UPDATES

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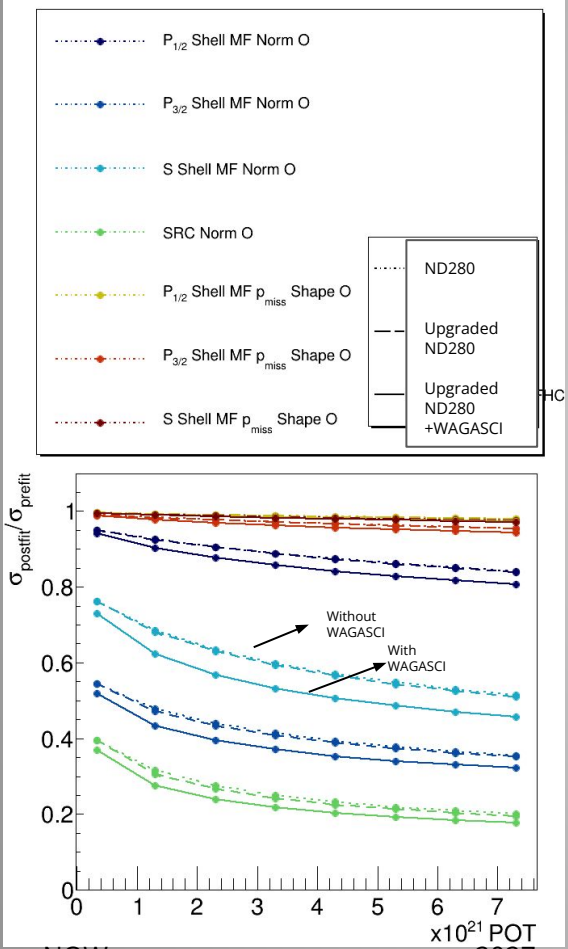
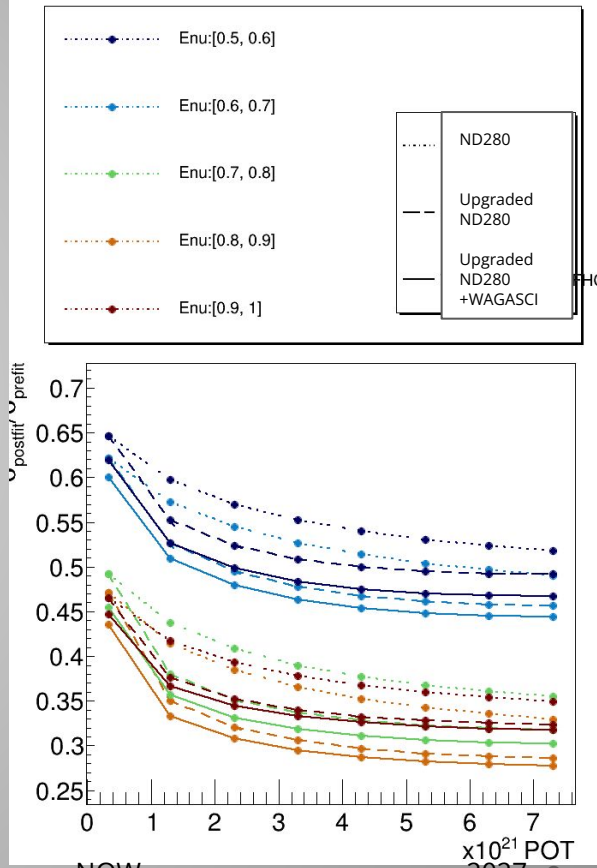
November 21 2023

Sensitivity studies with the addition of WAGASCI samples



- We consider 3 different configurations
  - ND280
  - Upgraded ND280
  - Upgraded ND280+WAGASCI
- Here we focus on certain parameters that are sensitive to the nuclear interactions
- Evolution of relative errors as a function of statistics (POT)
- We compare the uncertainty on the tuned parameters (post-fit) with respect to our prior knowledge (pre-fit)
- We clearly see that thanks to WAGASCI (additional water target) we can constrain Oxygen parameters
- Similarly we can also better constrained flux at the far detector



