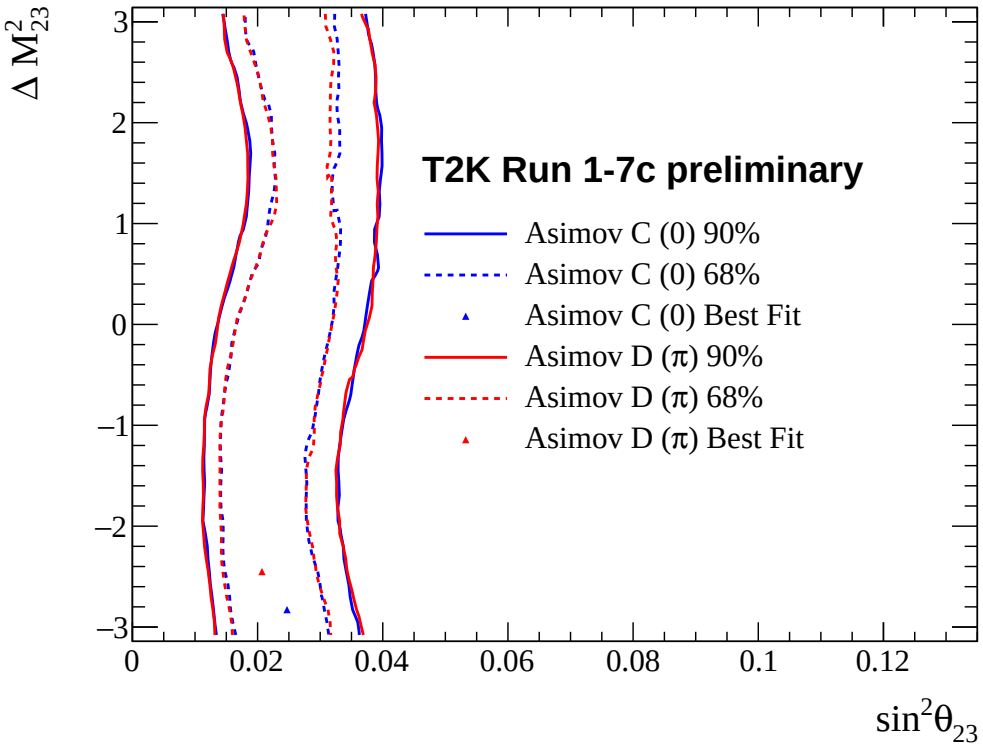
oscillated



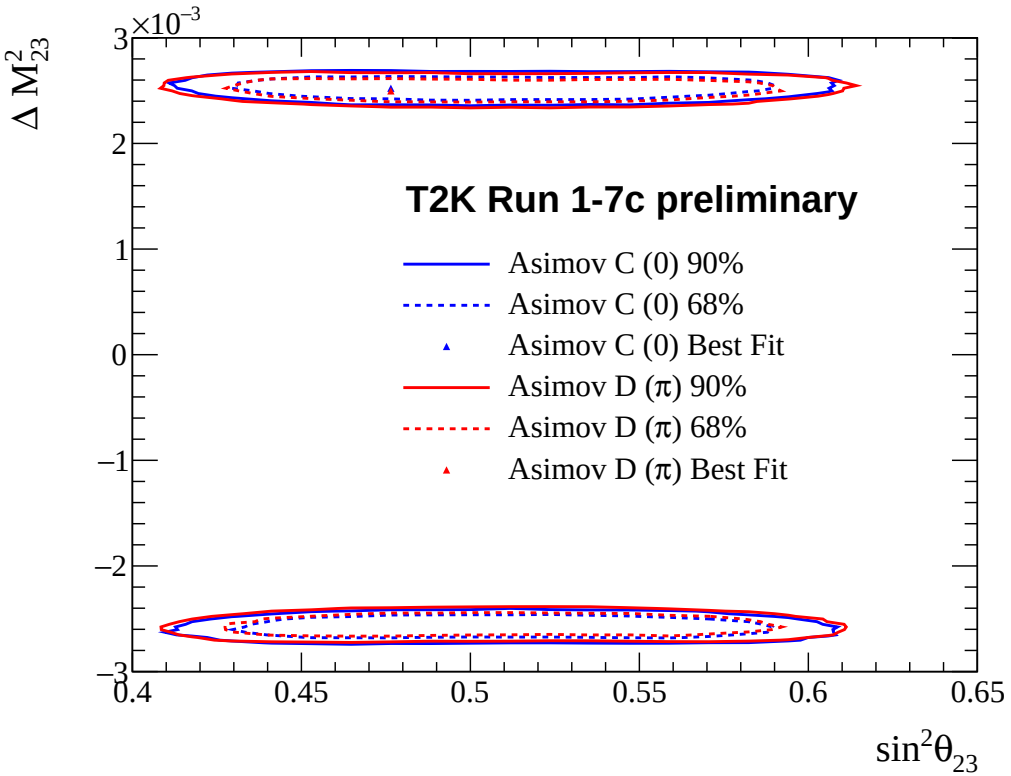


woRC contours

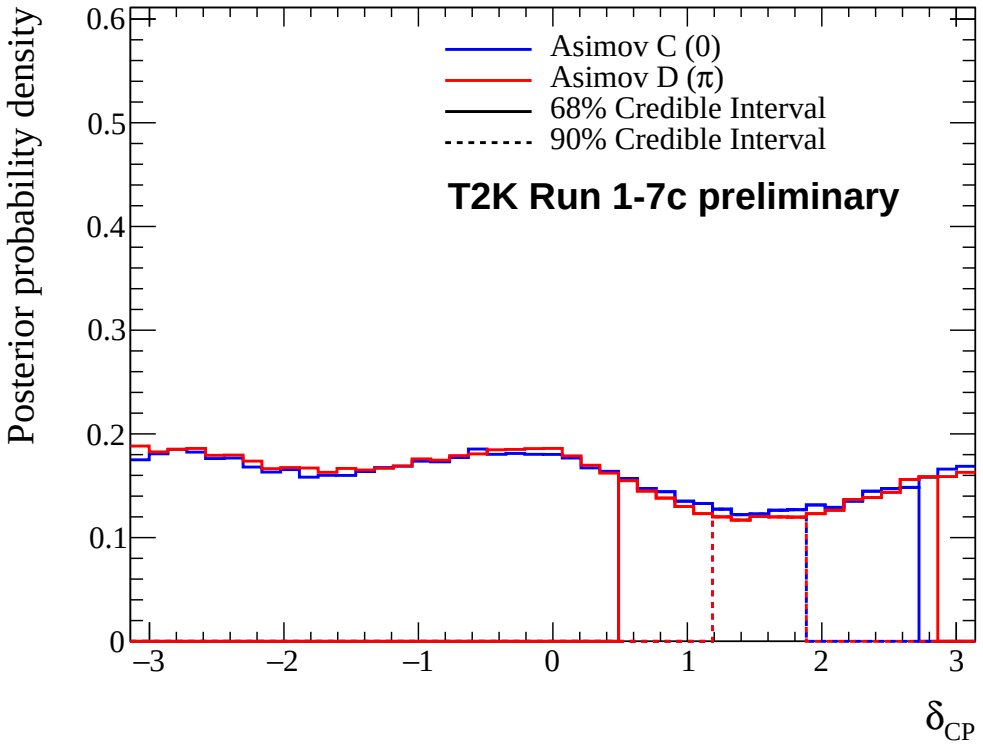
CP conserving sets - woRC appearance parameters



