Direct Reco Upgrade Progress

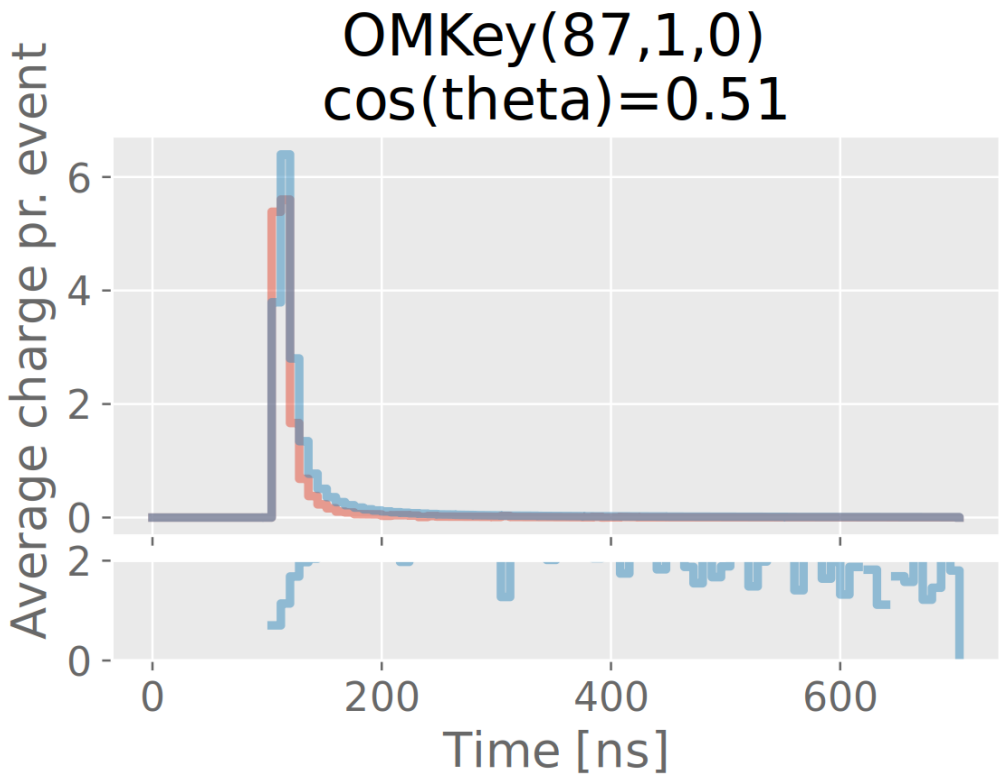
Friday meeting 26-02-2021

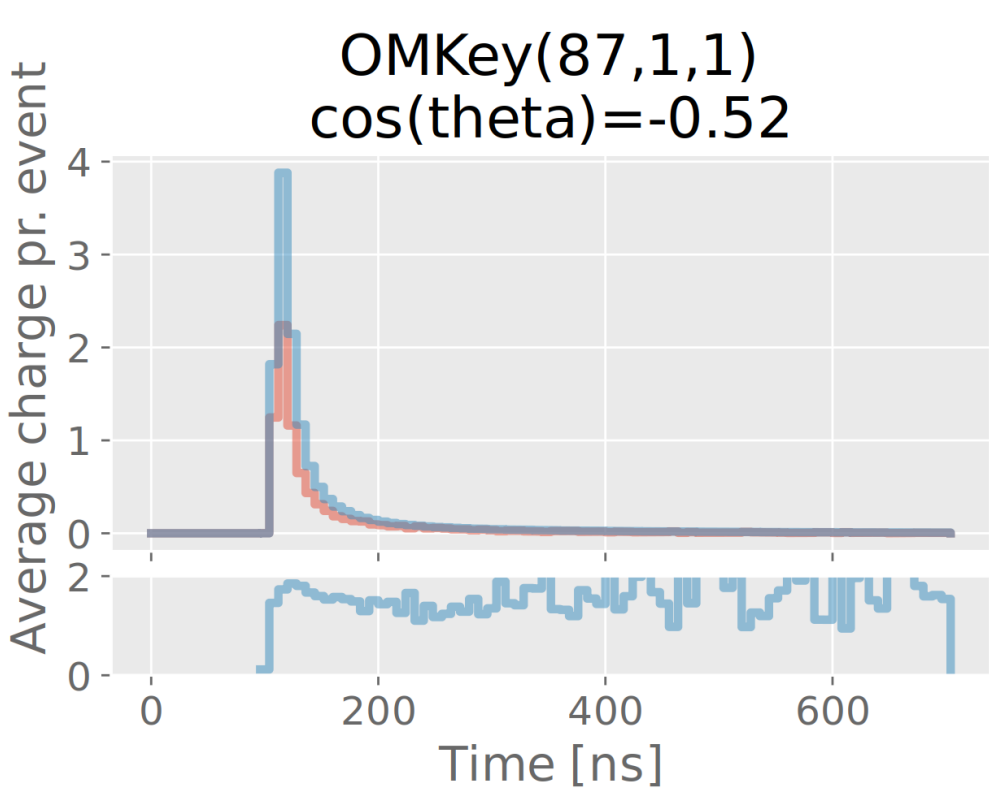
Jonathan Jegstrup

UNIVERSITY OF COPENHAGEN

Recap

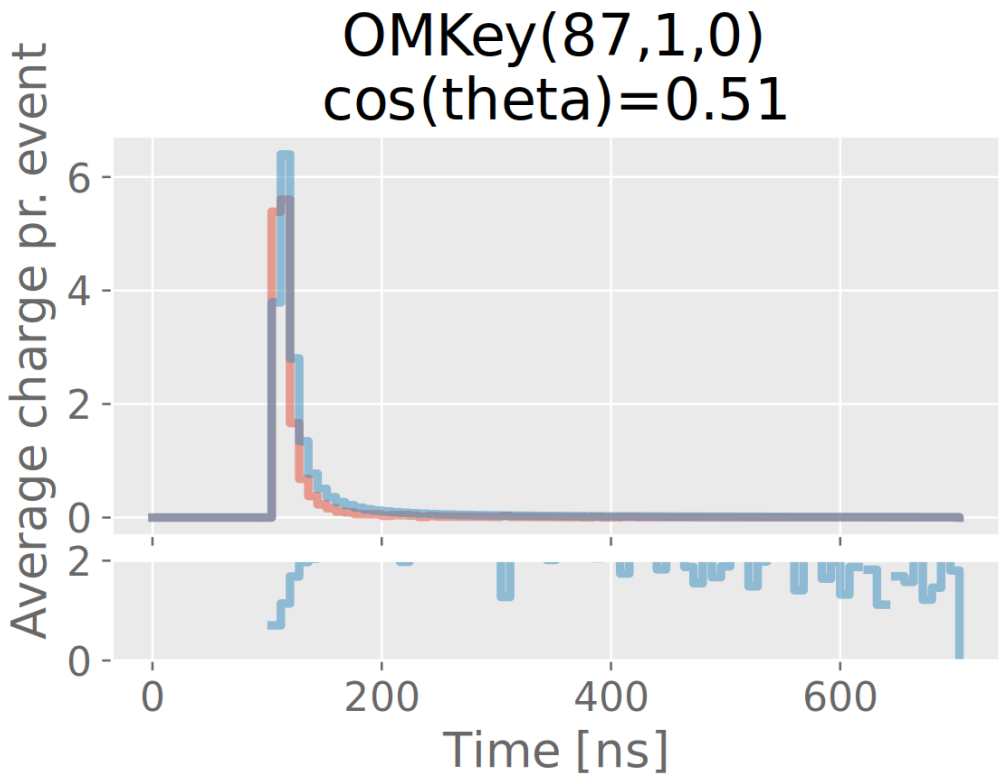
- We stripped away Detector Sim. and noise from MC simulation
- "The factor of 2" was still looming as it always has been

