Still digging in code

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Previously

- MC-data and Reco Hypothesis didn't match
- Got worse when making parameters match between Simulation and reconstruction

Fix?

- Removed noise and set MeanSpeCharge = 1.0 since we're using noiseless MC and no detector sim.

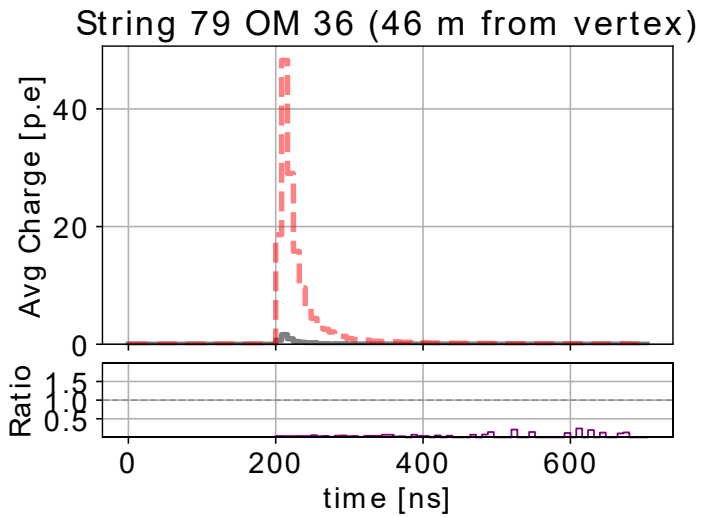
- Found a bug
  - EnergyScaling isn't passed through chain so uses default (True) when extracting hypothesis.
  - This scales each pulse in the hypothesis by the energy of the particle

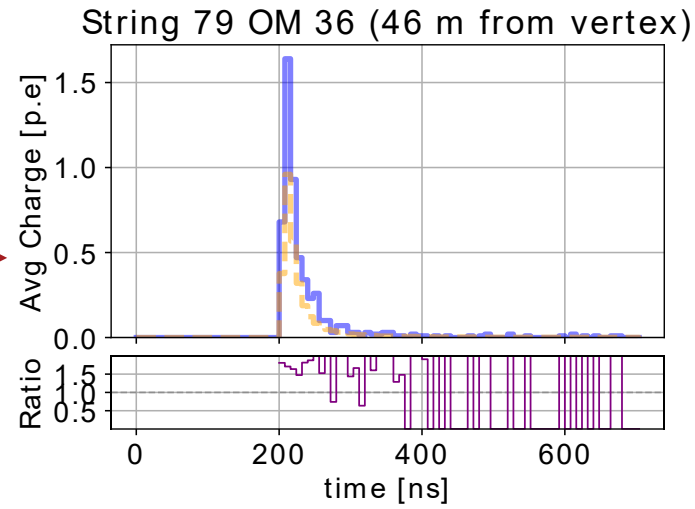
- Gives a better match but still not good enough
- Oversampling of 100 is used
- Averaging over 99 events

Comparison with previous plots

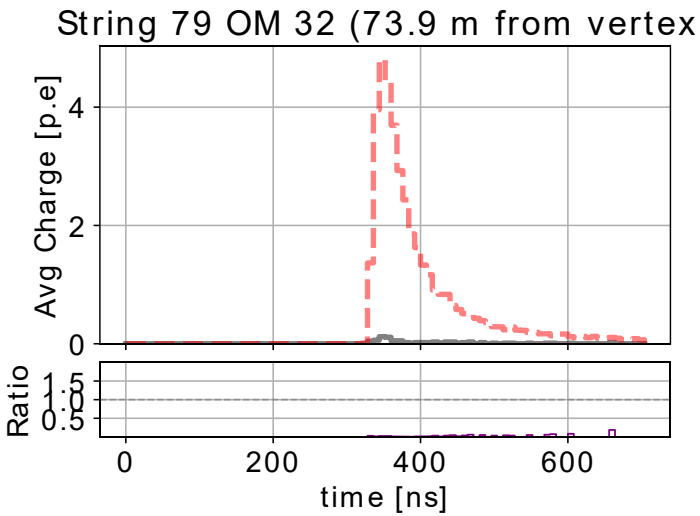
- Left plots:
  - Sim and Reco matches
- Right plots:
  - NoNoise
  - MeanSpe = 1.0
  - Correct Extraction of hypothesis