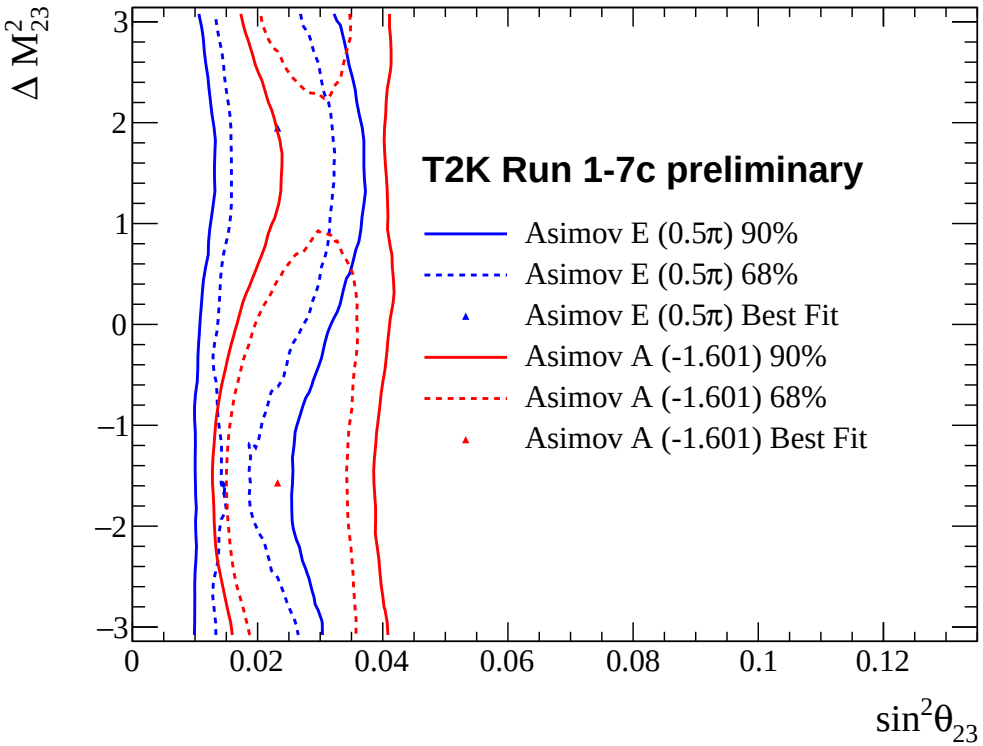
CP conserving sets - woRC disappearance parameters



