Baby MIND

Plots for meeting

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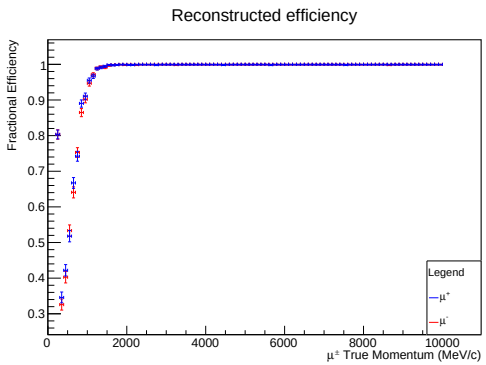
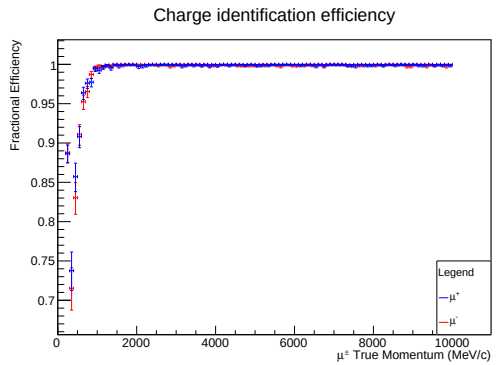
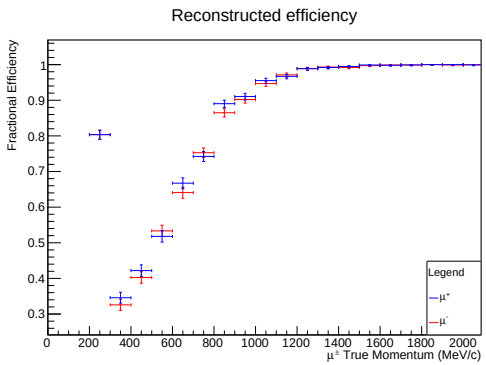
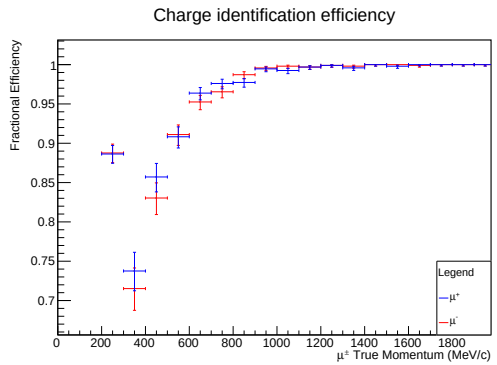
Monte Carlo events

- Test reconstruction performance against Monte Carlo truth in bins of momentum
- For muons, compare measured curvature vs expected curvature from MC in bins of momentum
- Then compare measured range vs expected range in bins of momentum
- Then you can plot measured momentum from curvature and compare with measured momentum by range