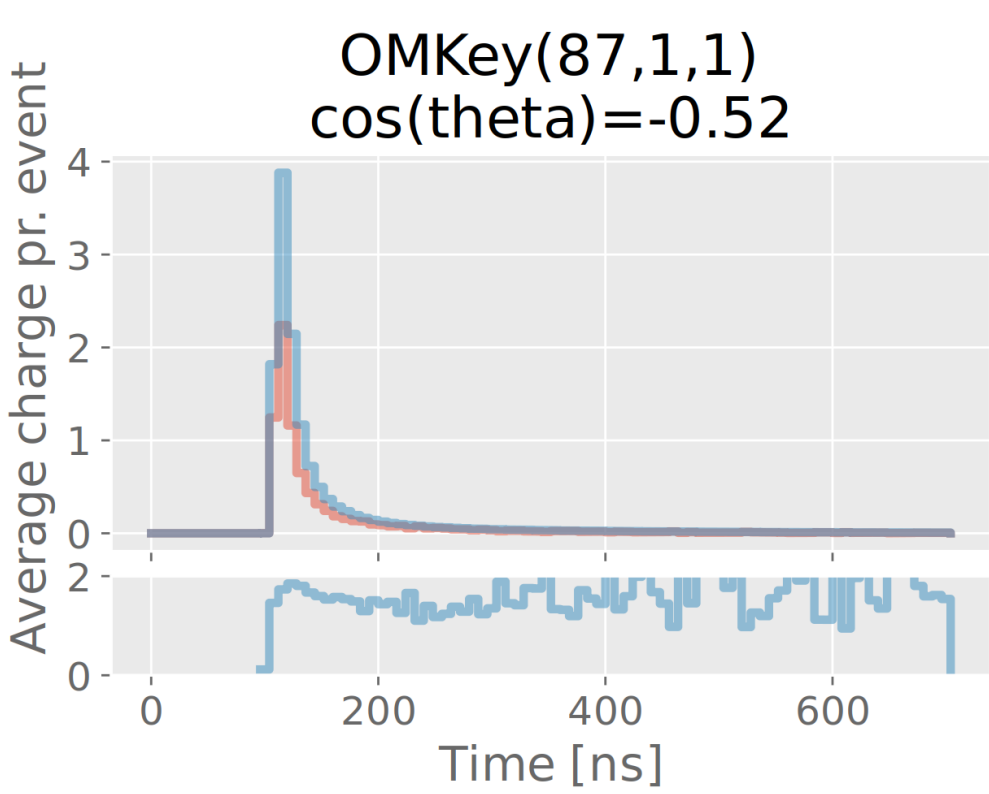




Friday Comments

- Tom: "Ice model might not be the same"
- James: "'The factor of 2' seem to be different for pmt=0 vs. pmt=1"