SFGD installation and commissioning

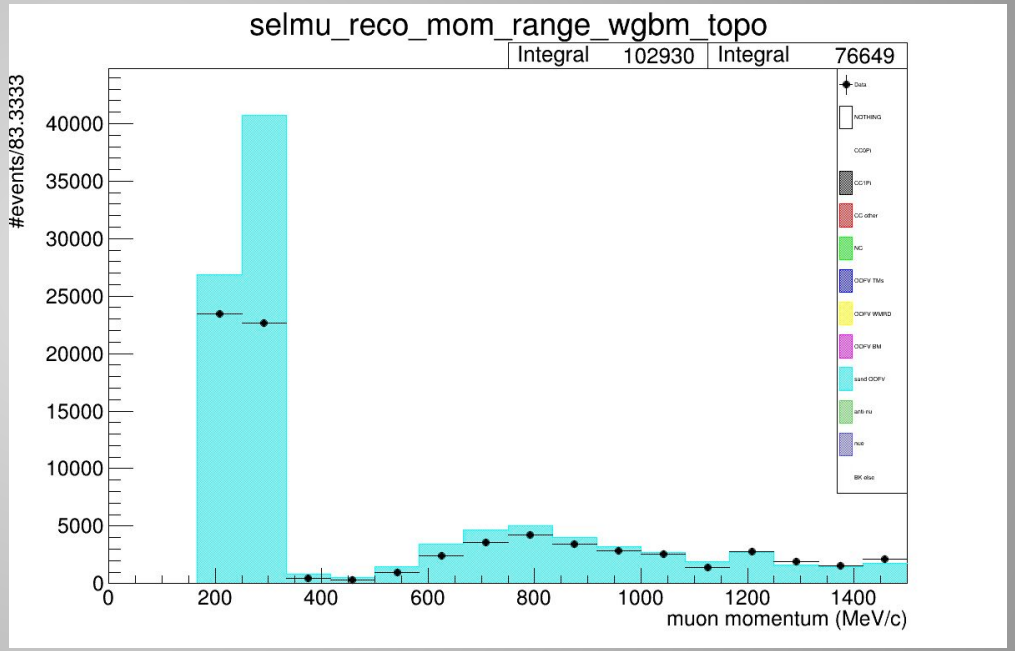
- Participated in installation with Viet
- Magnet closed
- Preparing for beam and data taking (Slow control, software, etc..)
- See more complete updates on Viet’s slides

Sand mu distributions

- Kenji’s wall MC production and data files
- César’s CC0pi analysis code (slightly modified)
- Plots made with highland drawing tools, based on John’s plotting macro