CP conserving sets - woRC dcp

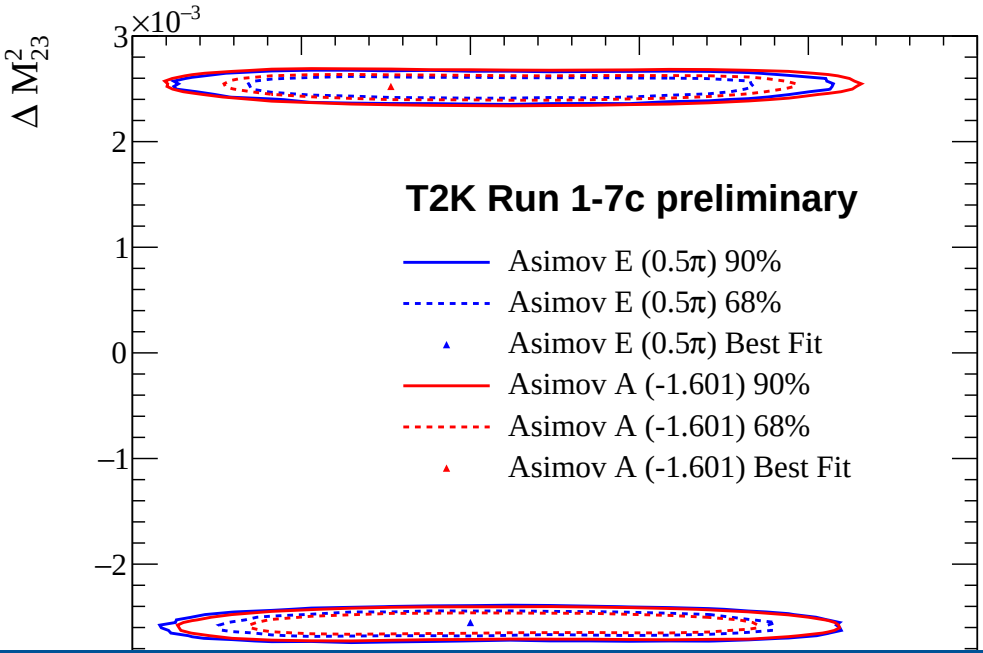


CP violating sets - woRC appearance parameters

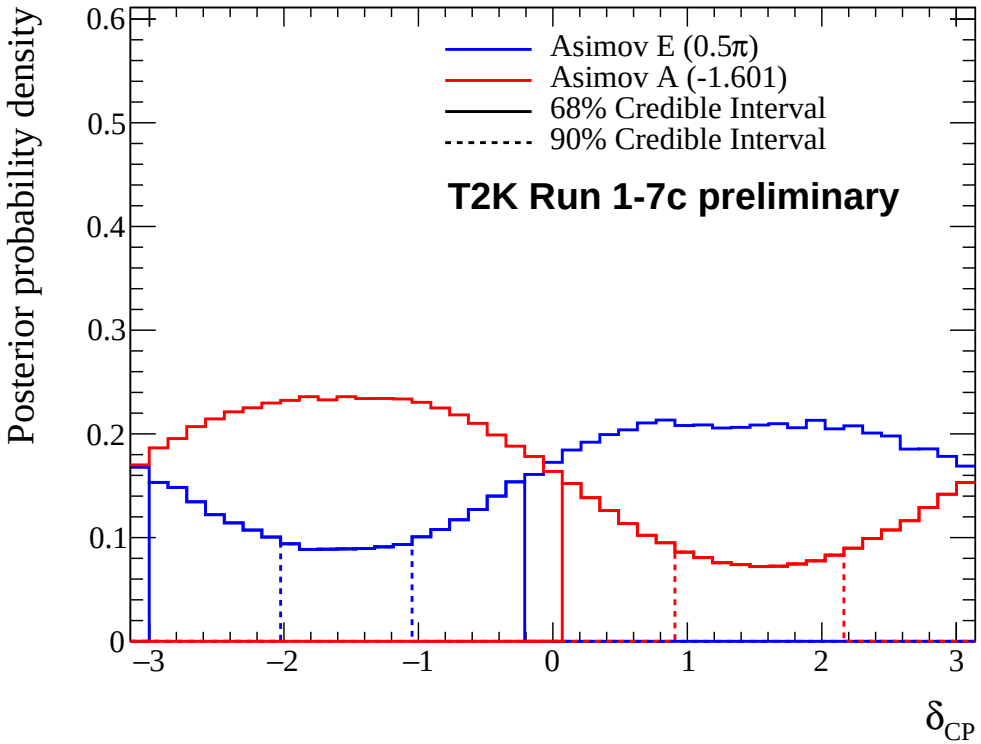


CP violating sets - woRC disappearance parameters

- Differences seen here seem to be due to $\delta_{CP} = \pi$ fit choosing wrong mass hierarchy
- Confirmed in contours where only one hierarchy is considered where differences are smaller (see backup)