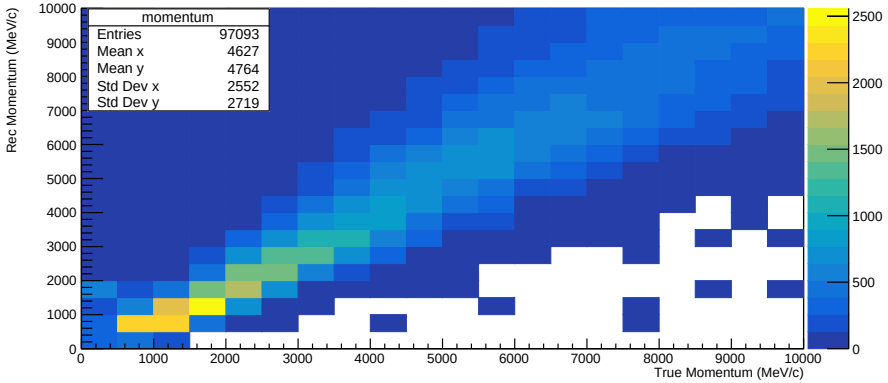




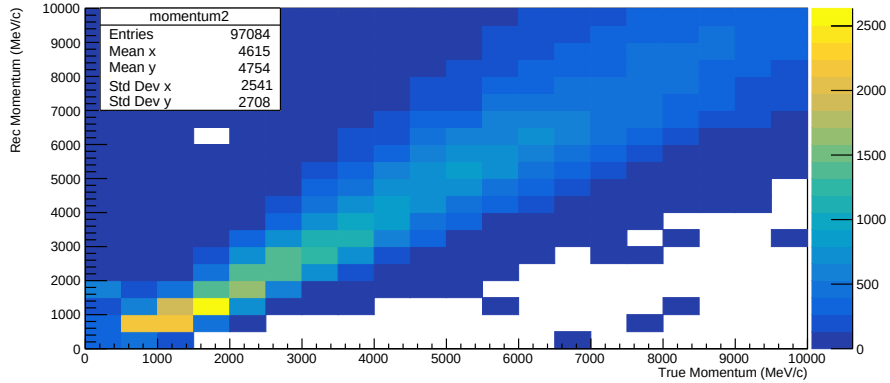


Monte Carlo events

μ^- beam 500MeV/c/bin



μ^+ beam 500MeV/c/bin