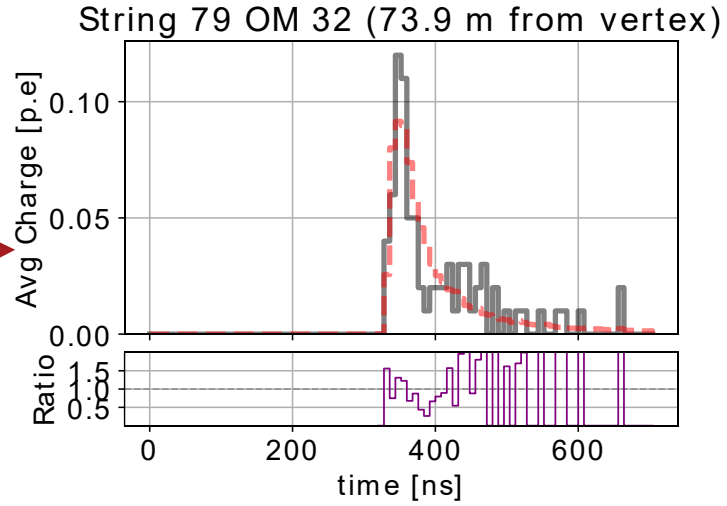
HQE





NORMAL

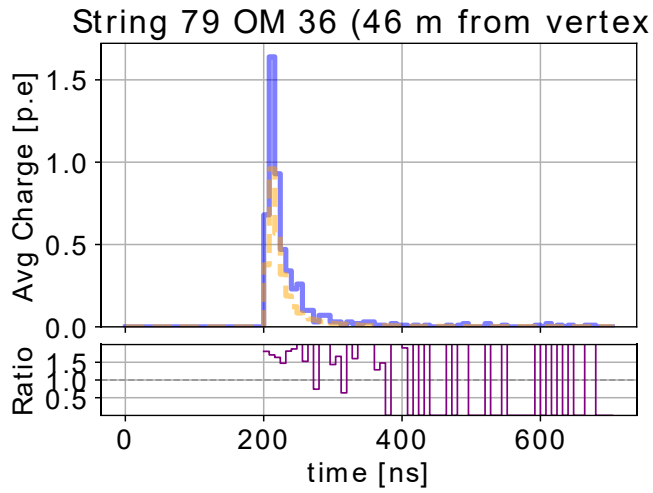


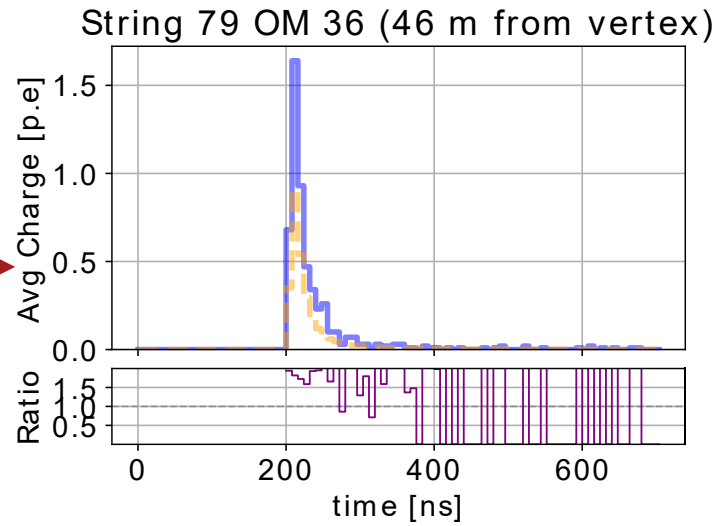


Found inconsistency in domEfficiency (MakeHitsFromPhotons)

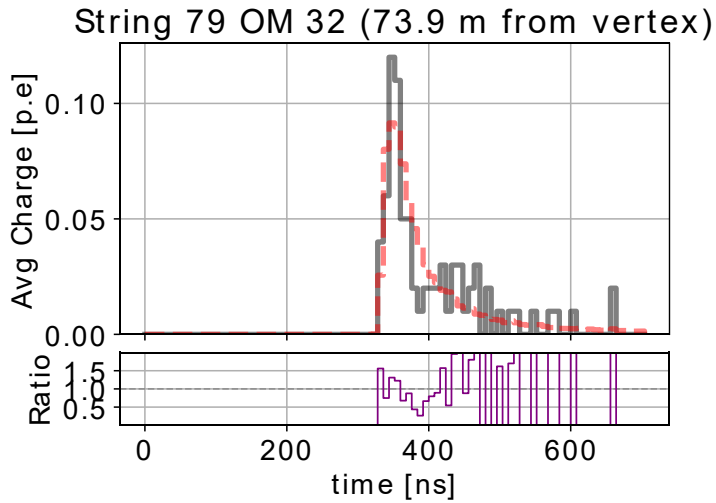
- Left plots:
  - NoNoise
  - MeanSpe = 1.0
  - Correct Extraction of hypothesis
- Right plots:
  - domEfficiency is 0.94 instead of 1.0 in reco

