



$J/\psi \rightarrow \mu\mu$ Update

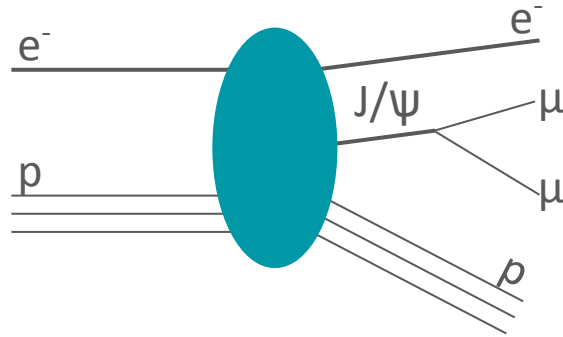
EDT Meeting 27/10/25

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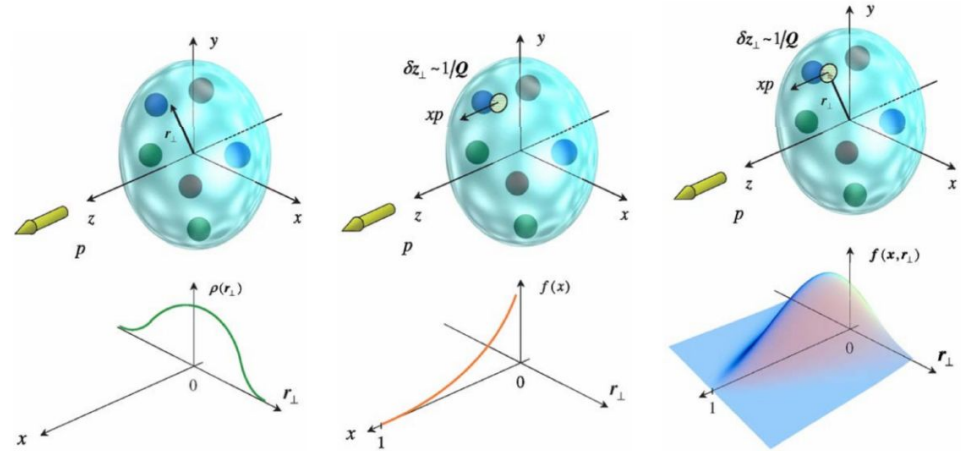
Motivation



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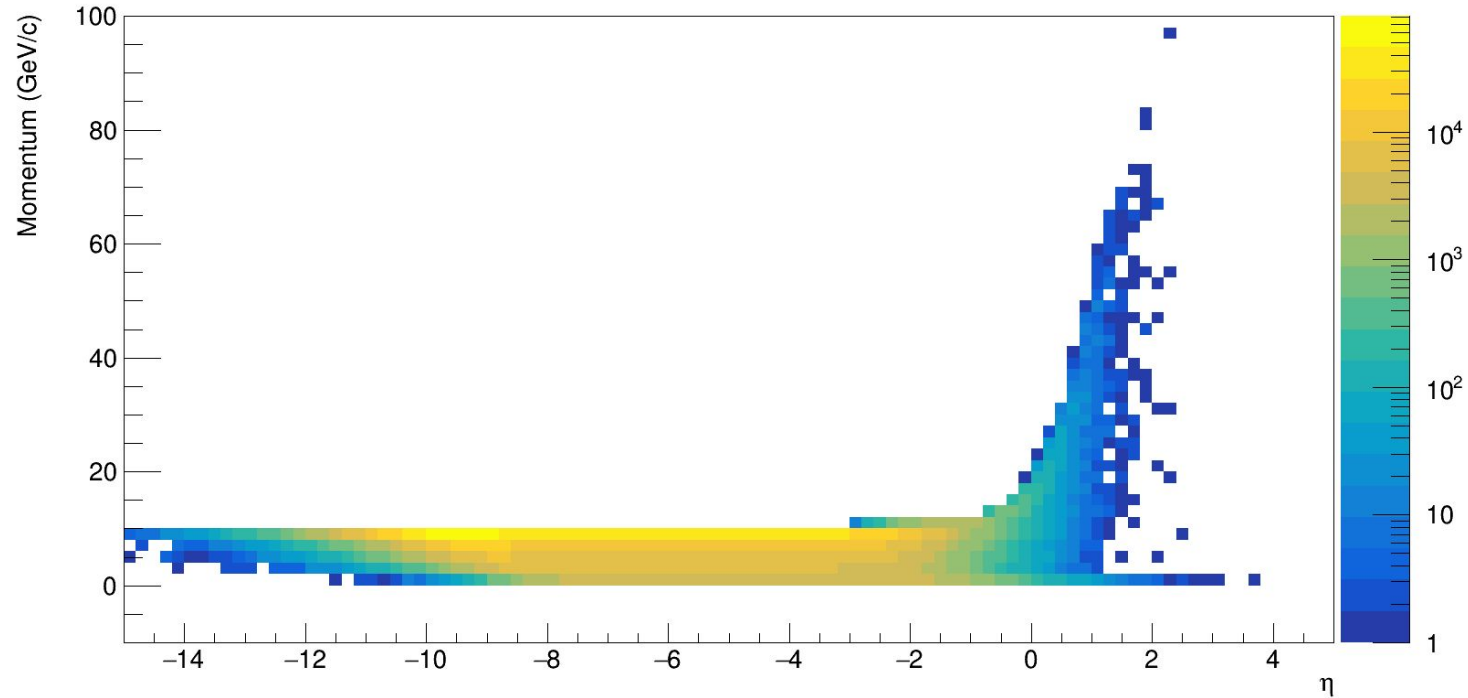