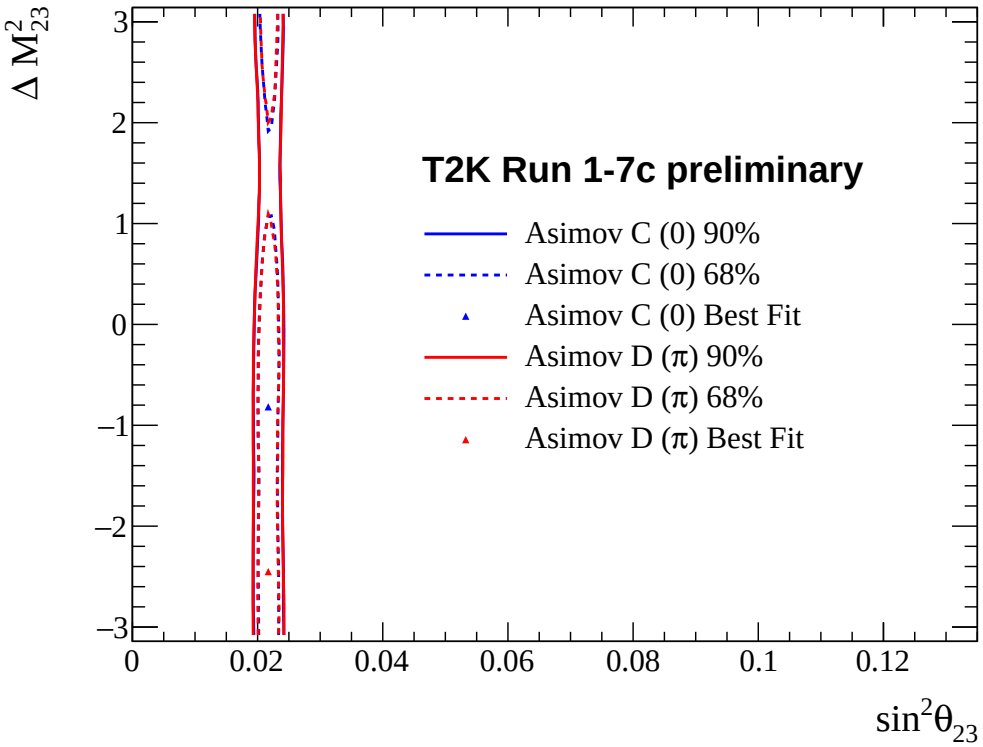


CP violating sets - woRC dcp

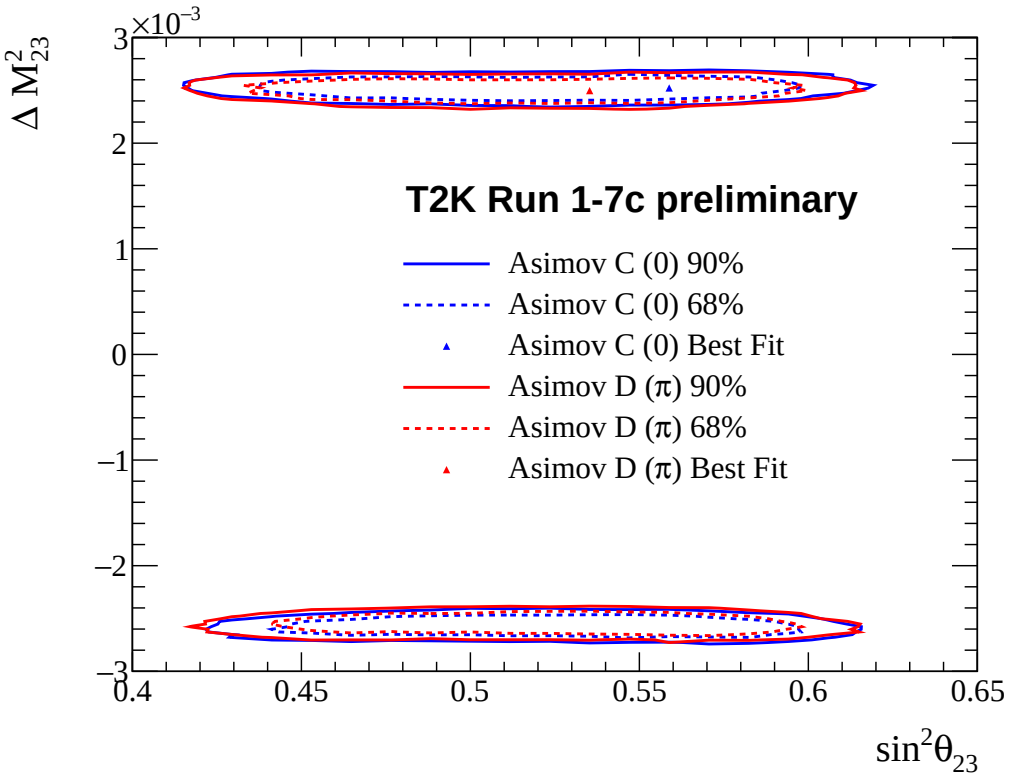