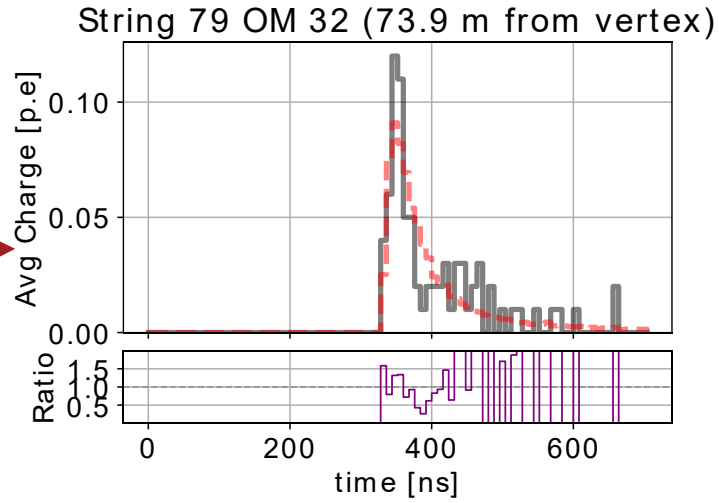
HQE





NORMAL

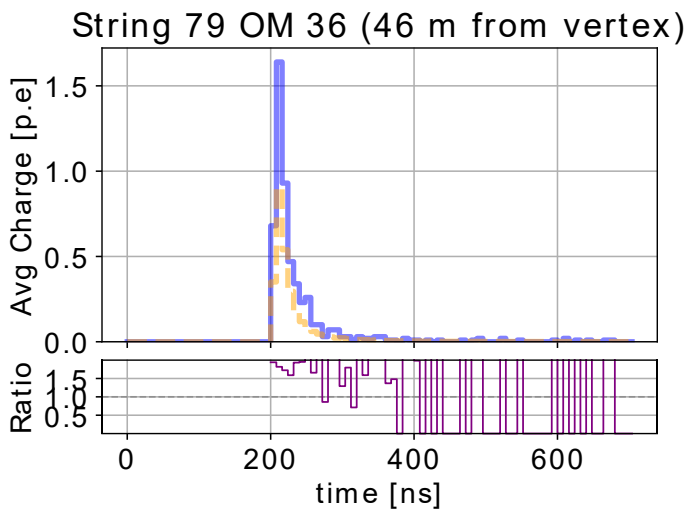


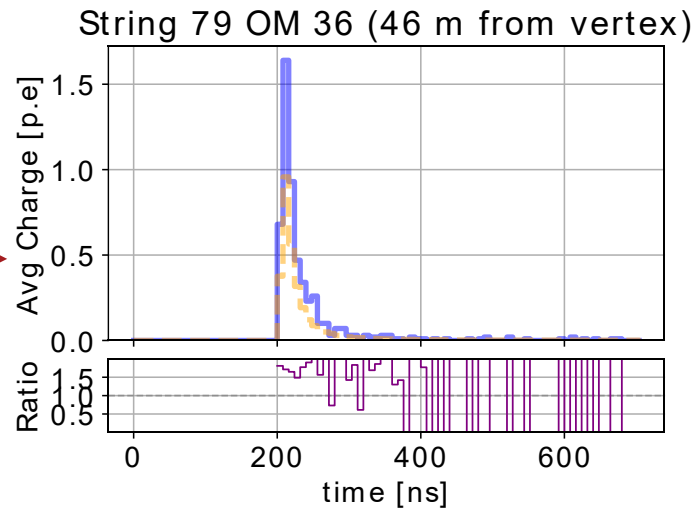


Remove RDE from Reco?

