Imperial College London

MaCh3 status and plans

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for the MaCh3 group

Overview

- Leïla updated on Run 1-7 5 sample status
- Preparation for main summer analysis
- New things we're working on

Preparations for the summer: Analysers and baseline

- Planned baseline analysis is 5 sample+ND280 joint fit with new Xsec parameterisation
- Leïla, Clarence and Patrick (me) will be the main analysers for this
  - Leïla has to graduate at some point this summer
  - We also have Elder and Kirsty in the group able to help

Preparations for the summer: Framework

- Turnaround from final inputs to results is about 1 week each for Asimov fits and data fits
- Notes from Clarence about framework streamlining

Preparations for the summer: New Xsec parametrisation

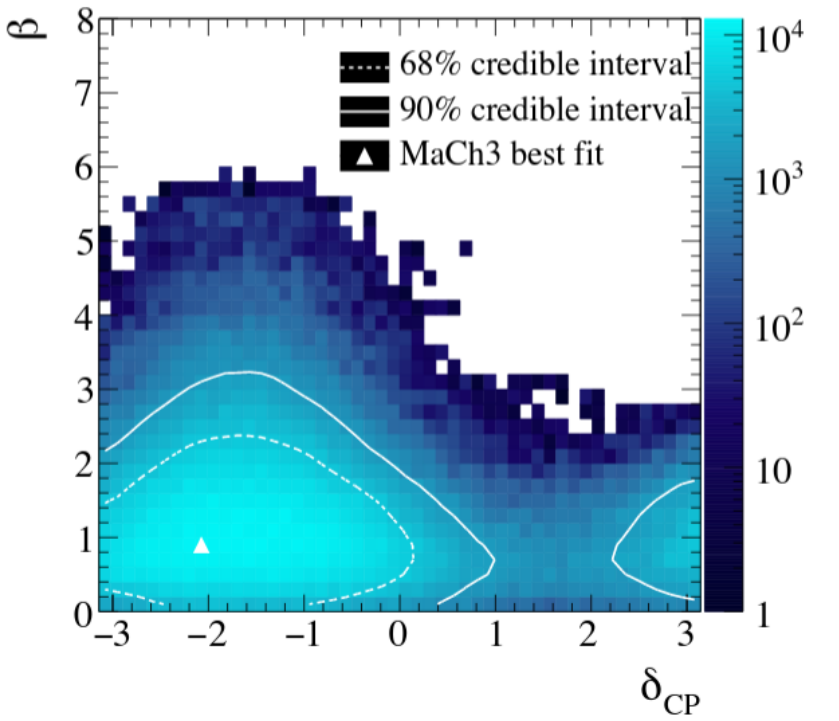
- Parameters are implemented in our ND280 (Clarence) and SK (Kirsty) code to the extent they're final
  - BeRPA implemented event-by-event already
- I'm waiting for freeze of parameters for spline production and SK implementation of spline parameters (see other talk)

fitQun CC1π: Elder

- Working on adding fitQun numu pion ring samples
- Aiming for stats only analysis in the next few weeks
- Will then add FSI+SI covariance matrix (with current implementation) as a conservative approach
- Also, working on preparing splines for this sample