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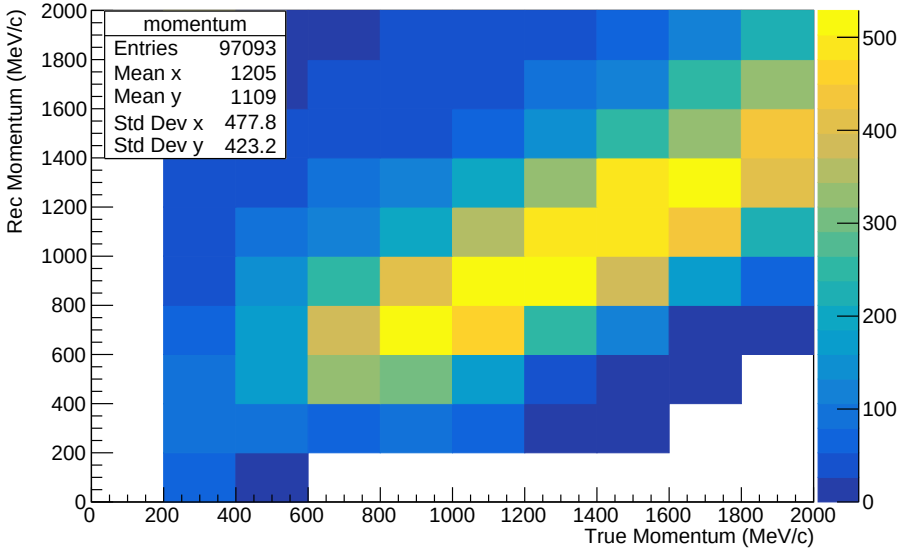
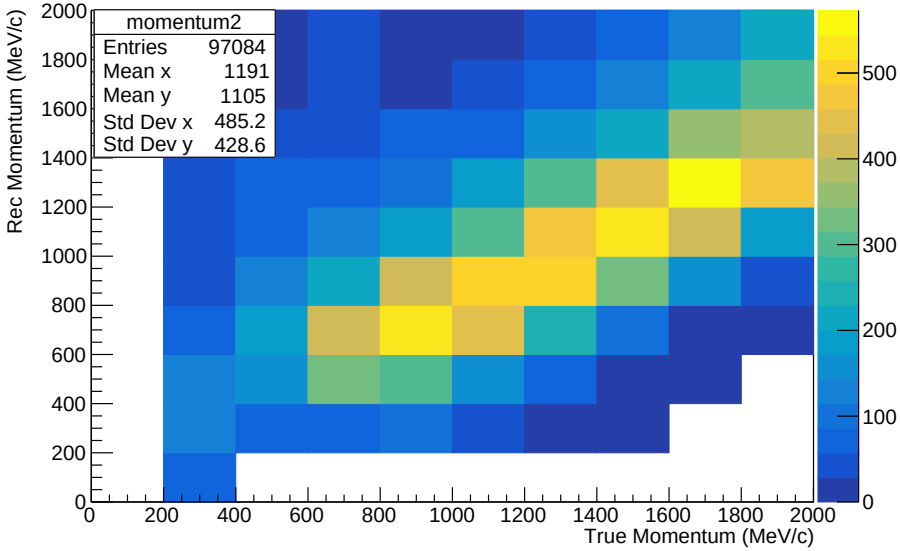
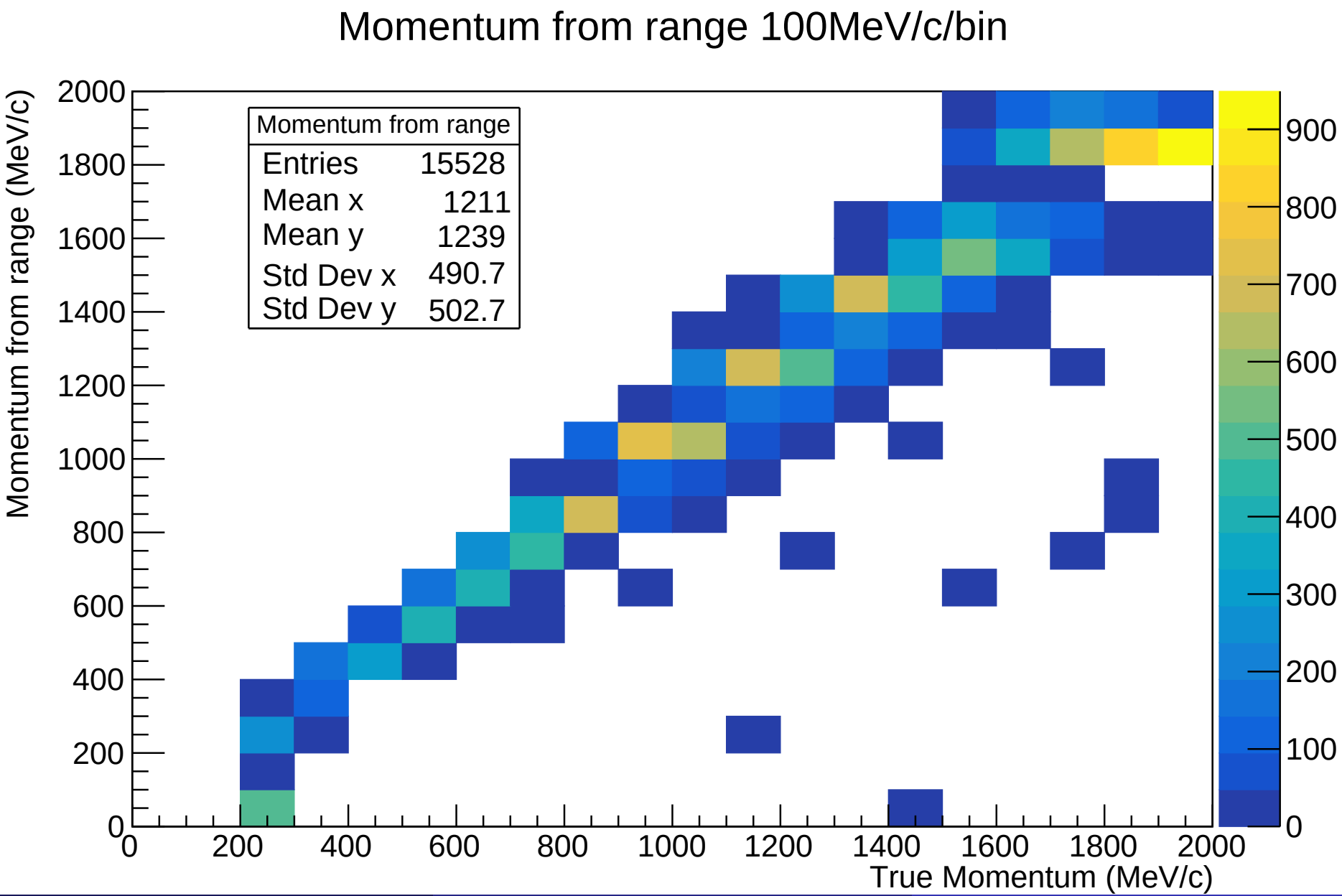