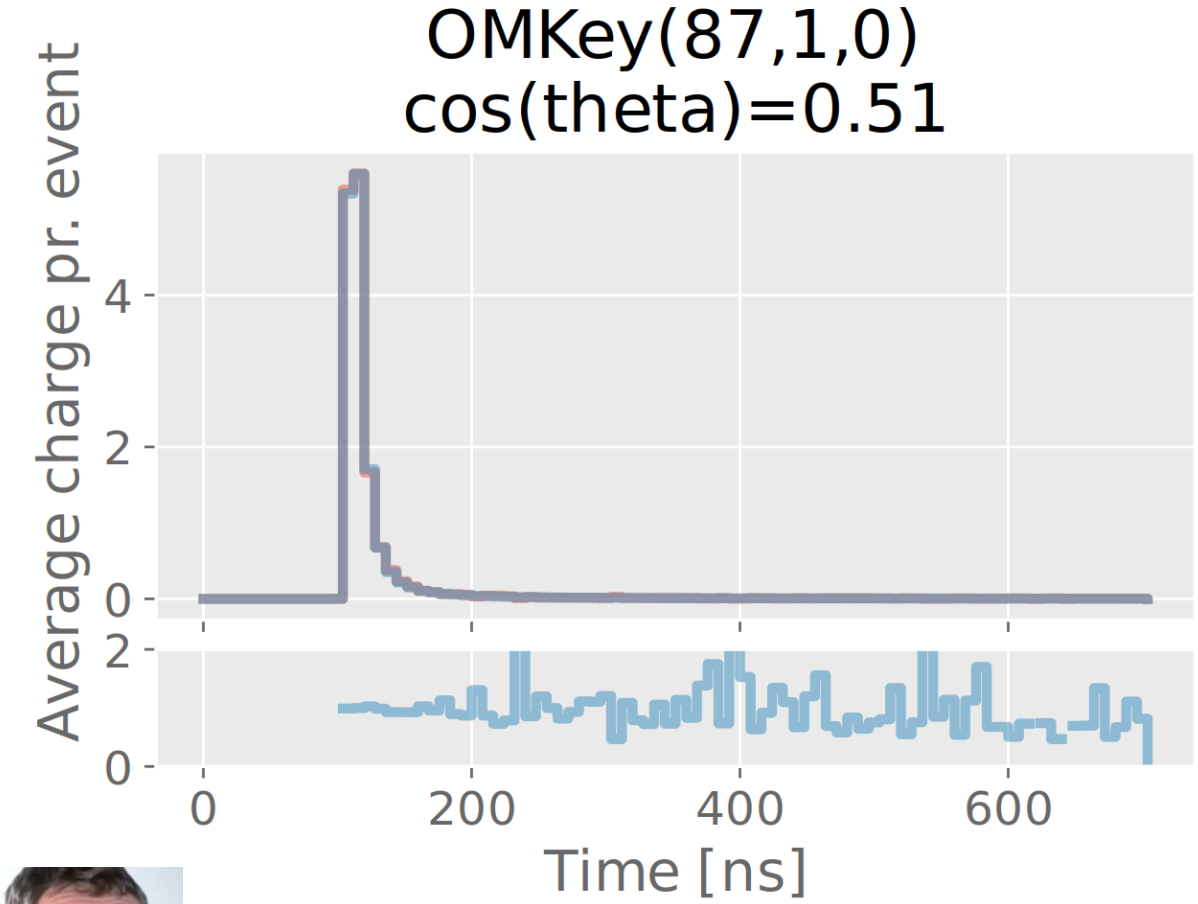


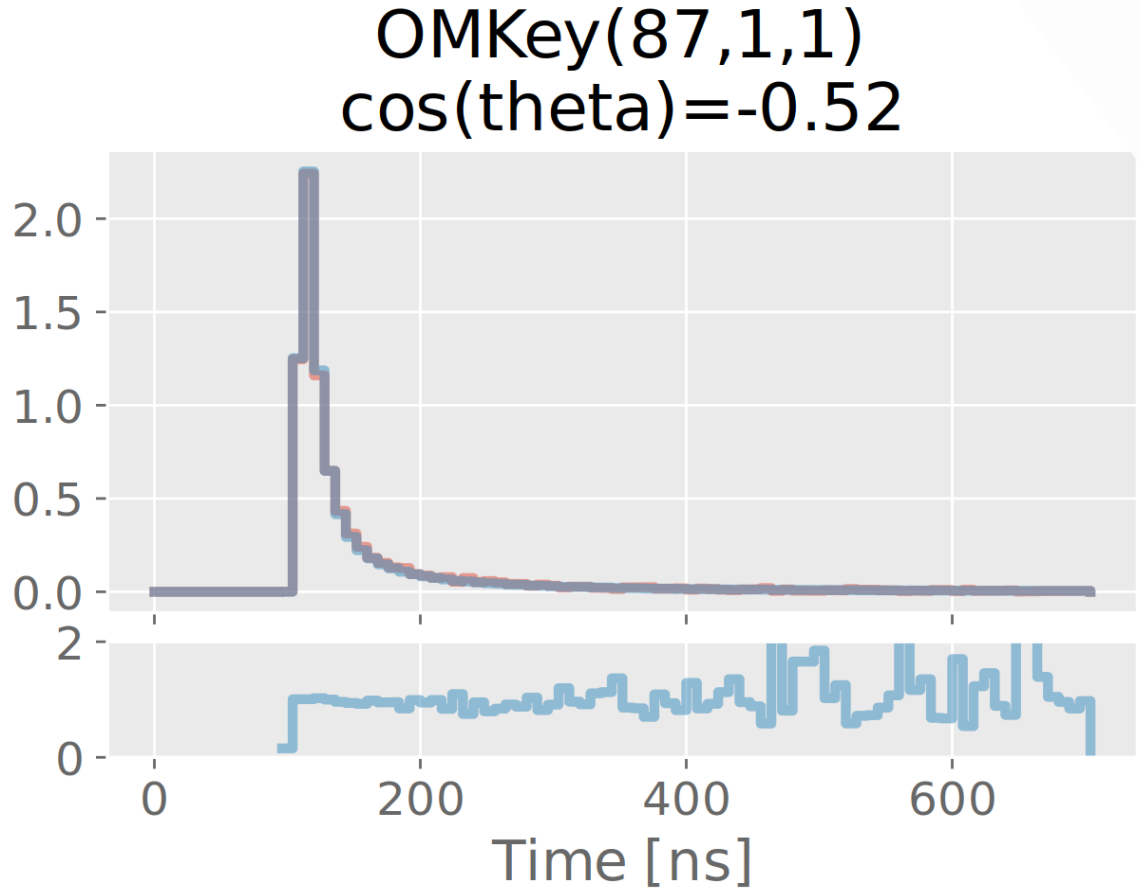


Friday Comments

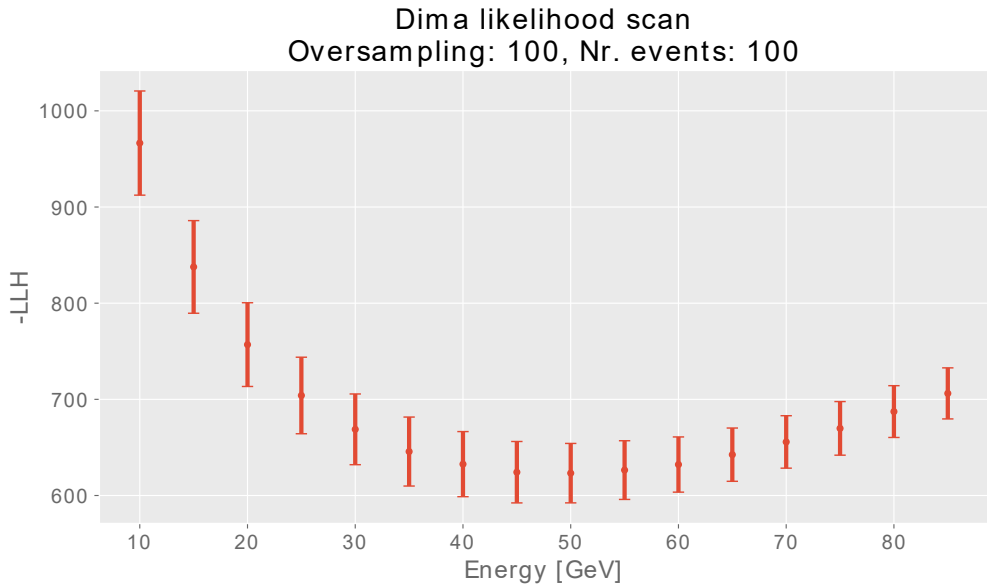
- Tom: "Ice model might not be the same"
- James: "'The factor of 2' seem to be different for pmt=0 vs. pmt=1"
  - We will return to James' question later slides

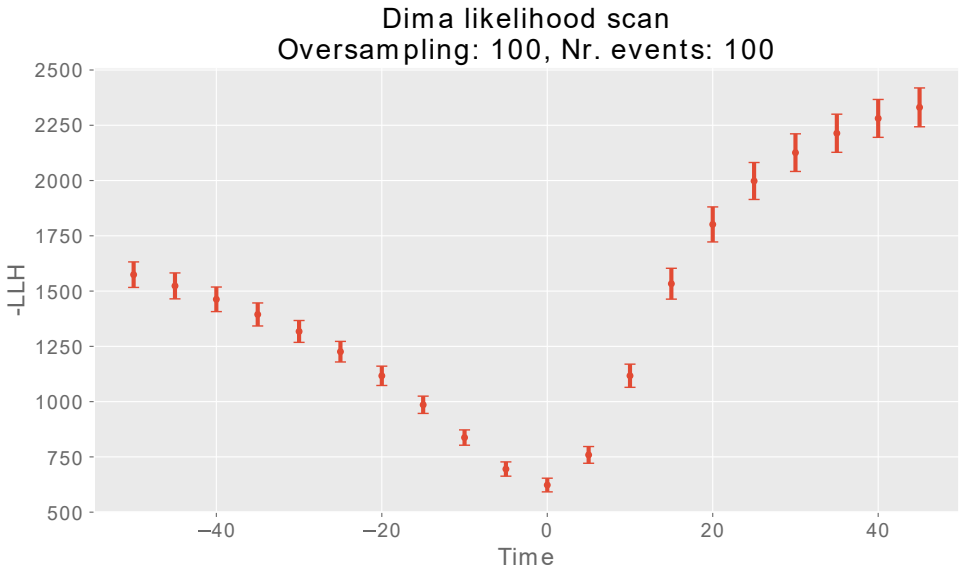
'The Age of The Factor of 2' was finally over