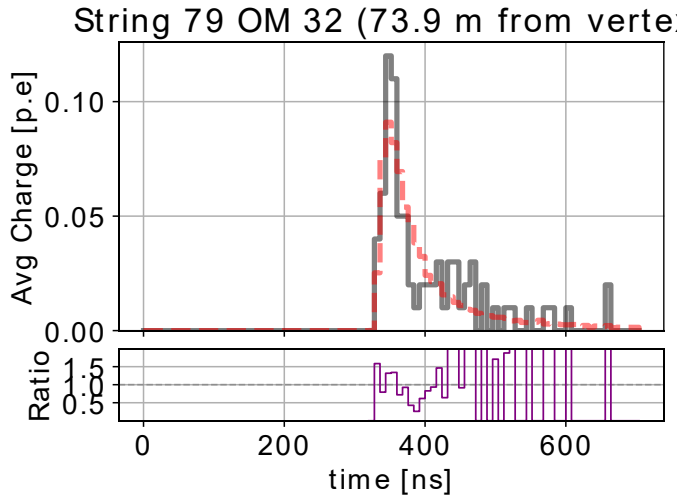
- Left plots:
  - NoNoise
  - MeanSpe = 1.0
  - Correct Extraction of hypothesis
- Right plots:
  - RDE is 1.0 for all DOMS

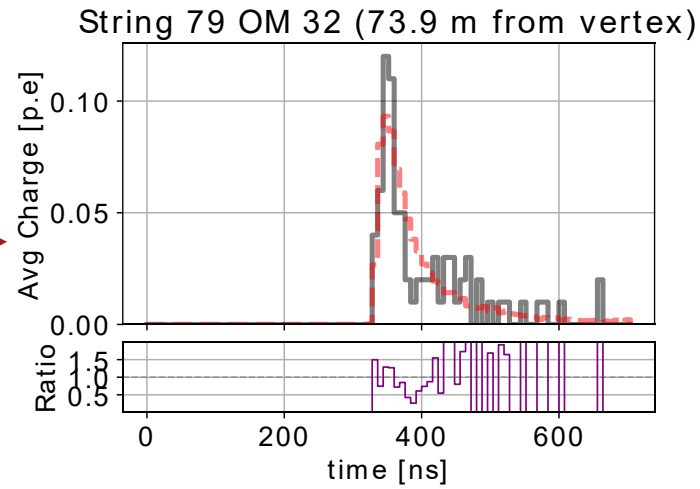
HQE





NORMAL

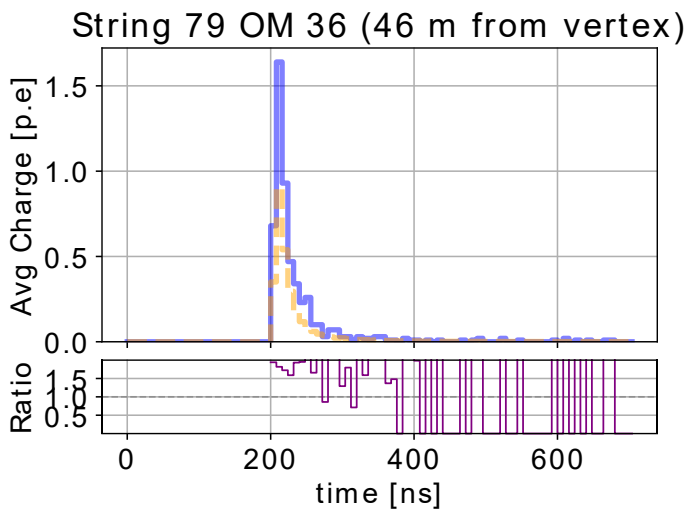


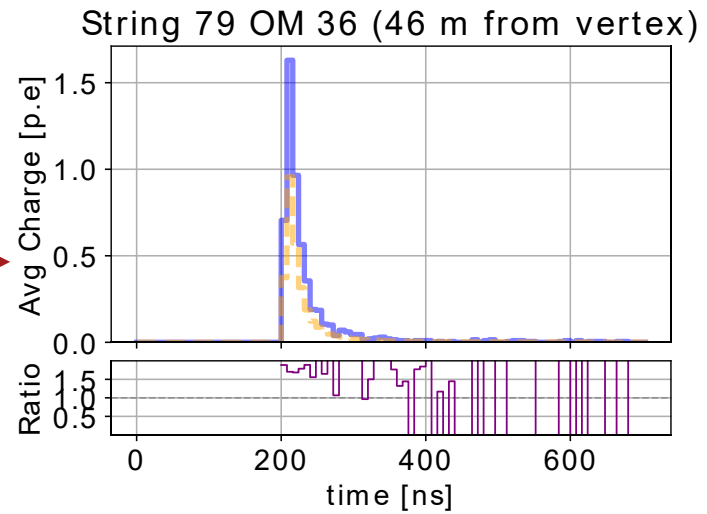


Higher oversampling and more stats might do the trick?