μ^+ beam 200MeV/c/bin

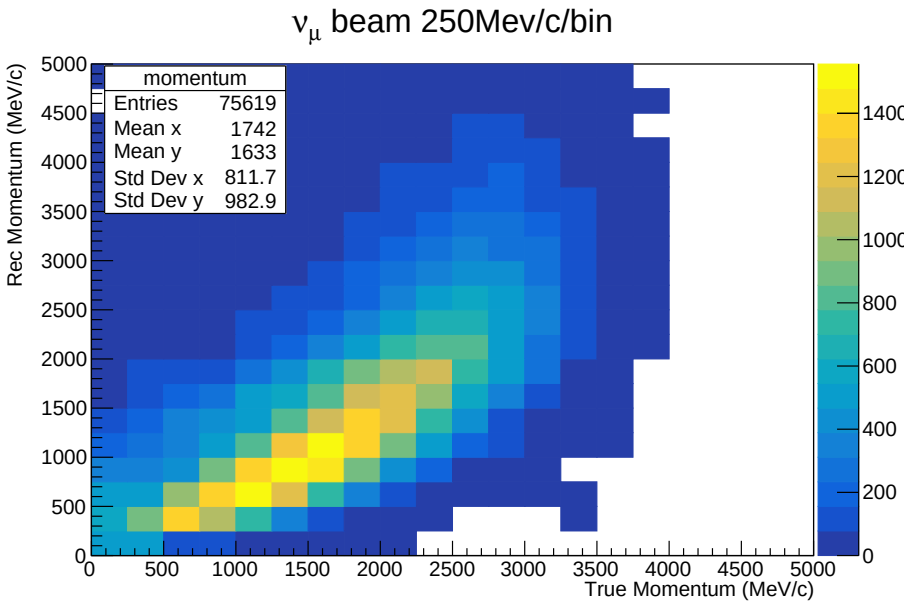


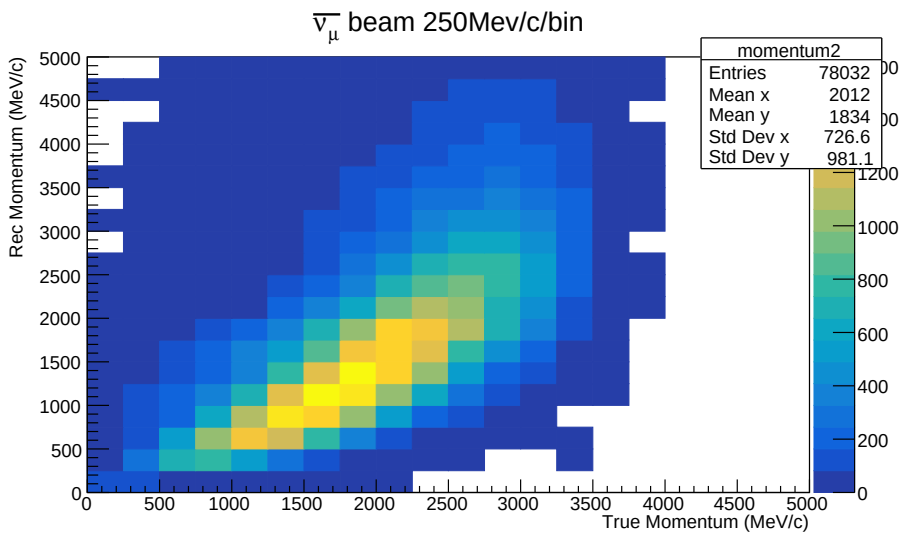
Monte Carlo events



From the nuSTORM beam

- Interactions in MIND with NuStorm beam.