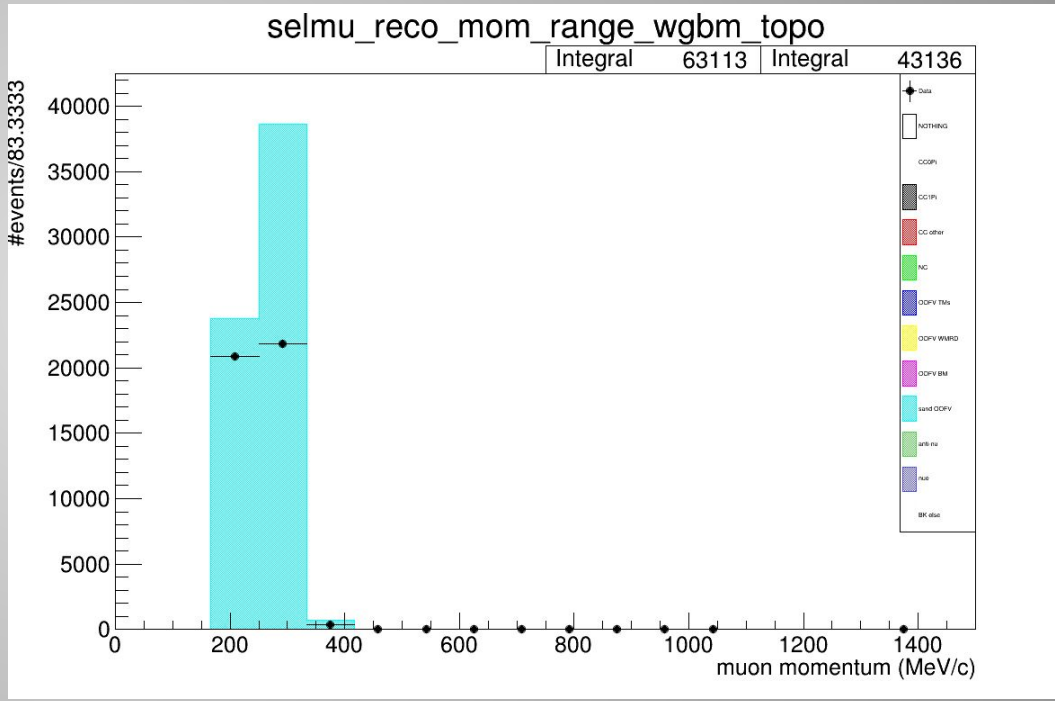
Muon momentum by range: TOTAL

- Excess events are low mom
- Other than that MC slightly higher than data

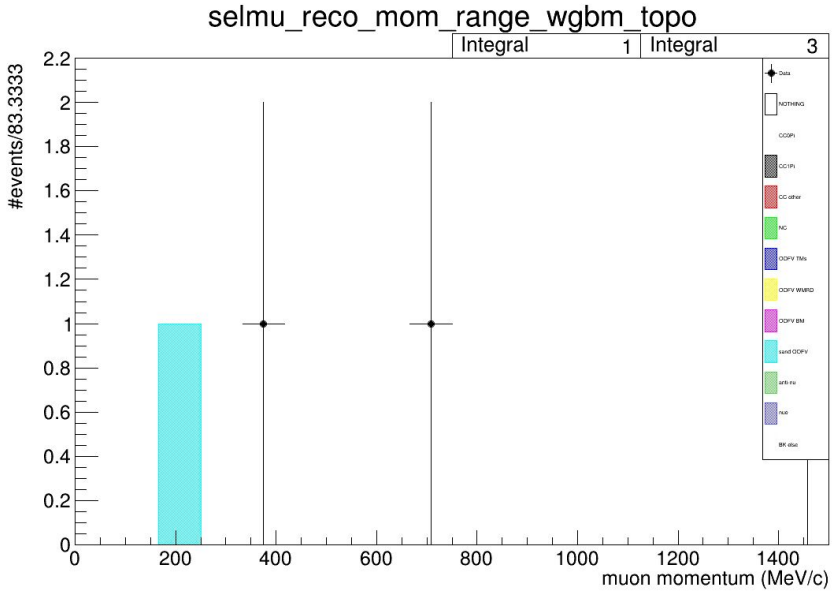


Muon momentum by range: PM

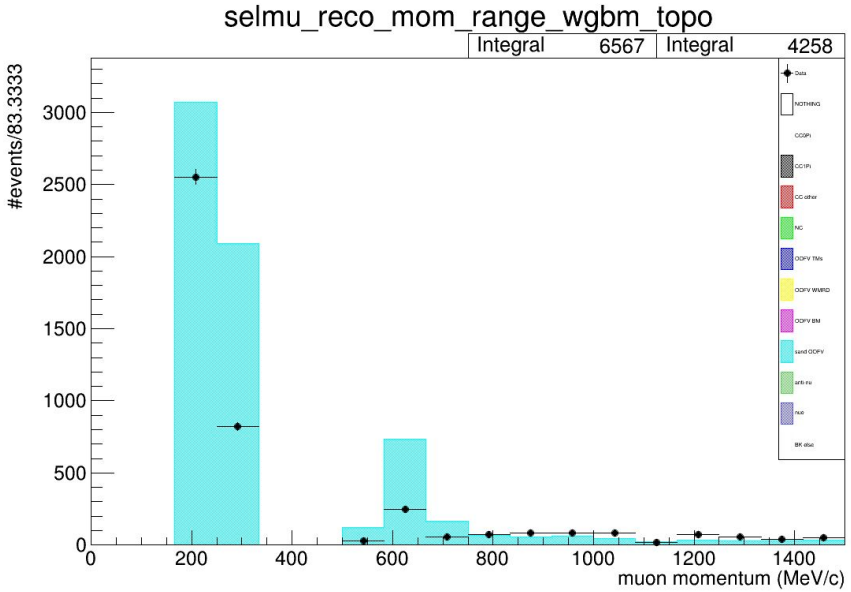
- Many of these low mom events end up in the PM