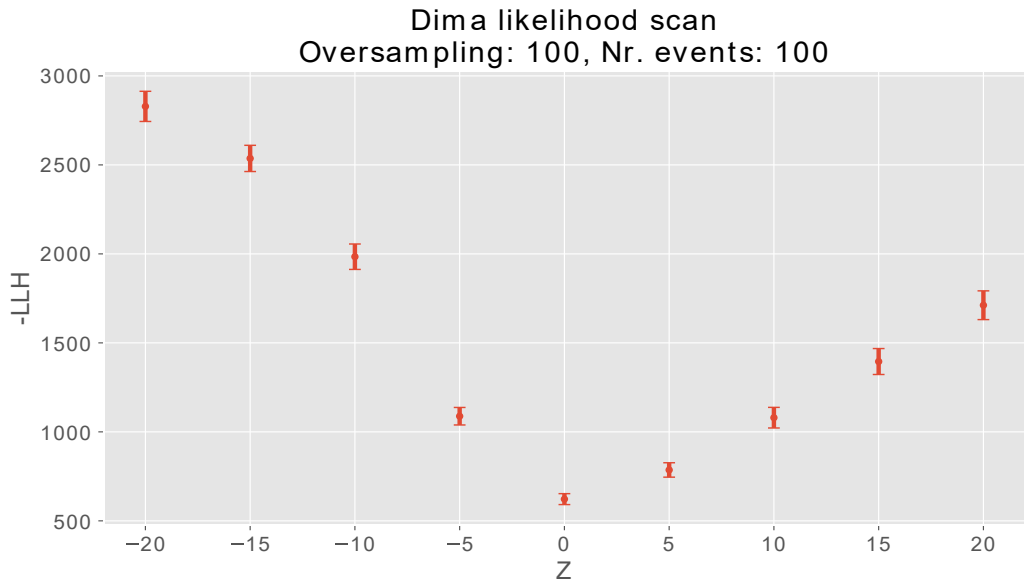


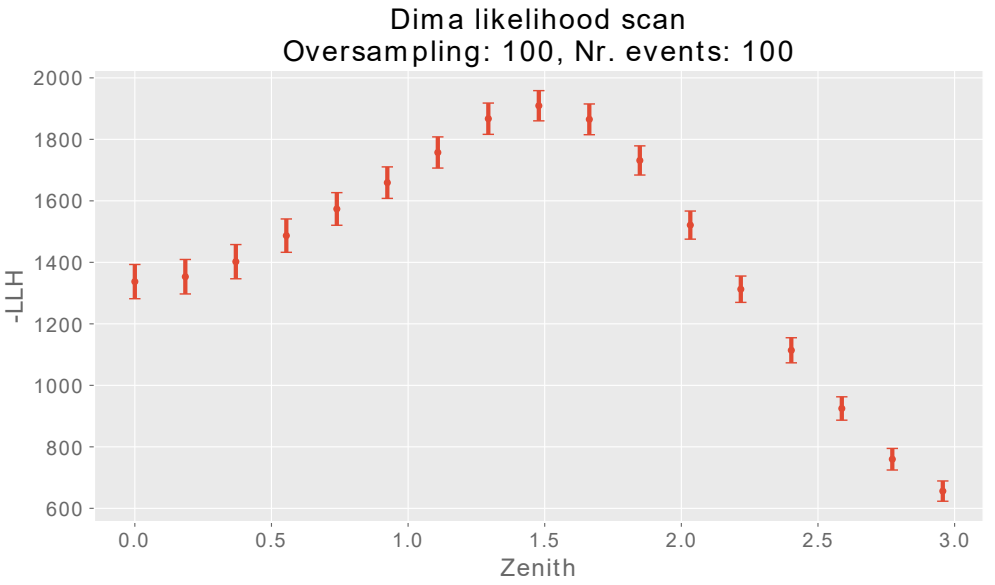


Likelihood scans



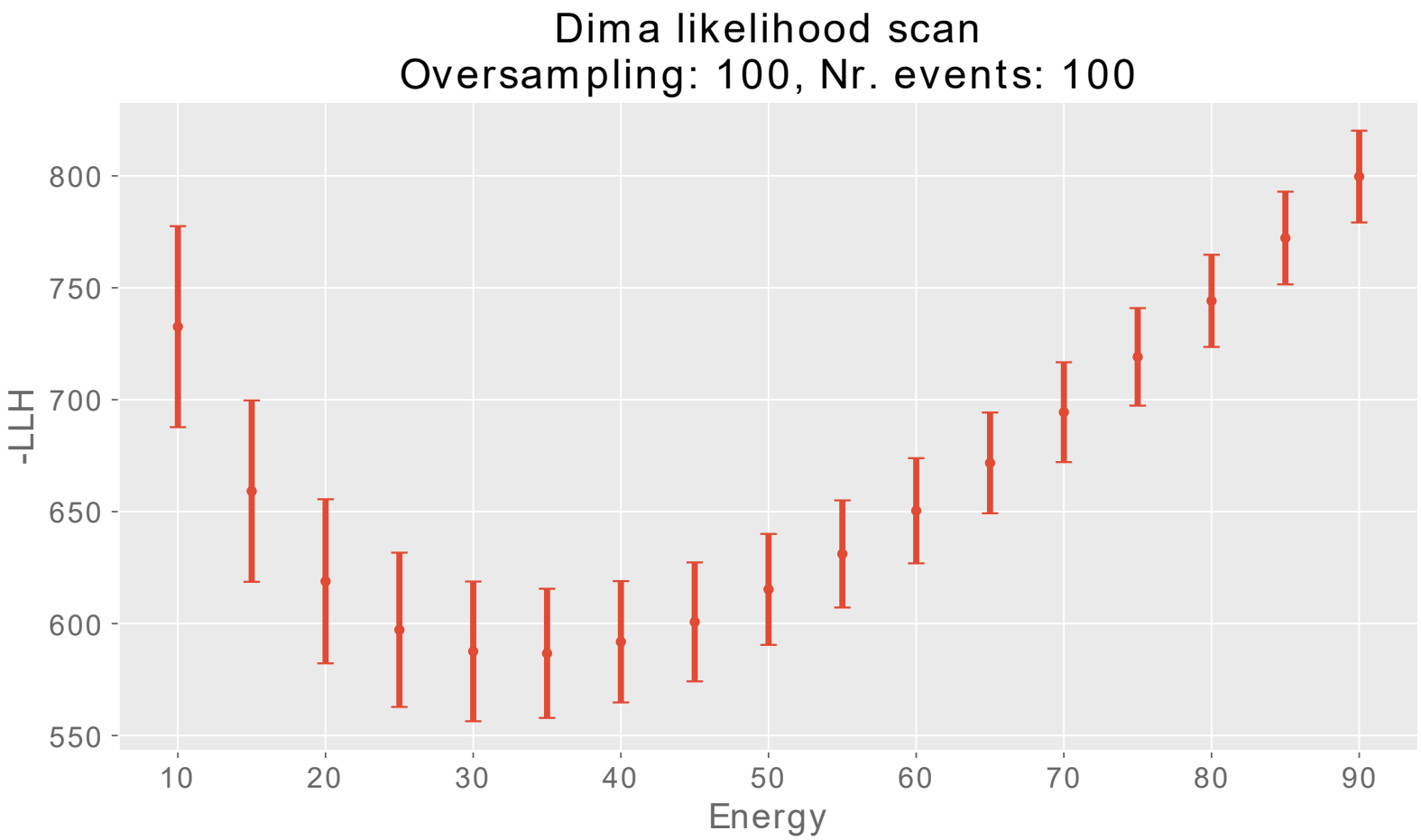






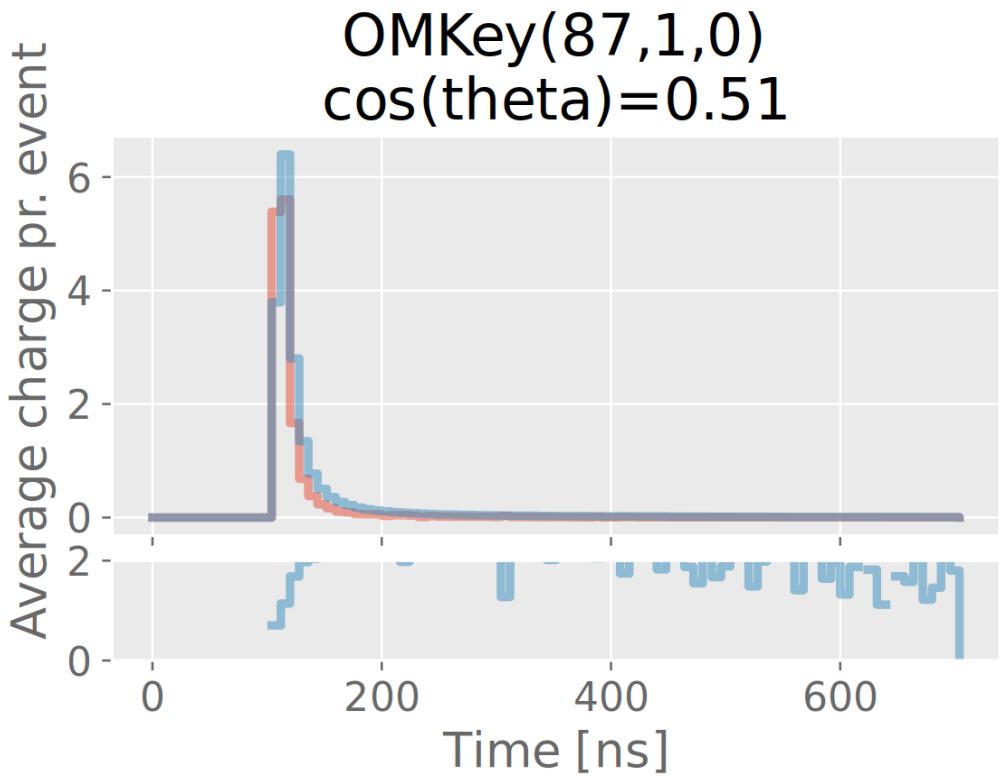
Likelihood scan with Detector Sim, noise and the same ice