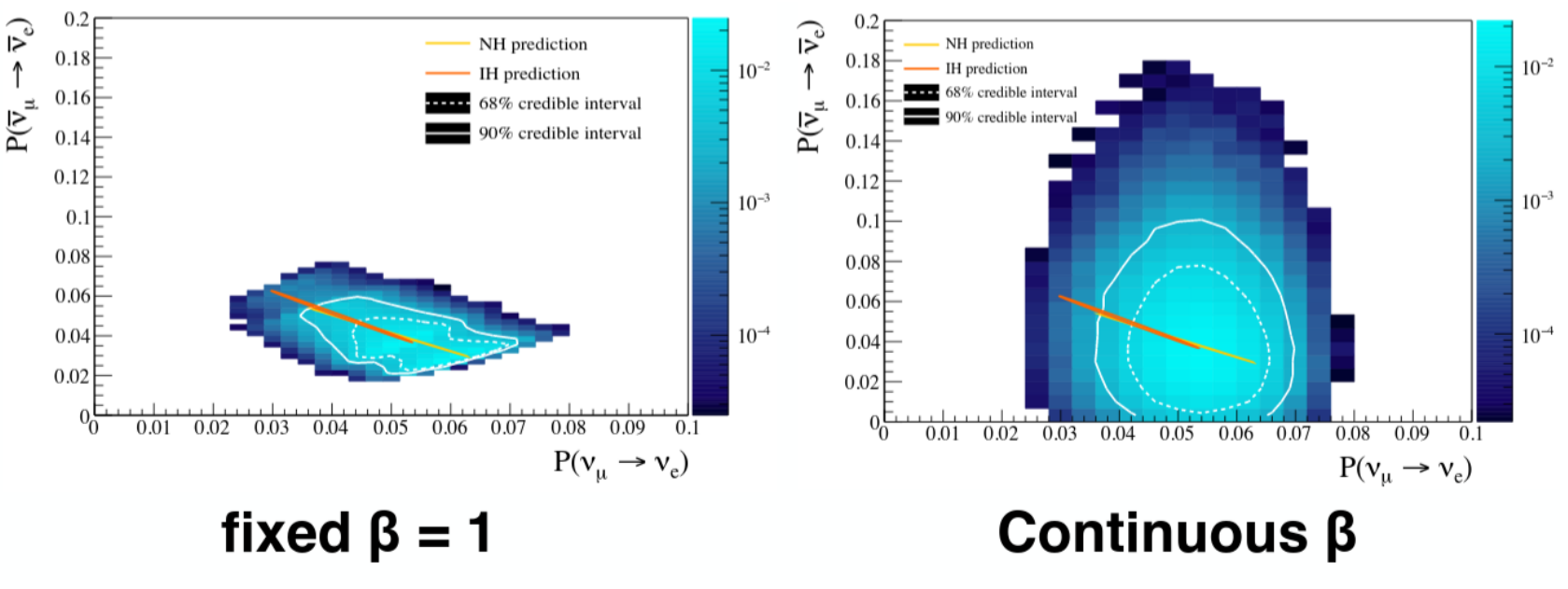
Continuous β: Kirsty

- Take β from $\bar{\nu}_e$ appearance analysis and allow to be continuous
- Have run Asimov's (shown today set 1 wRC)



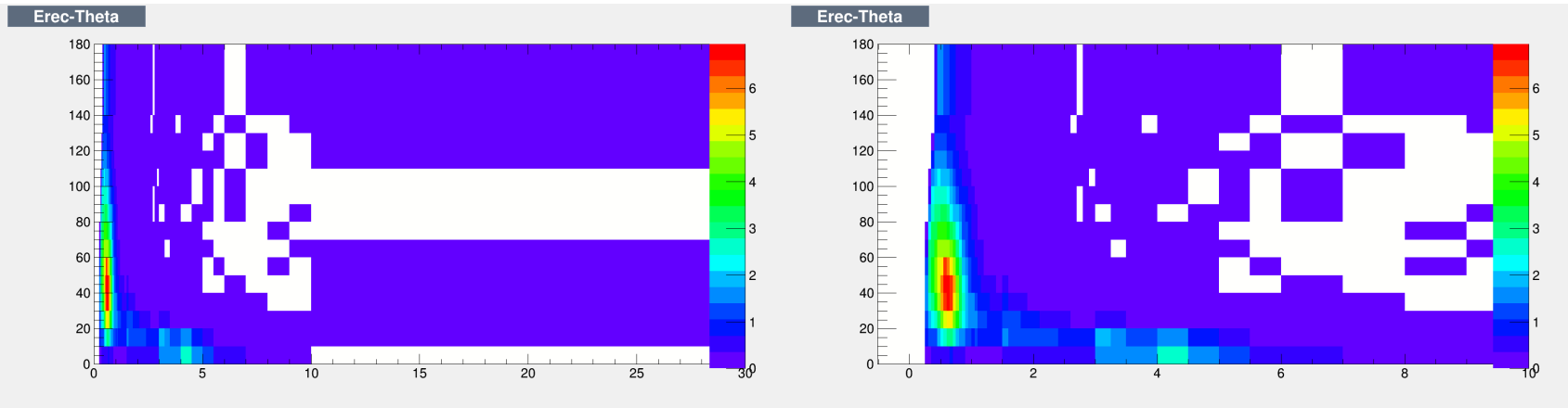
Continuous β: Kirsty

- Take β from $\bar{\nu}_e$ appearance analysis and allow to be continuous
- Have run Asimov's (shown today set 1 wRC)
- nb lower rightmost point is $\delta_{CP} = -\pi/2$



2D ν_μ studies: Me

- Looking at finding a working $E_{rec} - \theta$ binning for 2D ν_μ
- Difficult to capture oscillation dip without very large number of bins
- Very preliminary kinematic plots shown here



ND280: Clarence

- For summer: ready subject to last minute changes in Xsec parameterisation
- For future hopefully moving to psyche 3 at end of summer
  - Will allow ν_e and 4π samples to be added
  - Dedicated person for this effort in BANFF now (Pierre Lasorak)