Muon momentum by range: UWG + DWG



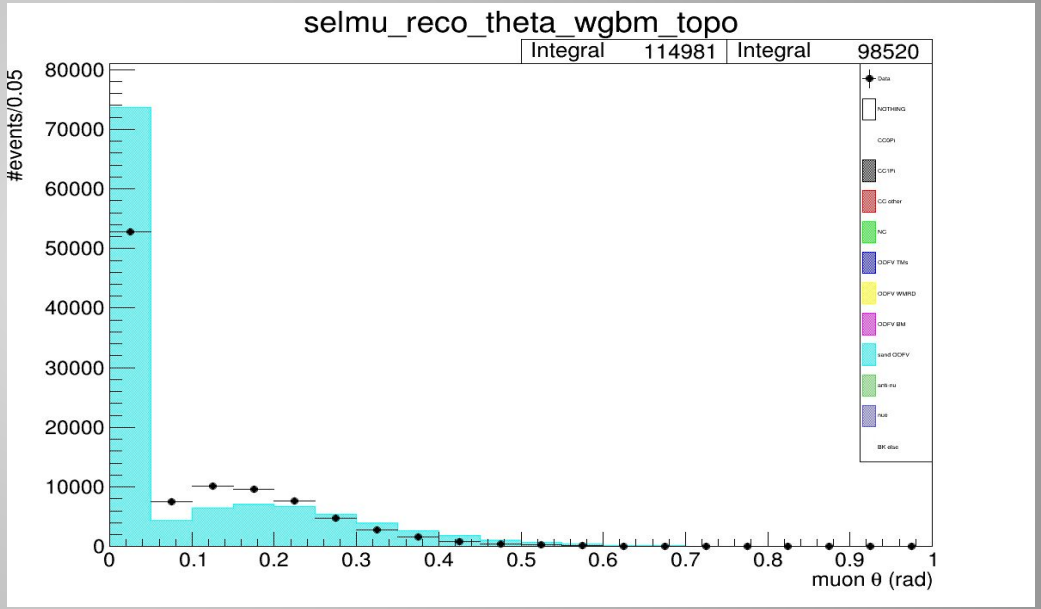
No events in the UWG



Still some excess in low mom

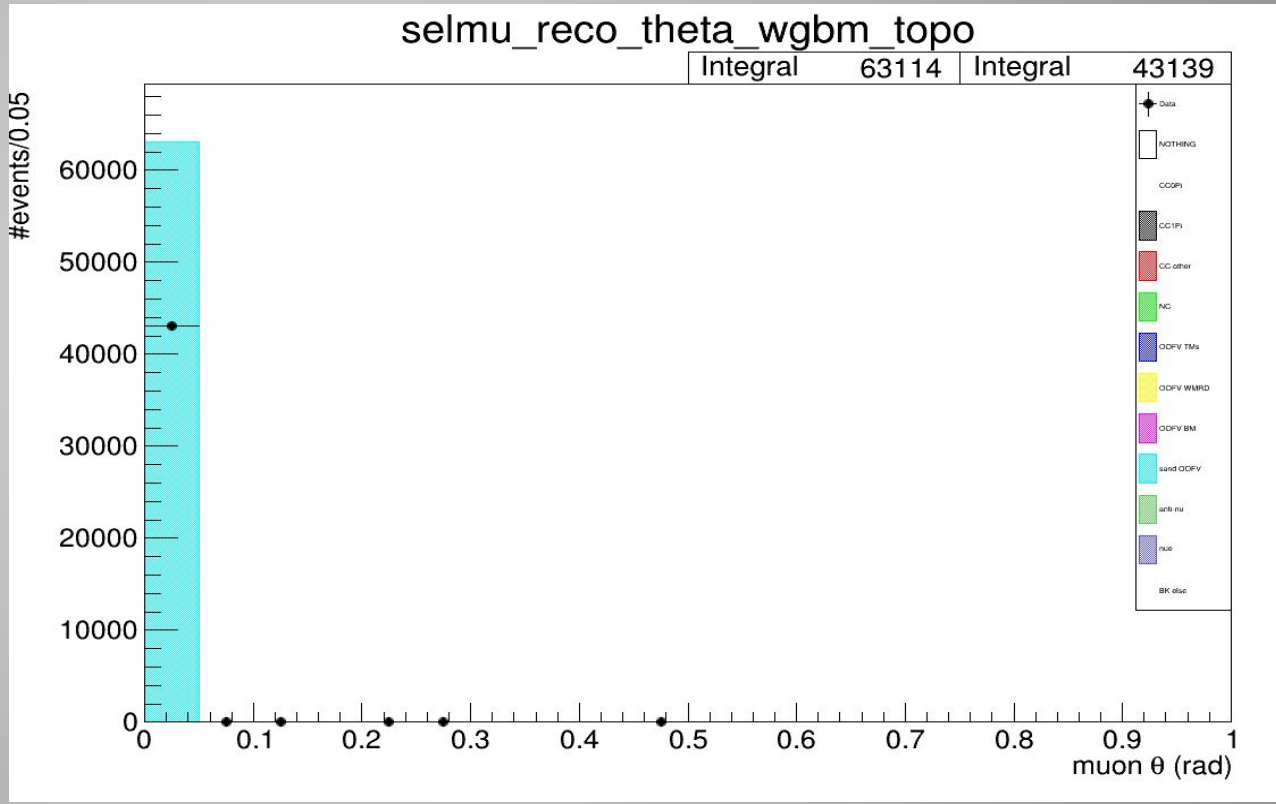