DVMP

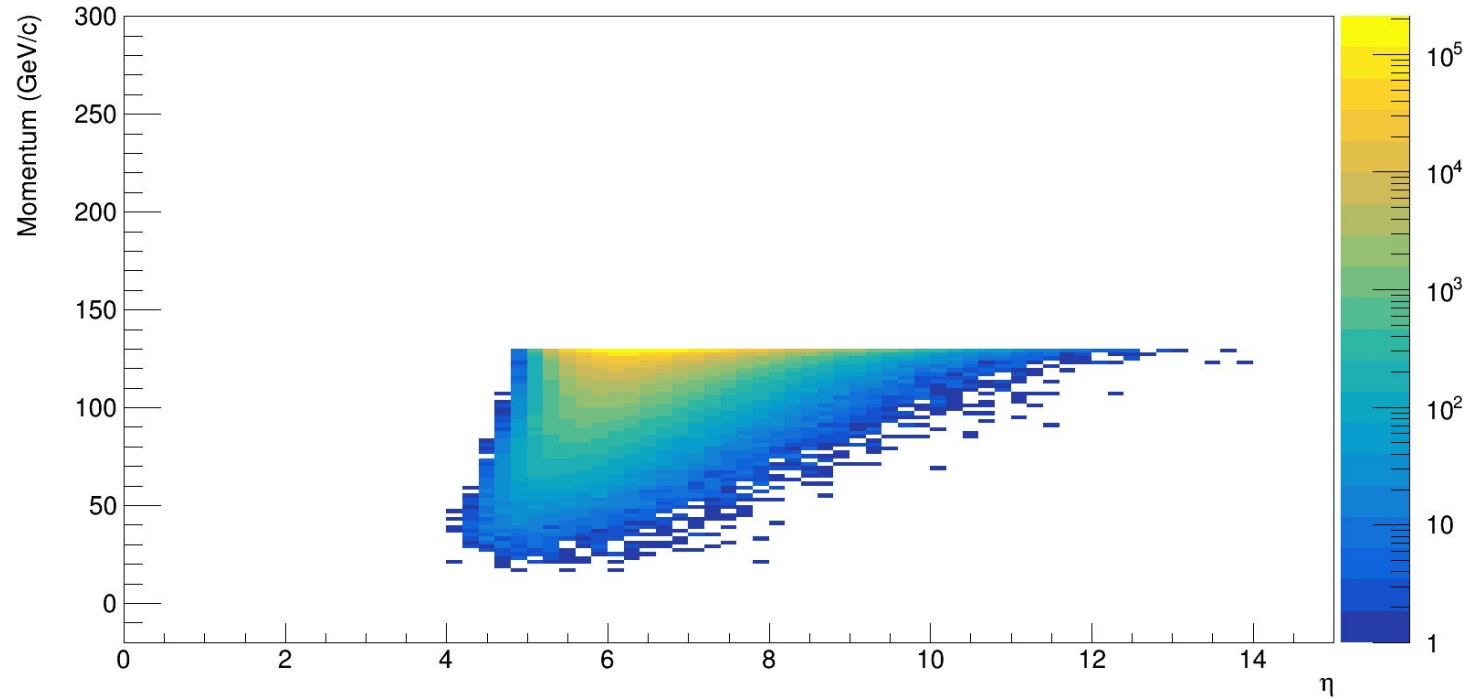


Uncovering Hadron Structure With Generalised Parton Distributions,
A.V. Belitsky and A.V. Radyushkin