wRC contours

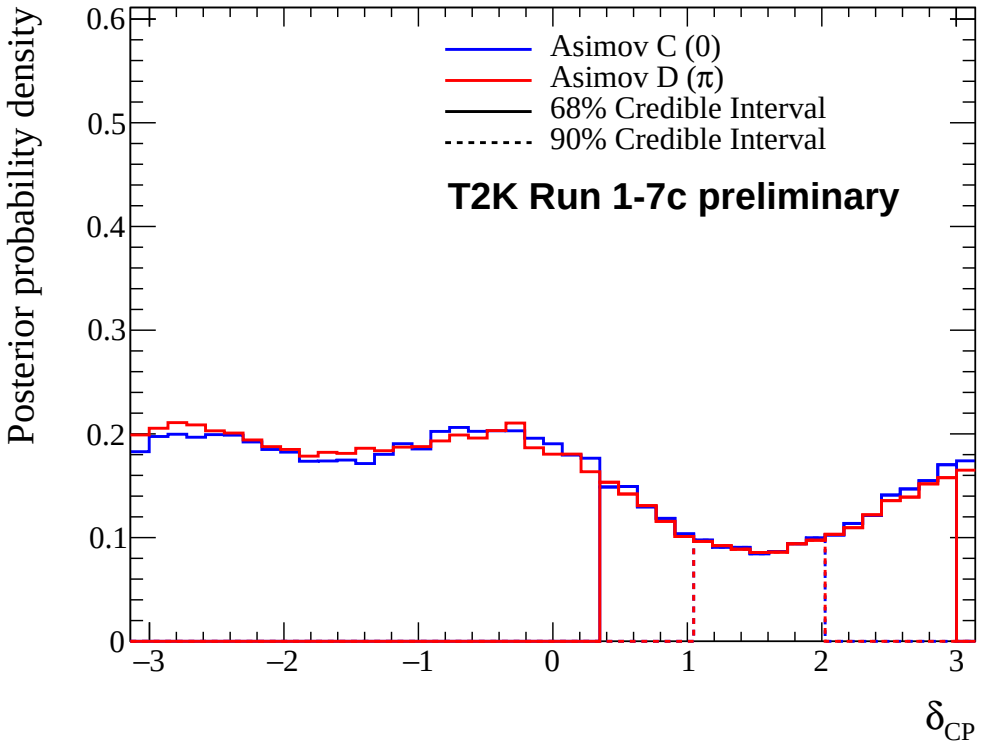
CP conserving sets - wRC appearance parameters