Muon theta: TOTAL

- Similar behaviour in theta, but for small angles
- MC lower than data

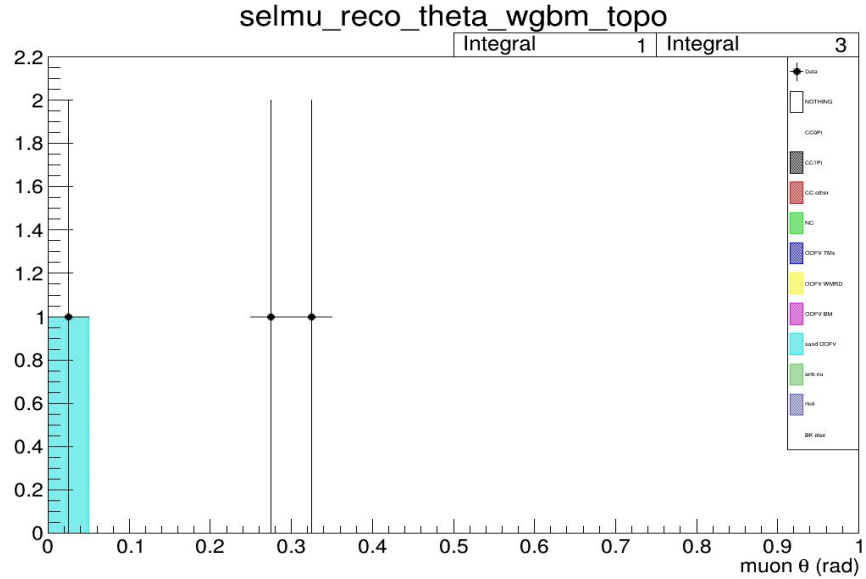


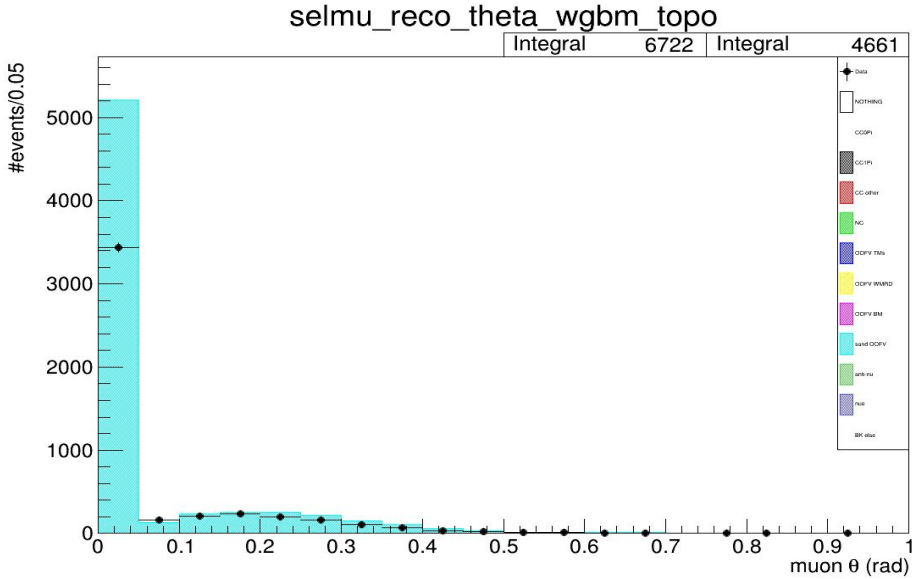