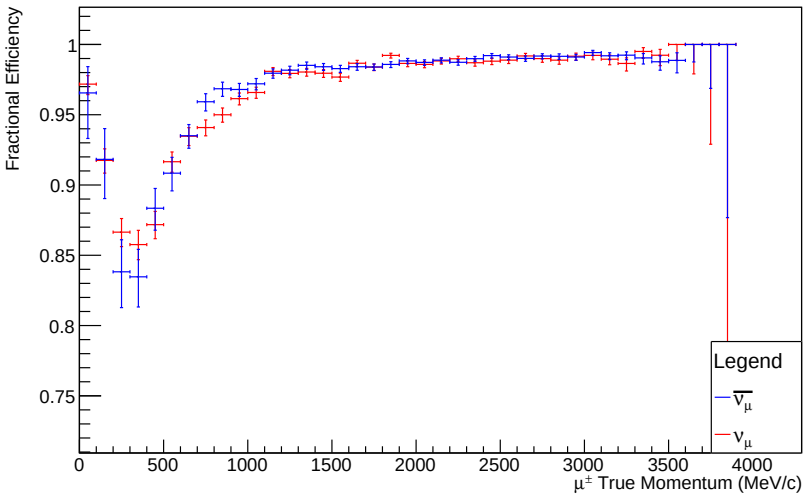




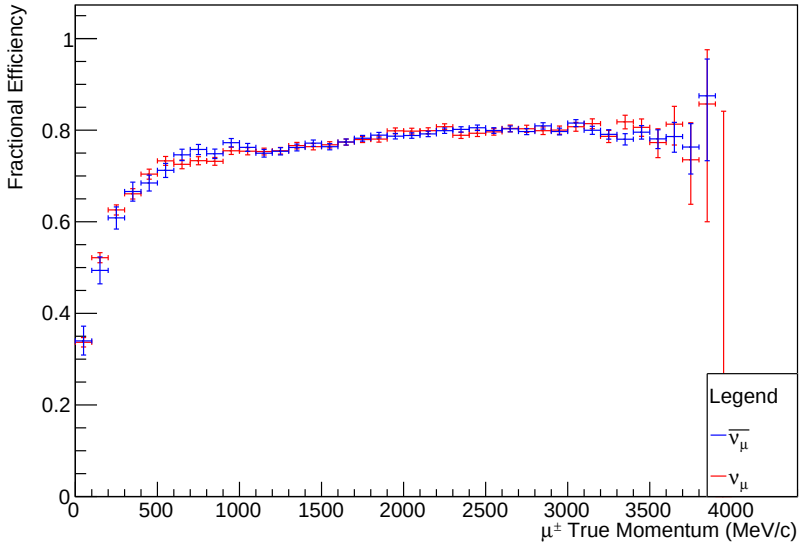
From the nuSTORM beam

- Interactions in MIND with NuStorm beam.