Sterile search: Tarak

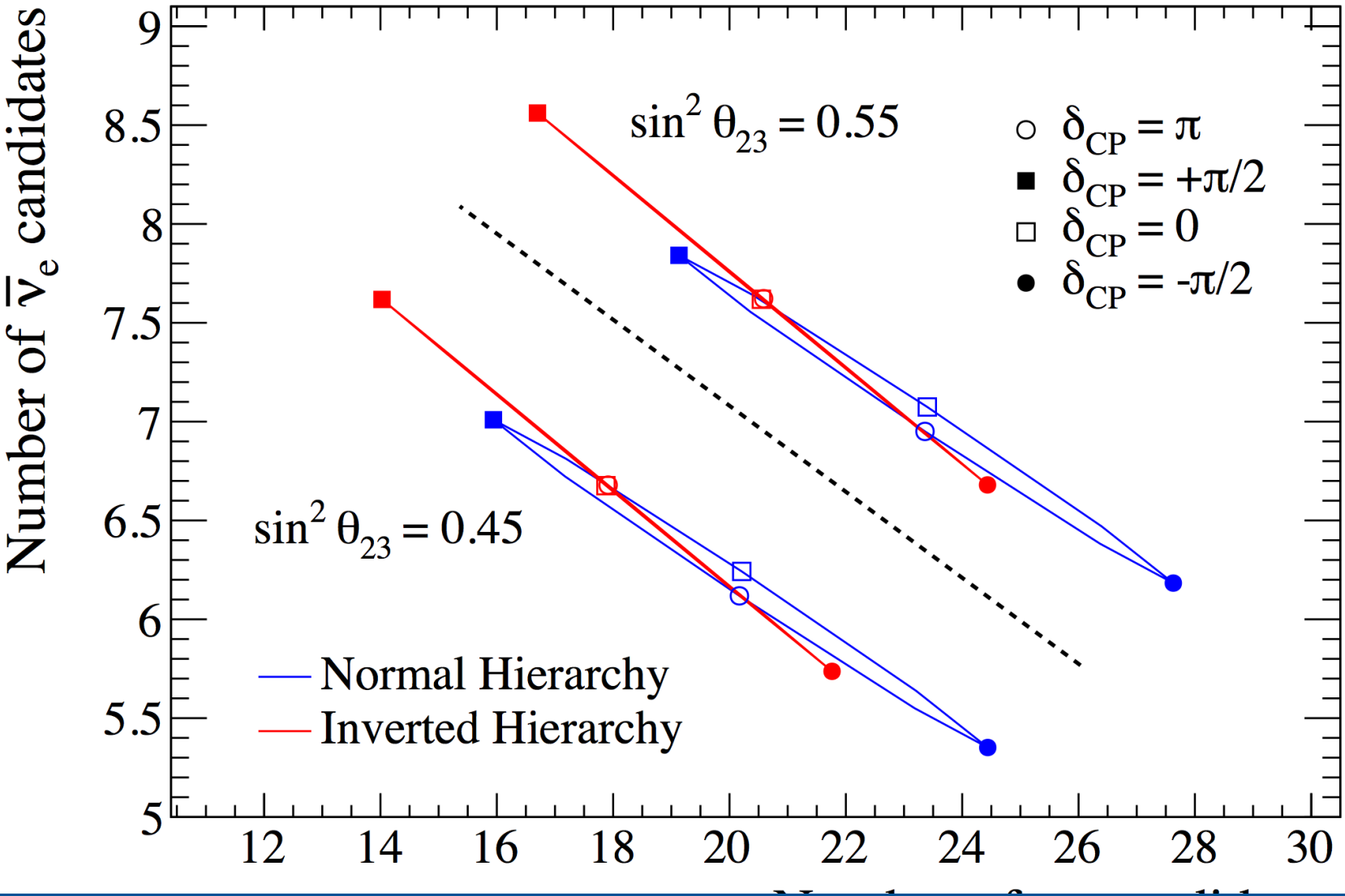
- Plan to implement ND280 ν_μ disappearance analysis with P6 and compare to previous analysis (based on P5)
- Have implemented 2 flavour oscillation weights
- Working to incorporate this into the Markov Chain
- Was planning ot use BANFF-like approach for cross-section parameters
- Significant effort recommended by NIWG convenors to implement a satisfactory cross-section model see here
- Plan to have preliminary sensitivity studies with the recommended cross section model by Summer

Conclusions

- On track for Summer analysis
  - Ready for new Xsec parameterisation when it arrives
  - Framework is stable
- Several interesting new studies in progress
  - New samples at SK and ND280, continuous beta etc.

Backup

Continuous beta



Continuous beta