Muon theta: PM

All excess events are in PM again



Muon theta: UWG+DWG



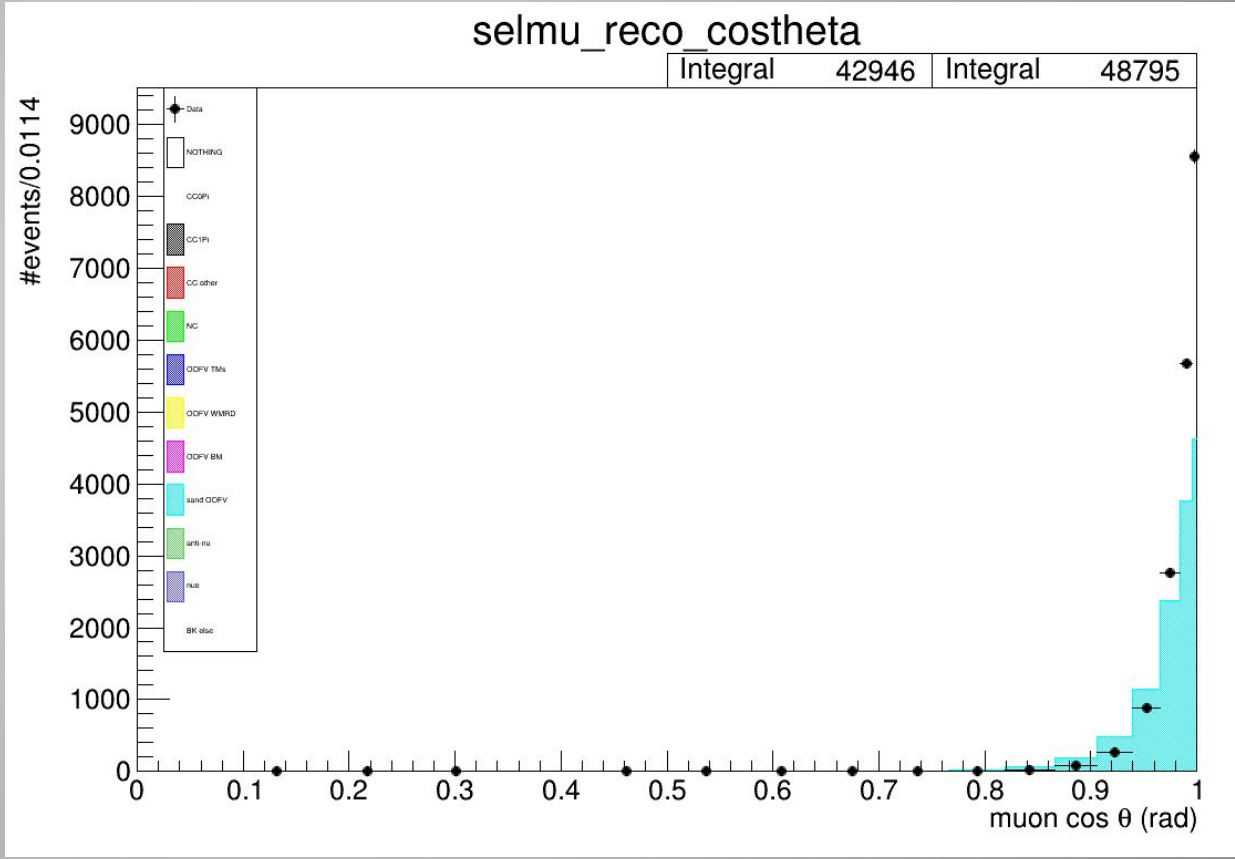


Same behaviour as before

Muon Cos theta: TOTAL