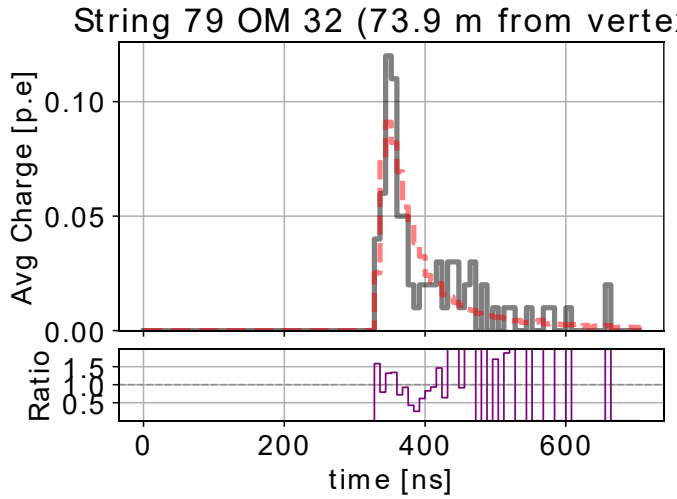
- Left plots:
  - NoNoise
  - MeanSpe = 1.0
  - Correct Extraction of hypothesis
- Right plots:
  - Oversampling = 300
  - Average over 200 events