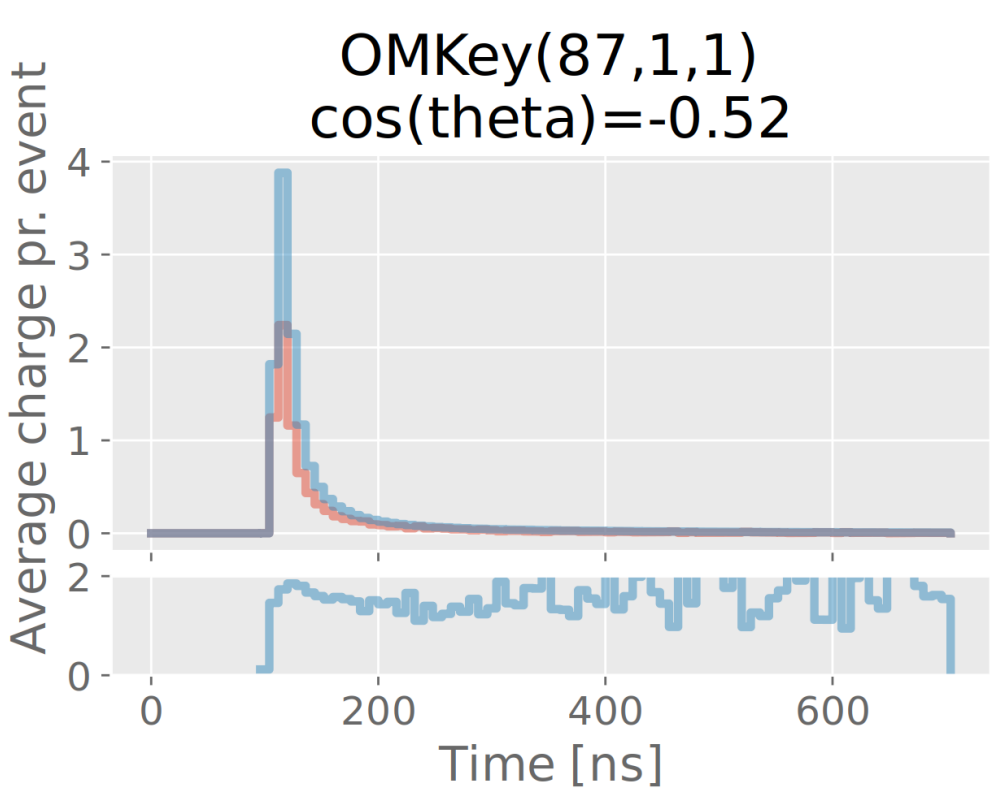
- Still a problem when noise and detector sim is once again introduced
- Looks like Kasper's likelihood scans before removing noise and detector sim
- Will need further investigation



Investigating aymmetry in PMTs [1/6]

- There seemed to be a difference in the ratio of data to hypo charge before changing the ice to be the same