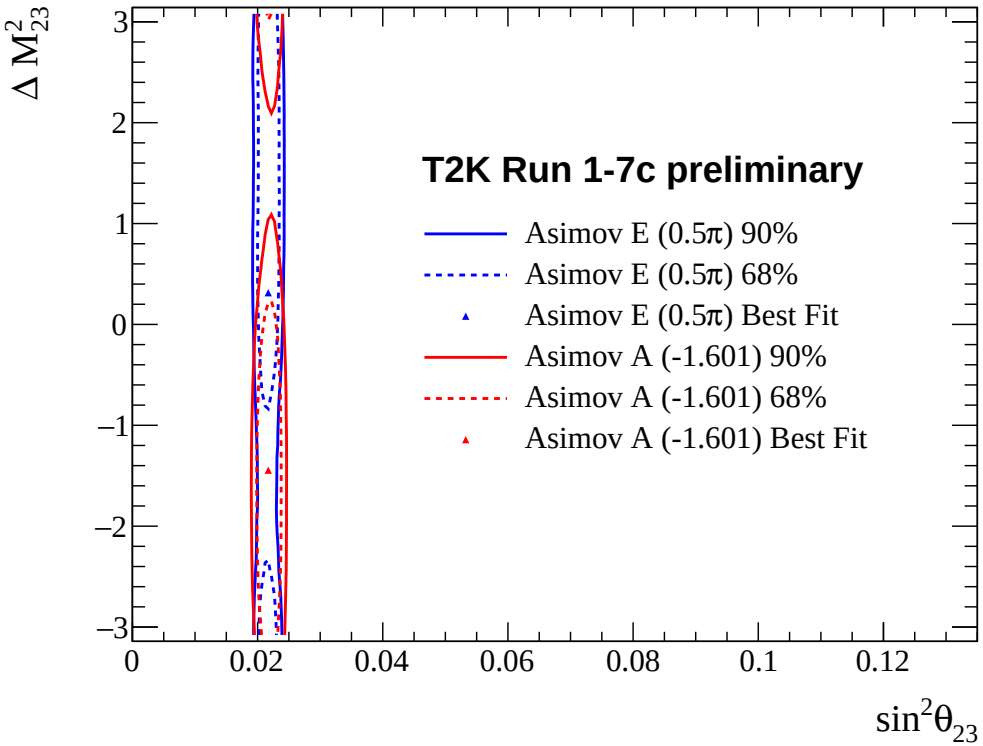
CP conserving sets - wRC disappearance parameters