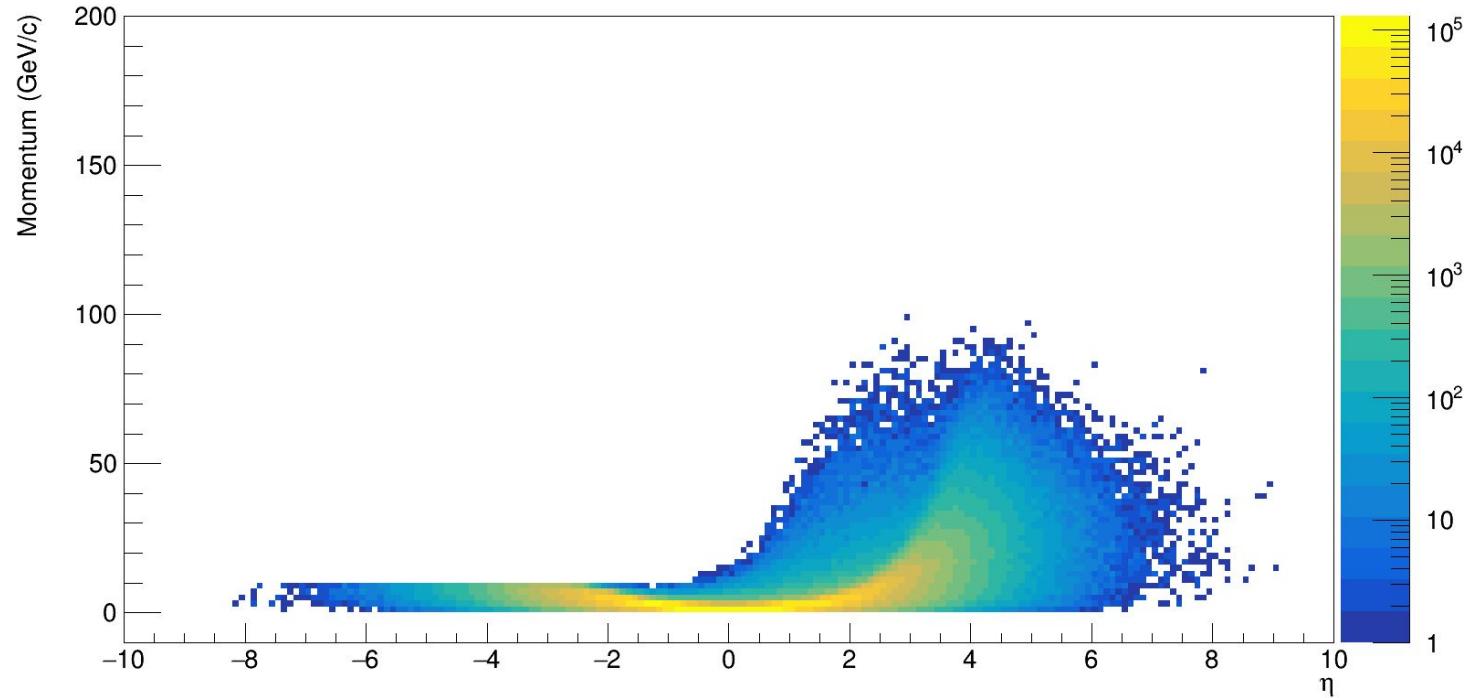
10x130 η p Electrons



10x130 η p Protons



10x130 η p Muons



Cuts/Particle ID



- Currently cheating with the protons.
 - Any forward detector hit of sufficient energy is taken as proof of proton -> use truth.
- Other particles are IDed using very basic cuts.
 - Positive track -> positive muon
 - Negative muon determined by $\text{invMass of } J/\psi$ (few other cuts too).
- No muon ID built in yet.
- Not using electron finder either.