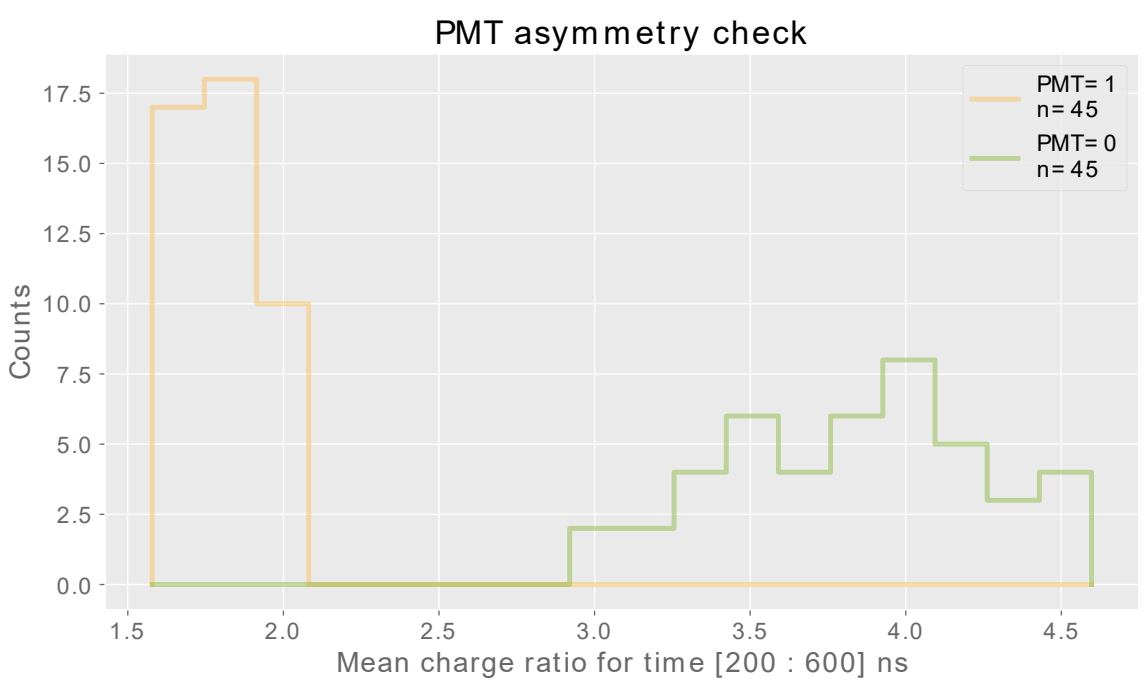


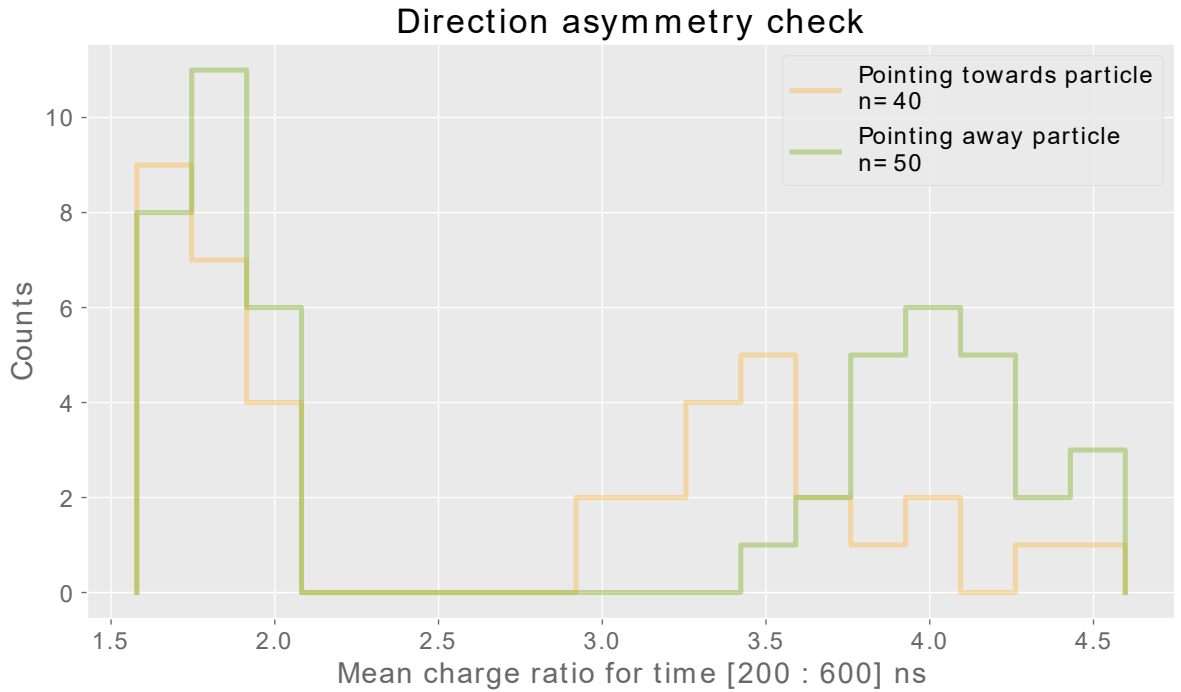


Investigating asymmetry in PMTs [2/6]

Before changing the ice to be the same:

- For every single PMT the mean of the hypo/data ratio is found for the time interval 200-600 ns
- Seems to be specific to PMT and not direction

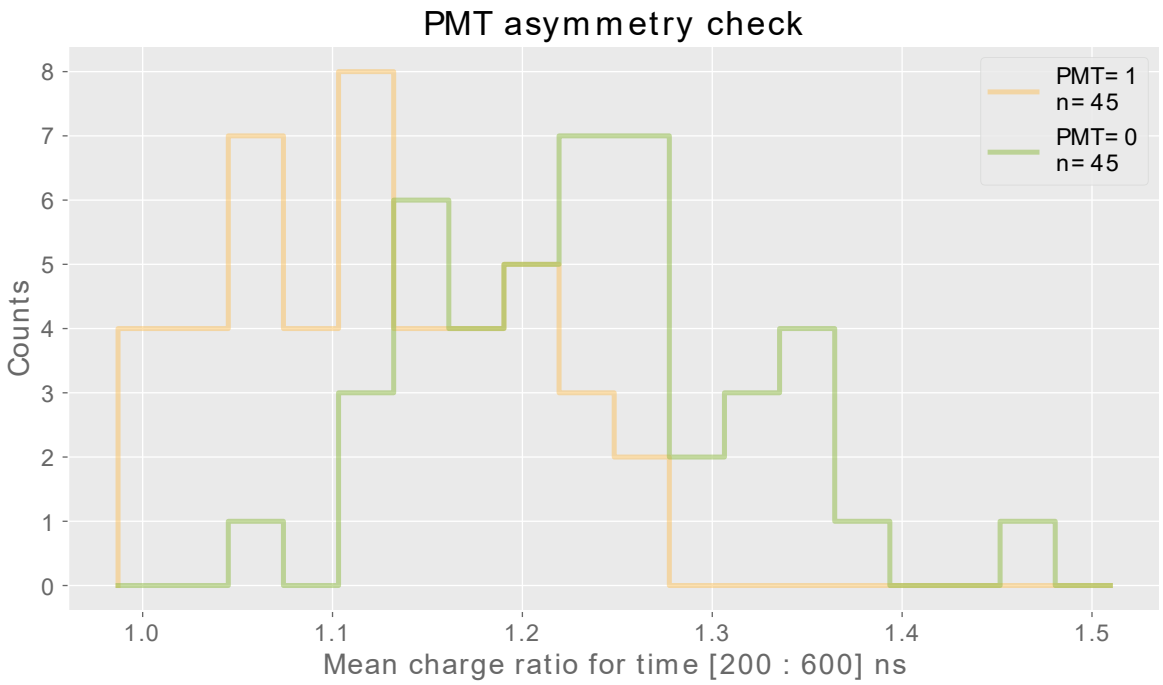


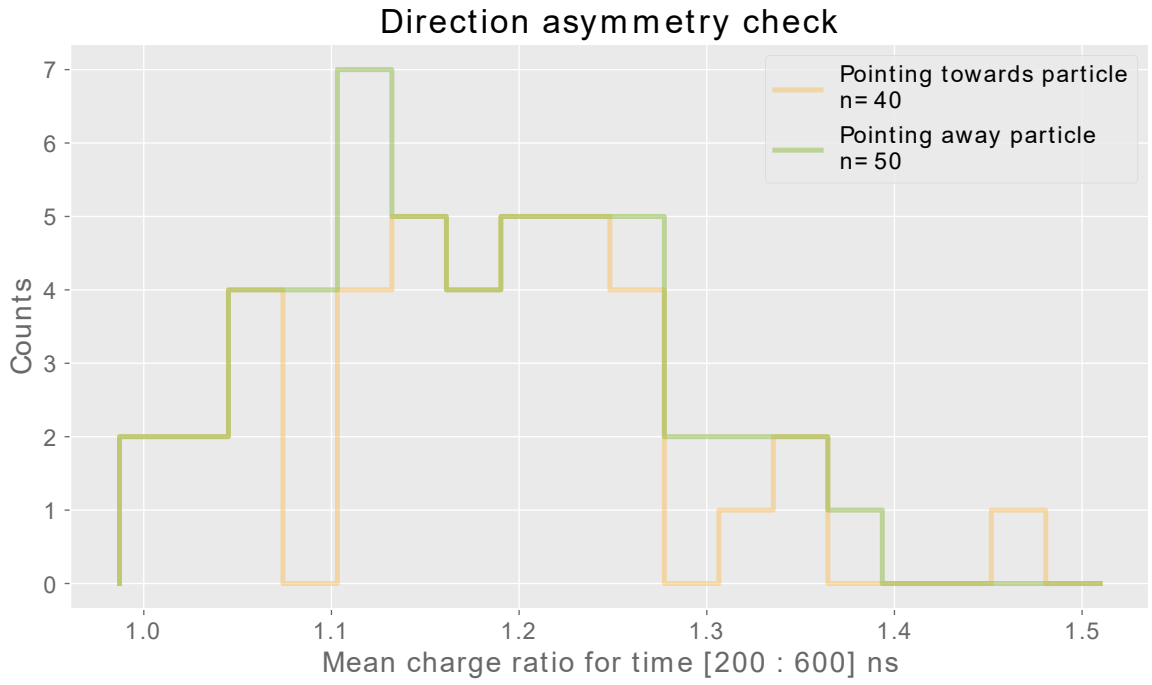


Investigating asymmetry in PMTs [3/6]

After changing the ice to be the same:

- For every single PMT the mean of the hypo/data ratio is found for the time interval 200-600 ns
- Does not show a clear seperation in 'PMT asymmetry check' as before
- Next: Instead of ratio, look at hypo and data separate.