Charge identification efficiency

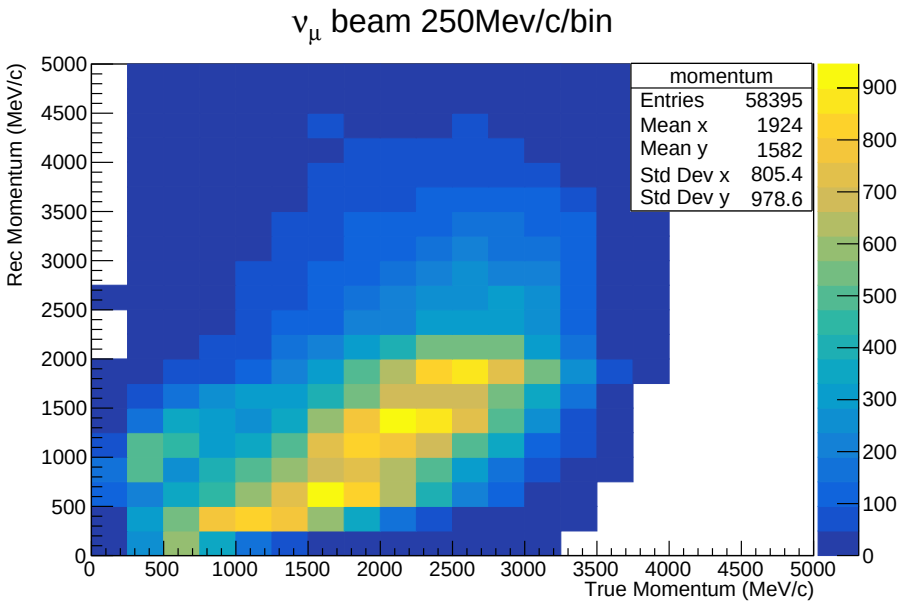


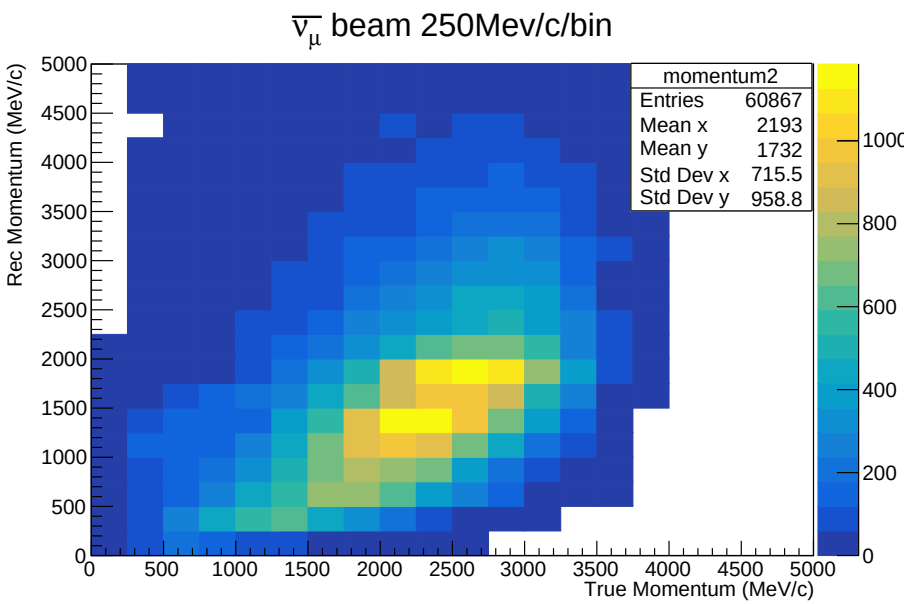
Reconstructed efficiency



From the nuSTORM beam

- Interactions in TASD with NuStorm beam.





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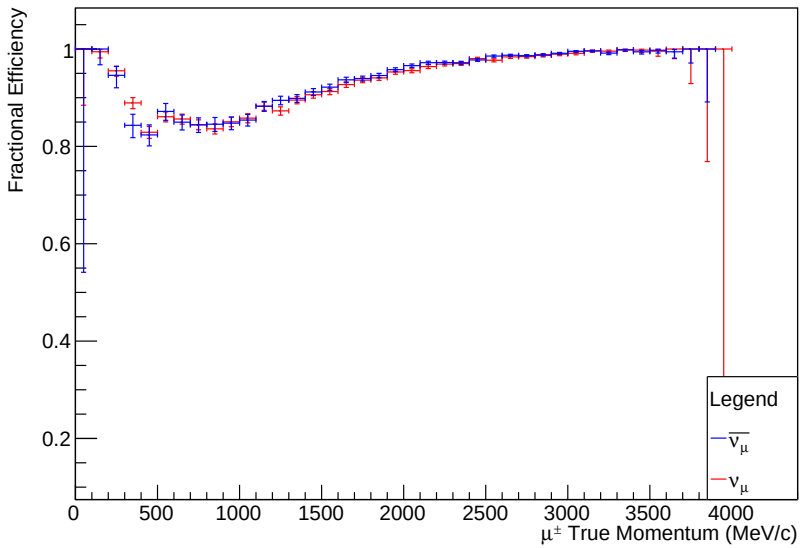