Total Events Processed: 2,732,981

Cut Flow:

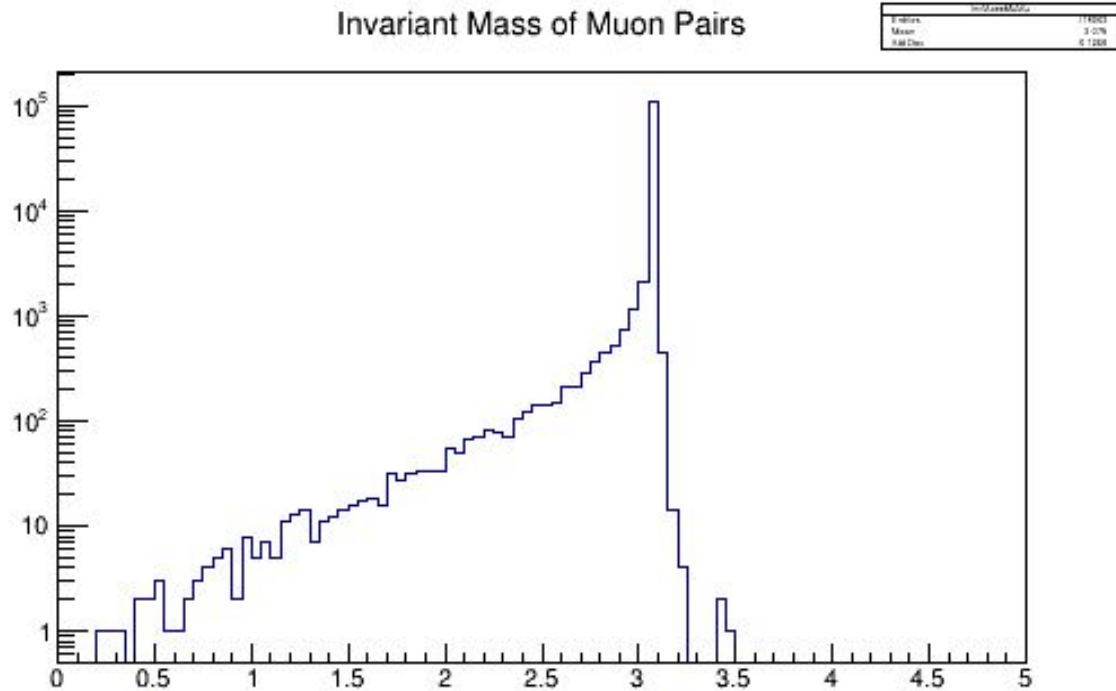
- Events with 3 tracks: 1,117,971
- Events with identified proton: 748,004
- Events with identified electron/muon pair: 118,063

Incorrectly identified electron tracks: 21,373

Invariant mass



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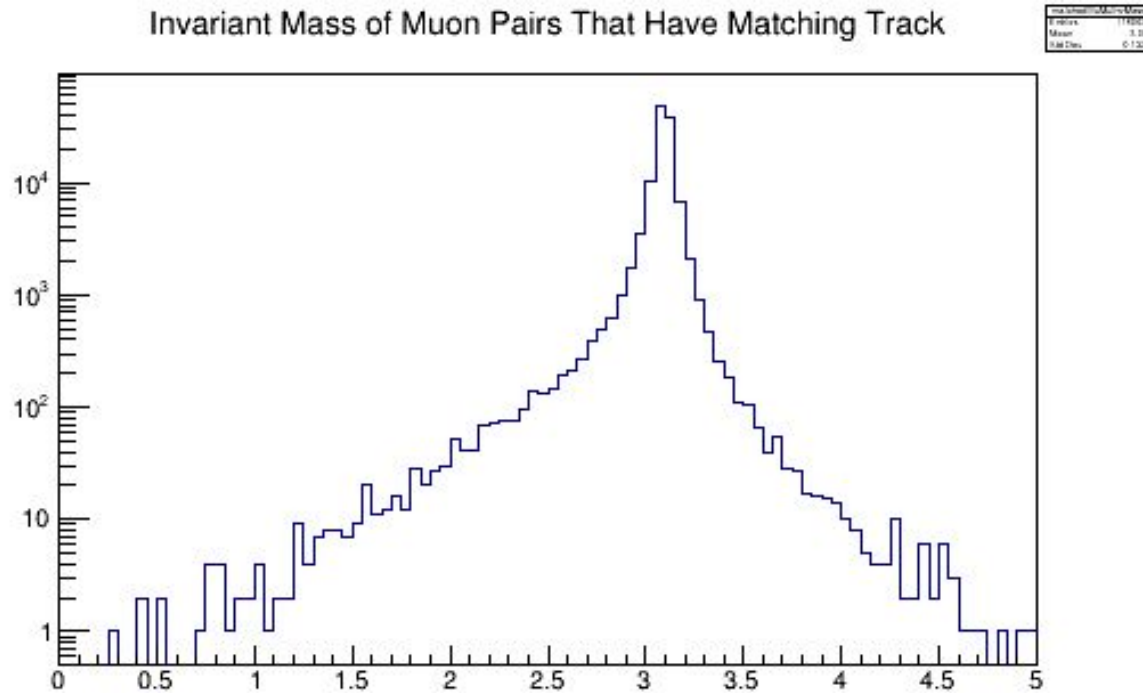