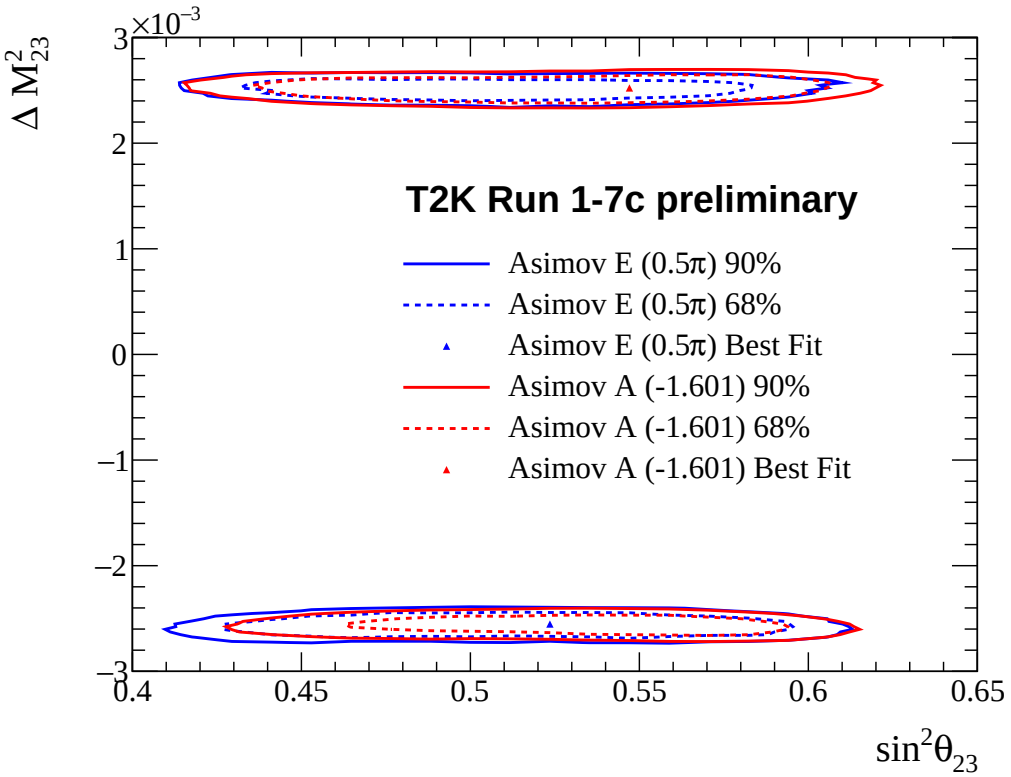
CP conserving sets - wRC dcp



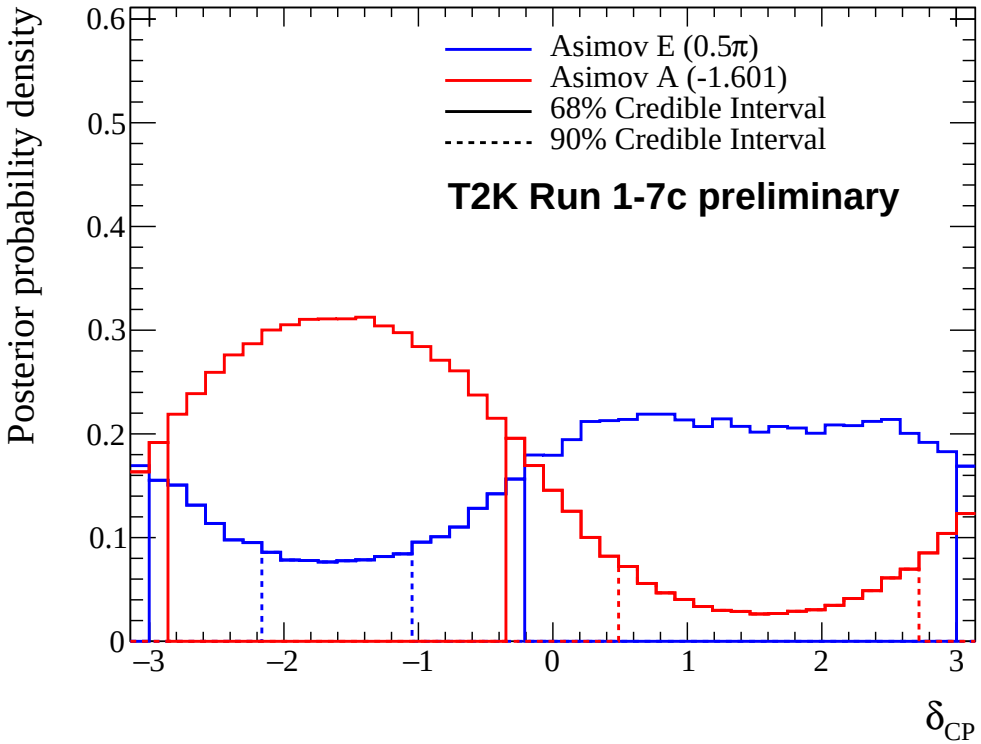
CP violating sets - wRC appearance parameters



CP violating sets - wRC disappearance parameters



CP violating sets - wRC dcp



- Little difference between CP conserving asimovs
  - Spectra are very similar (see right
- CP violating Asimovs show tighter exclusions for -1.601 than $\frac{\pi}{2}$
  - This is due to there being a lot more ν_e events for -1.601 than for $\frac{\pi}{2}$
- wRC being processed now

Backup

CP violating sets - woRC disappearance parameters NH & IH separately