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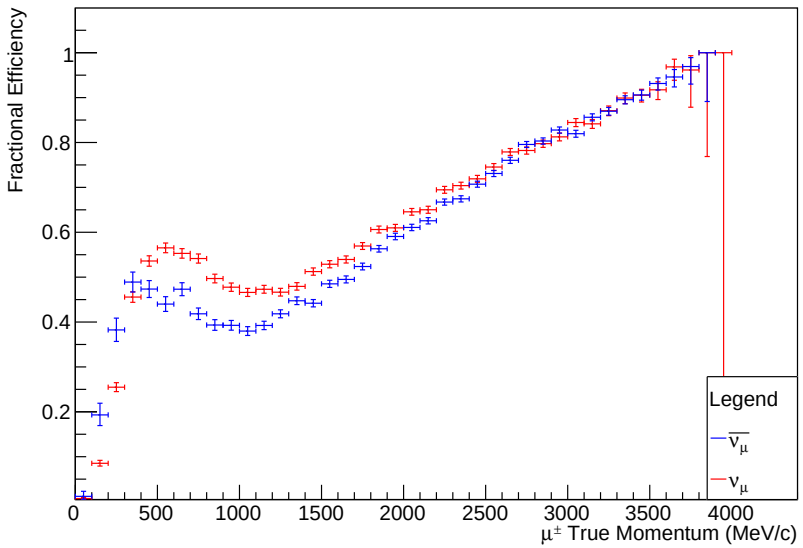
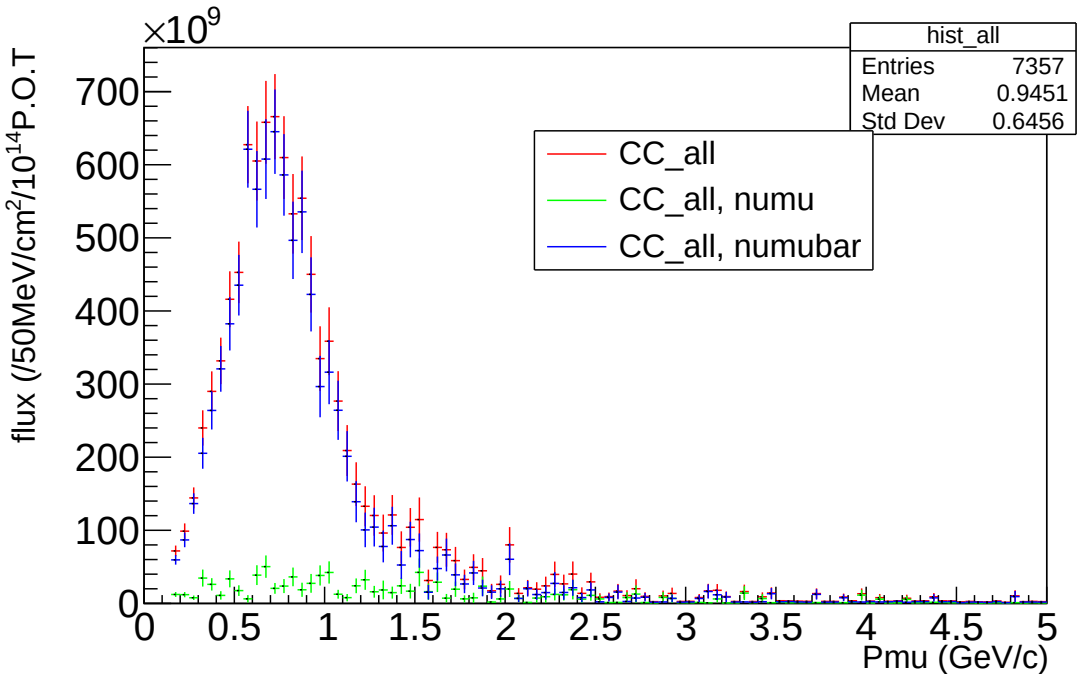


From the WAGASCI beam at 1.5 degrees

- Show the neutrino and antineutrino spectra for the wrong-sign beam (also for the right-sign beam). Do the ratio of neutrino to antineutrino in bins of neutrino energy.
- Do a GENIE simulation of the neutrino and antineutrino beam and place the events uniformly in the first three iron modules of Baby MIND. This will allow you to obtain the ratio of neutrino to antineutrino events (i.e.. multiplied by cross section) in Baby MIND as a function of neutrino energy.
- This can be compared to the neutrino data from the last six days of data taking in May 2018. You can select neutrino events in Baby MIND by putting a veto on S1 and making a coincidence of S2 and S3 (or S4). This can be compared with the simulation. To avoid doing cross-sections, we do the ratio of neutrino to antineutrino (to first order, the nuclear effects in the cross sections cancel).



From the WAGASCI beam at 1.5 degrees