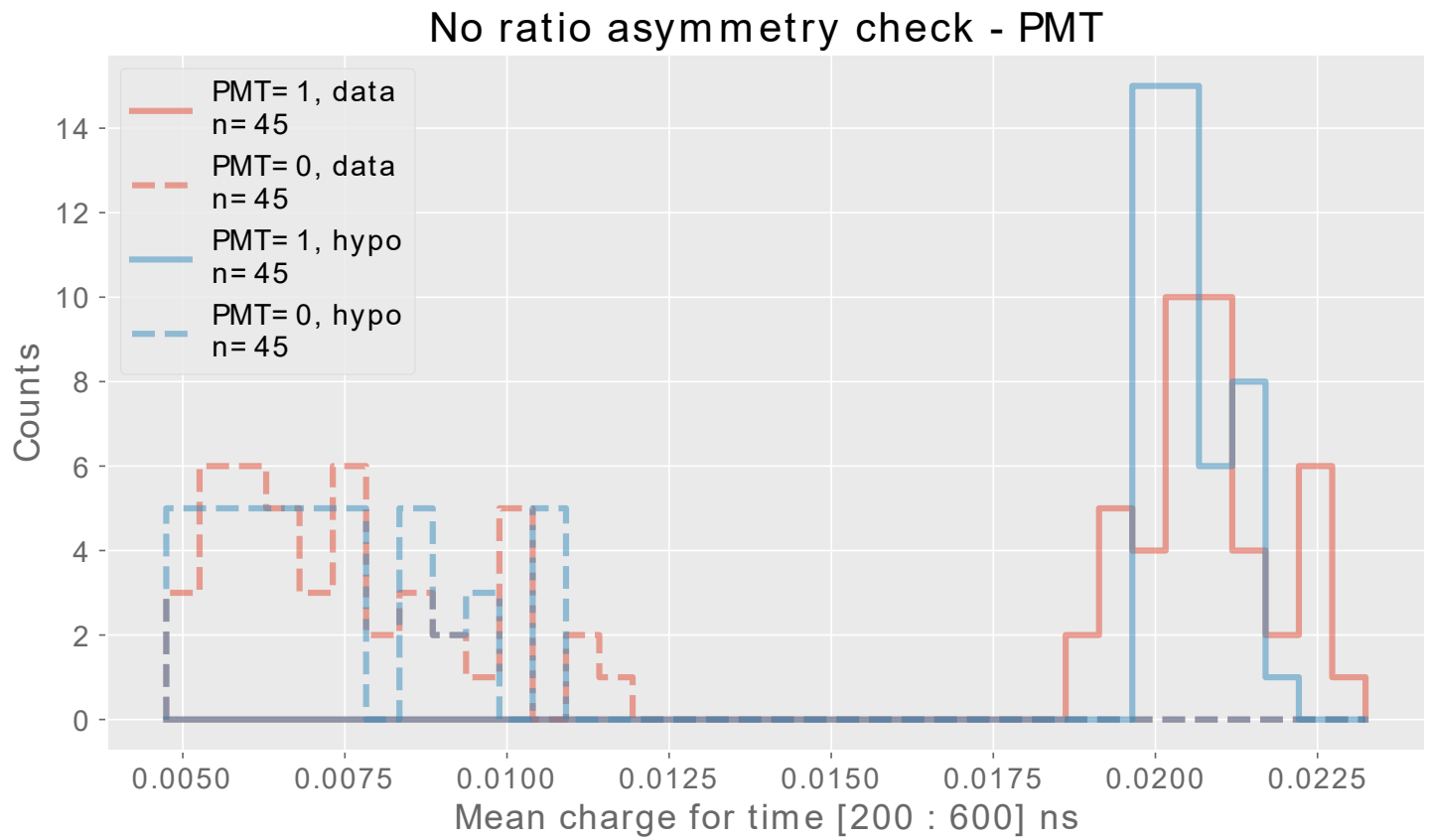




Investigating asymmetry in PMTs [4/6]

After changing the ice to be the same:

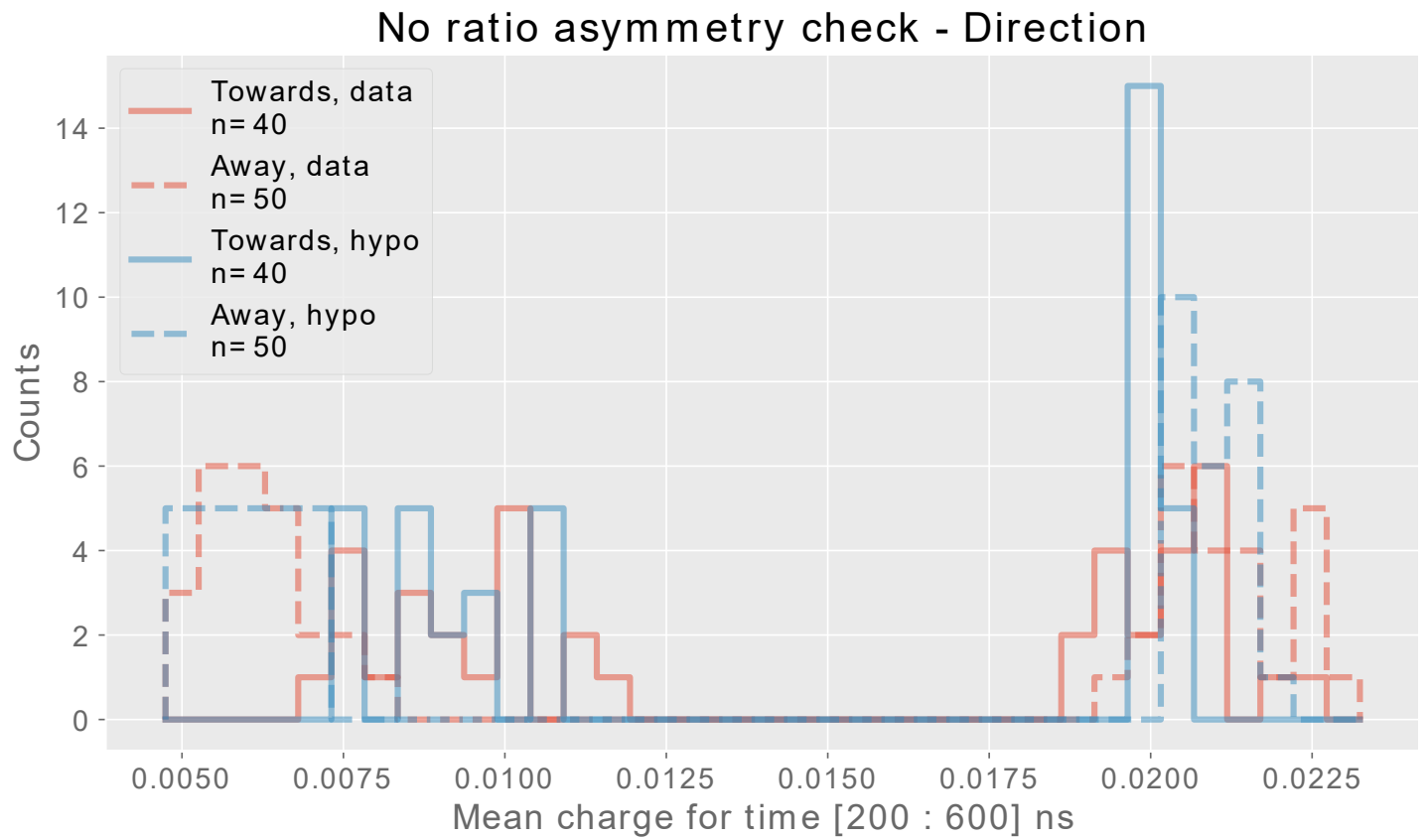
- For every single PMT the mean of the hypo and data charge is found for the time interval 200-600 ns



Investigating asymmetry in PMTs [5/6]

After changing the ice to be the same:

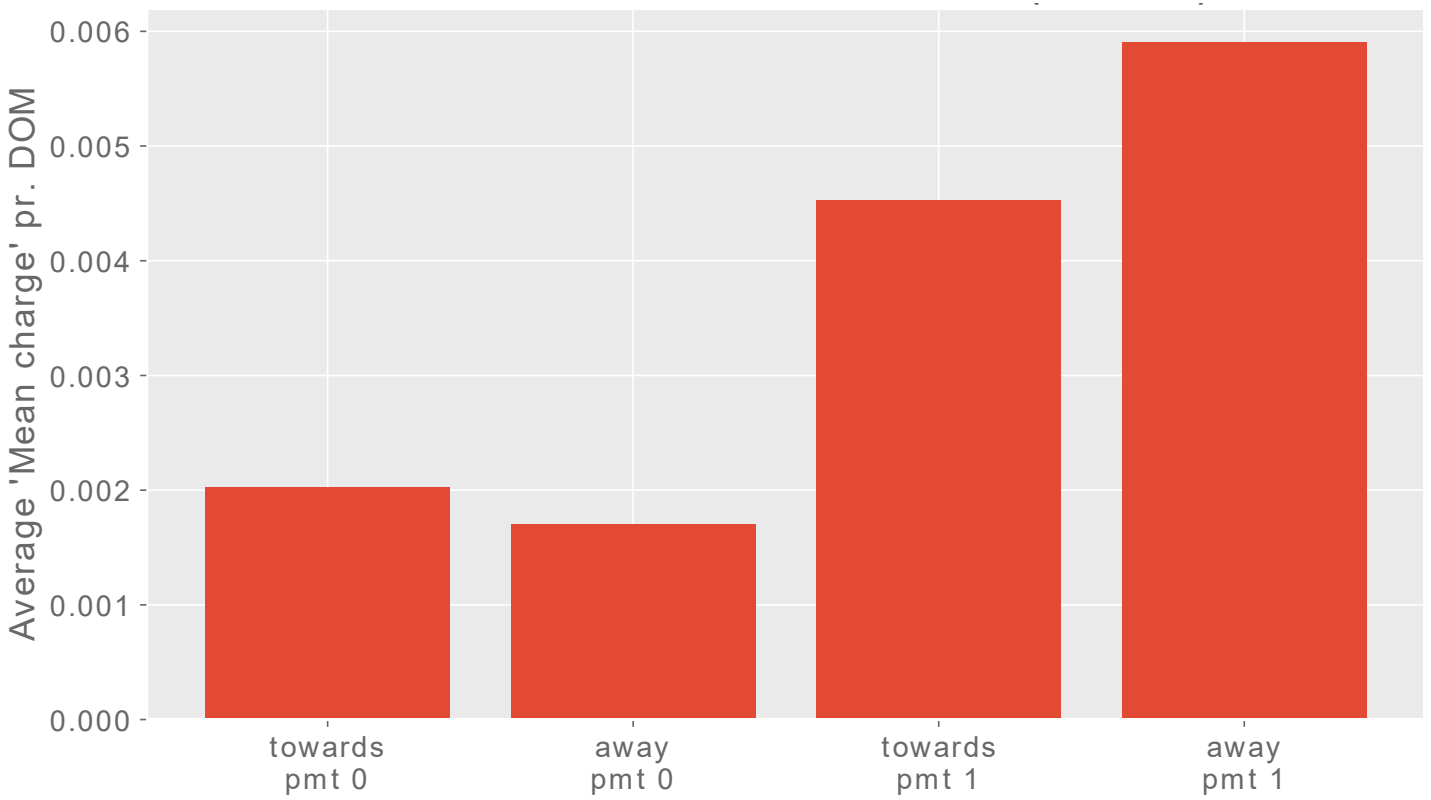
- For every single PMT the mean of the hypo and data charge is found for the time interval 200-600 ns



Investigating asymmetry in PMTs [6/6]

After changing the ice to be the same:

- For every single PMT the mean of **only** data charge is found for the time interval 200-600 ns

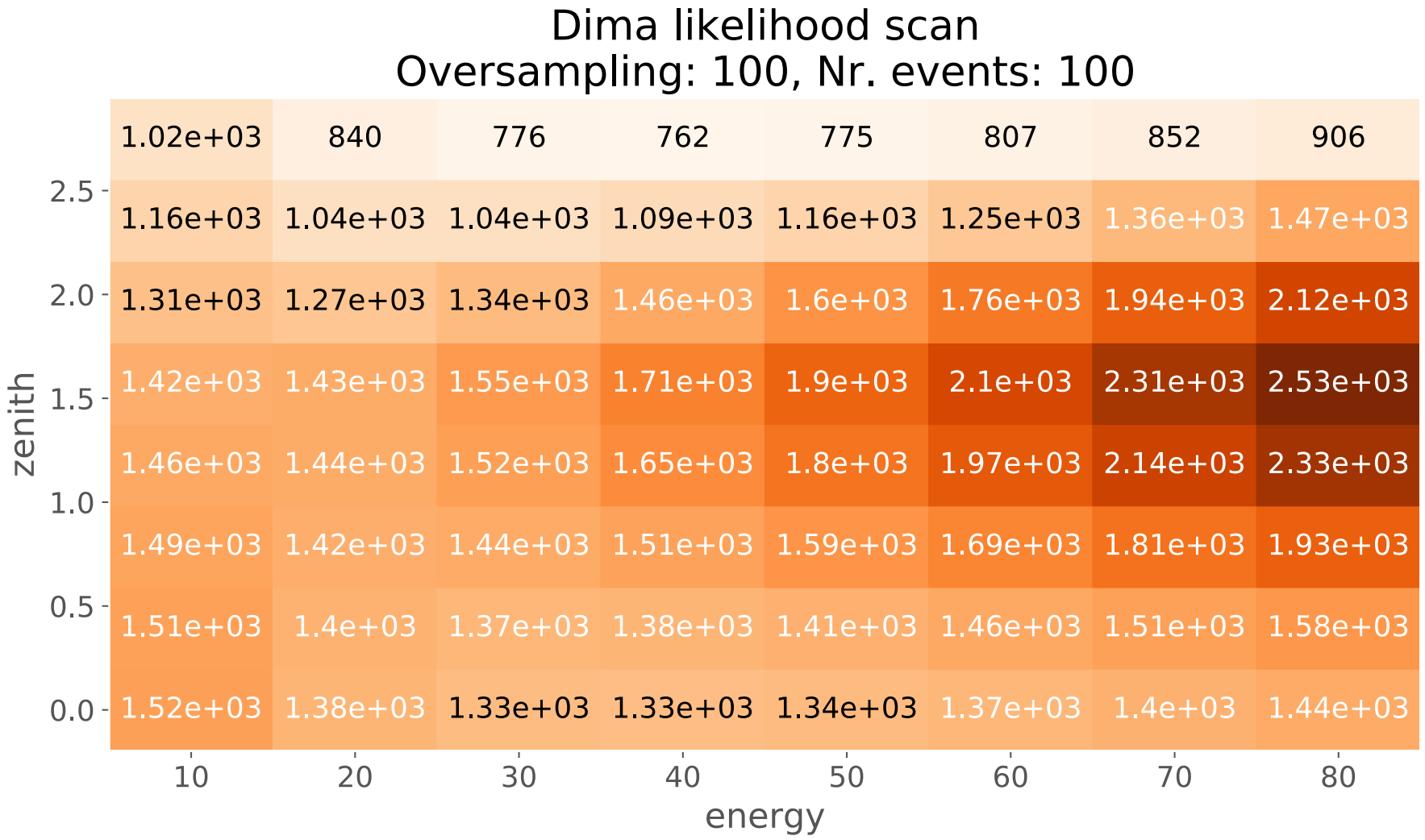


What is next?

- Figure out what causes the asymmetry in PMT simulation that is seen in both MC simulation and DirectReco
  - Tom has readied some code which can look into this -> Will look at this next week

- Figure out what happens to energy likelihood when detector and noise is added to simulation

Extra slides: Bad 2D scan plots [1/2]



Extra slides: Bad 2D scan plots [2/2]