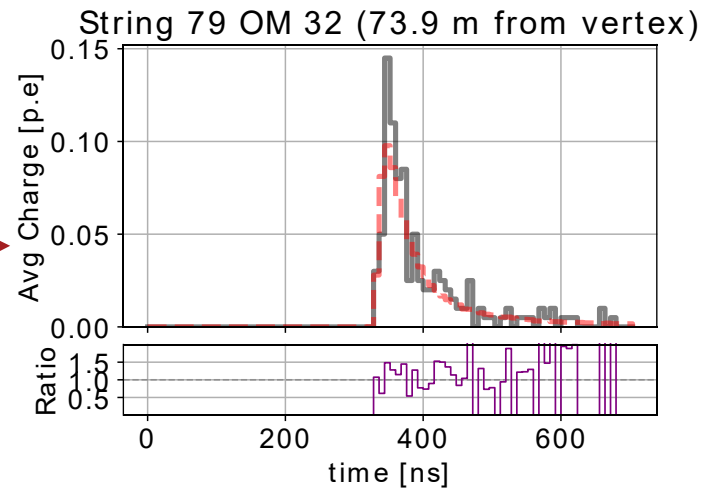
HQE





NORMAL

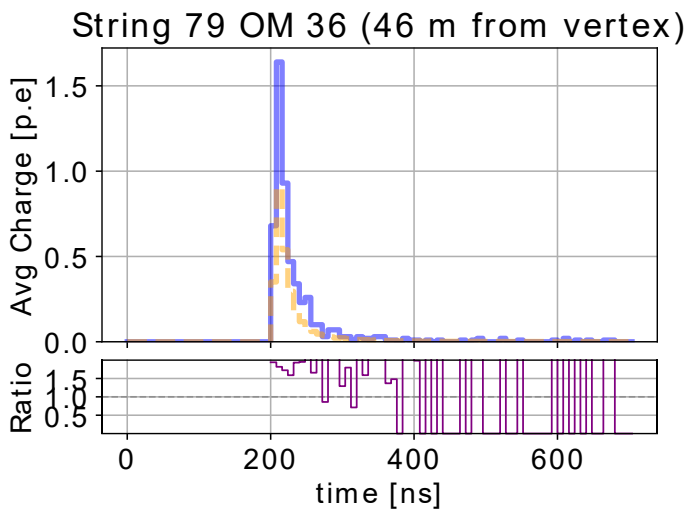


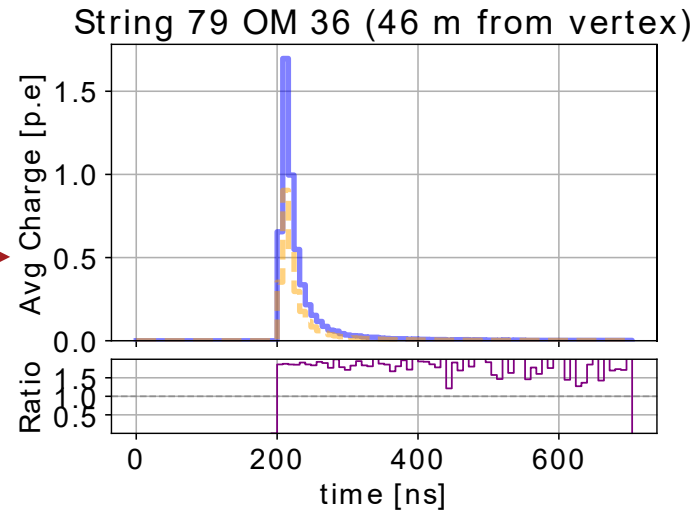


HQE/Normal DOM discrepancy from low stats?

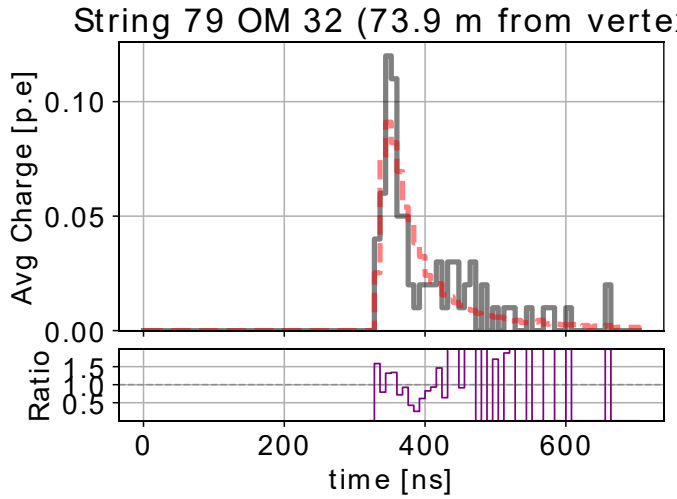
- Left plots:
  - NoNoise
  - MeanSpe = 1.0
  - Correct Extraction of hypothesis
- Right plots:
  - Average over 10000 events

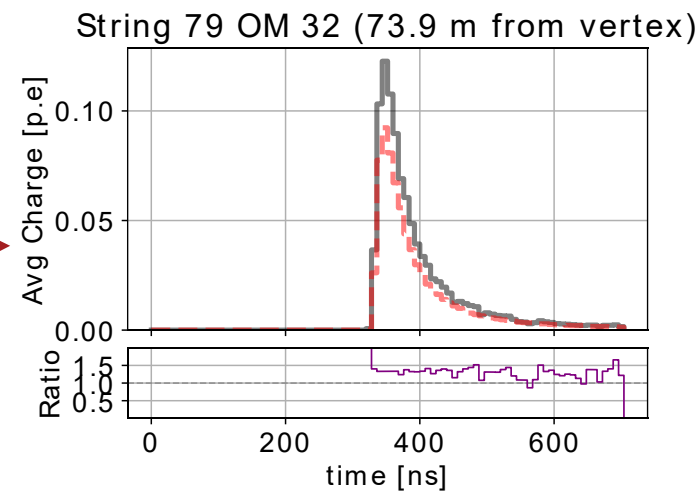
HQE





NORMAL





Out of ideas to check

- Compared scripts used by both sim vs. reco (different builds)
- Found nothing but the 1.0 -> 0.94 discrepancy in domEfficiency
- Now running a preliminary test with RDE in ClShim (hardcoded)
- Ideas at this point are very welcome

Backup Slides

icemodel_efficiency_factor

```
Using RUNNR:  1
Using SEED:  1
DOM efficiency:  1.0
Using hole ice:  angsens/as.flasher_p1_0.30_p2_-1
Looking for ice model in  /groups/icecube/kpederse/ICE/oscNext_meta/src/ice-models/resources/models/
Folder with ice model found:  /groups/icecube/kpederse/ICE/oscNext_meta/src/ice-models/resources/models/spice_3.2.1
Ice model path:  /groups/icecube/kpederse/ICE/oscNext_meta/src/ice-models/resources/models/spice_3.2.1
efficiency given 0.94
 icemodel_efficiency_factor 0.94
 UnshadowedFraction 1.0
RemoveLatePhotons:  0  photons removed from this file.
```