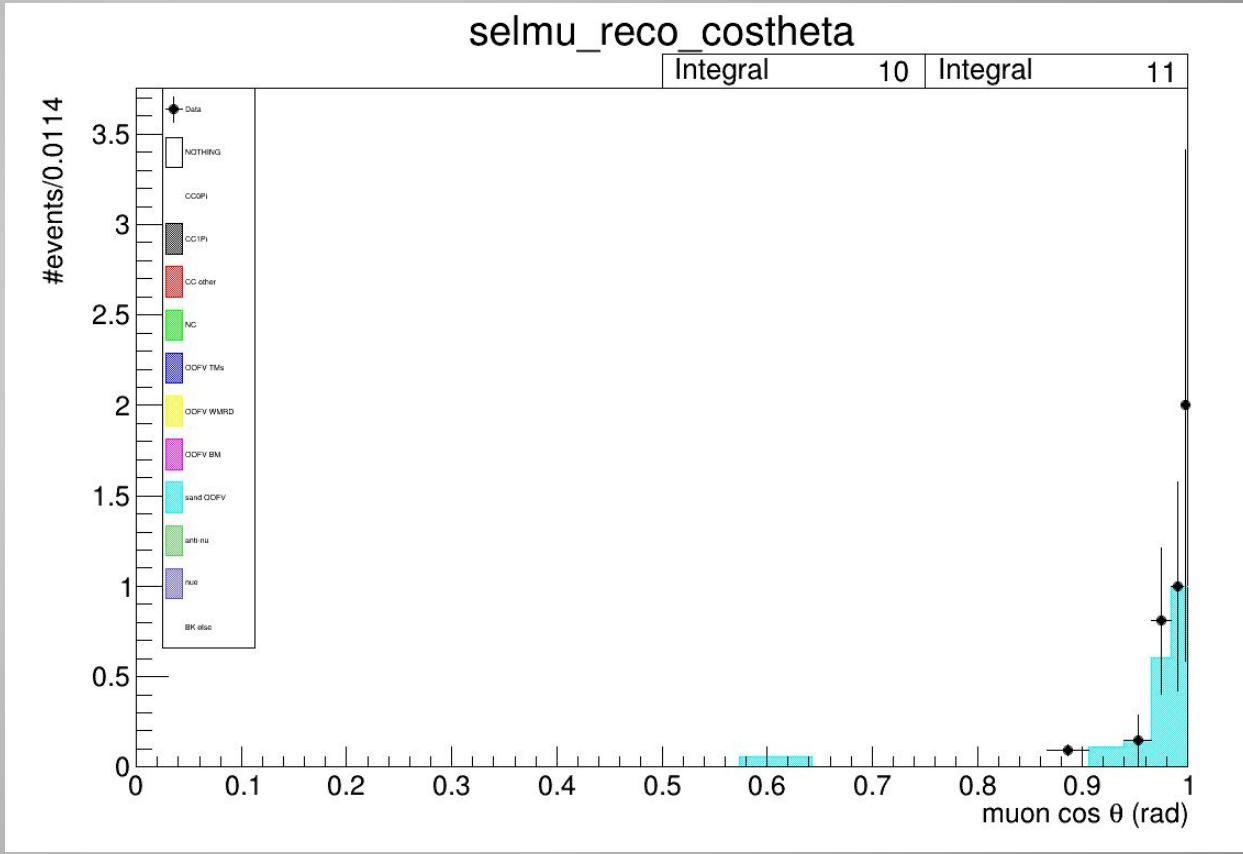
Strangely no excess in cos theta

Only in data

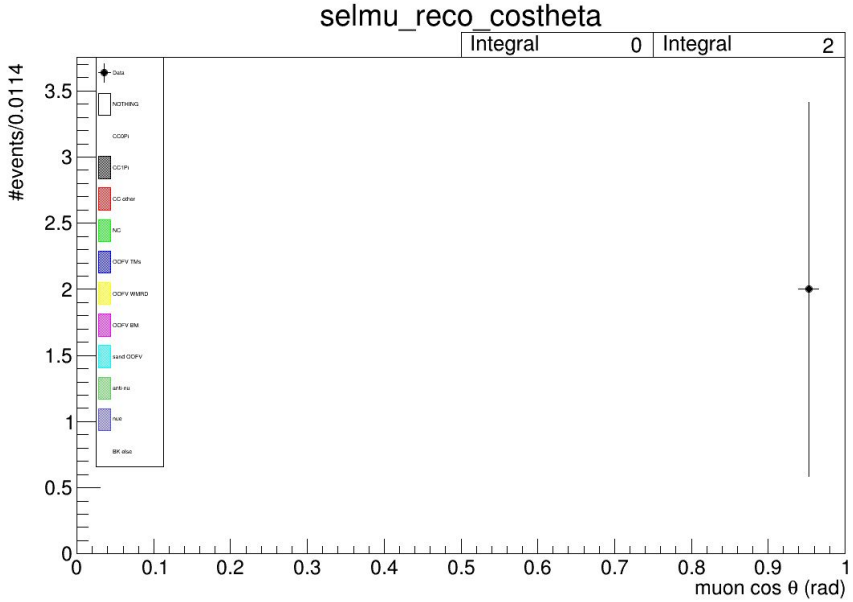


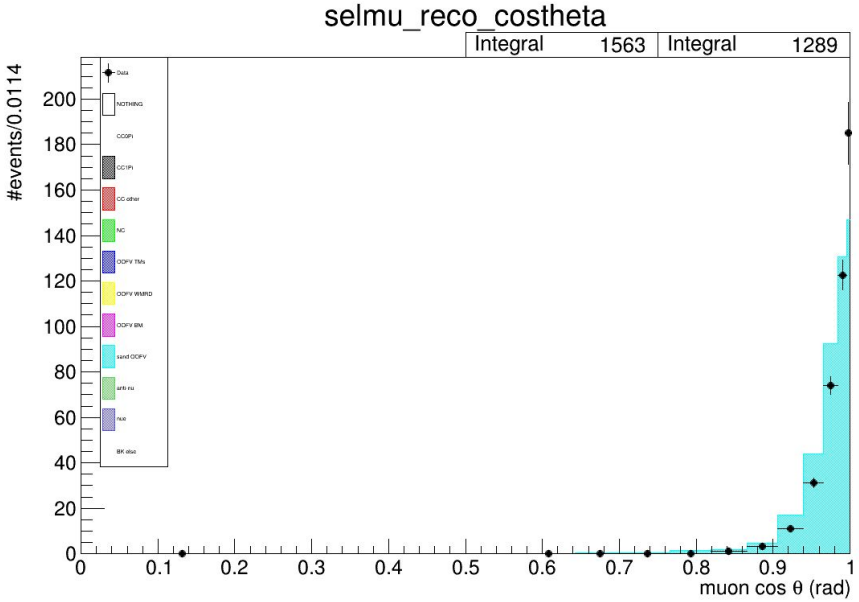
Muon Cos theta: PM

Very little events



Muon Cos theta: UWG+DWG





Conclusion

- Excess of events in certain plots
- Possible due to an excess of badly reconstructed events