Invariant mass



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Invariant Mass of Muon Pairs That Have Matching Track



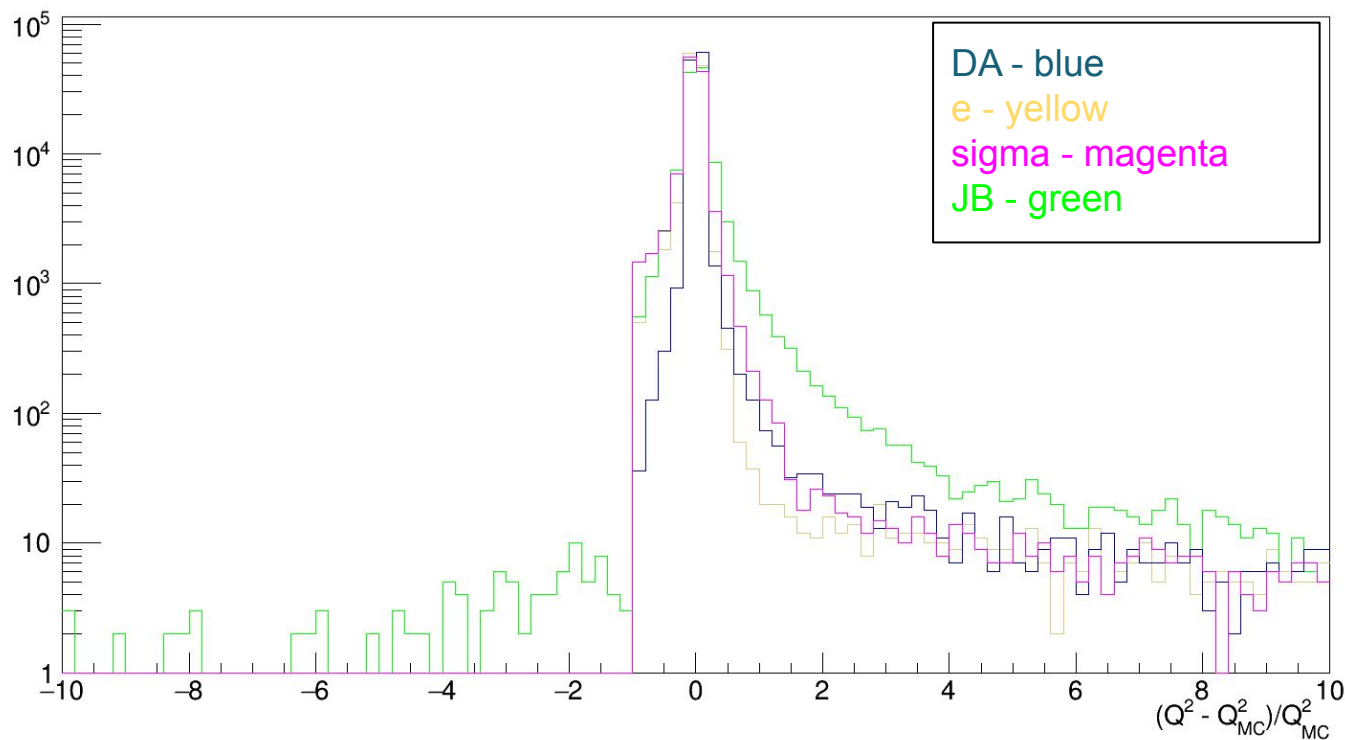
Q^2 Method Plots



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Delta Q^2 (Reconstructed - True) using the electron Method

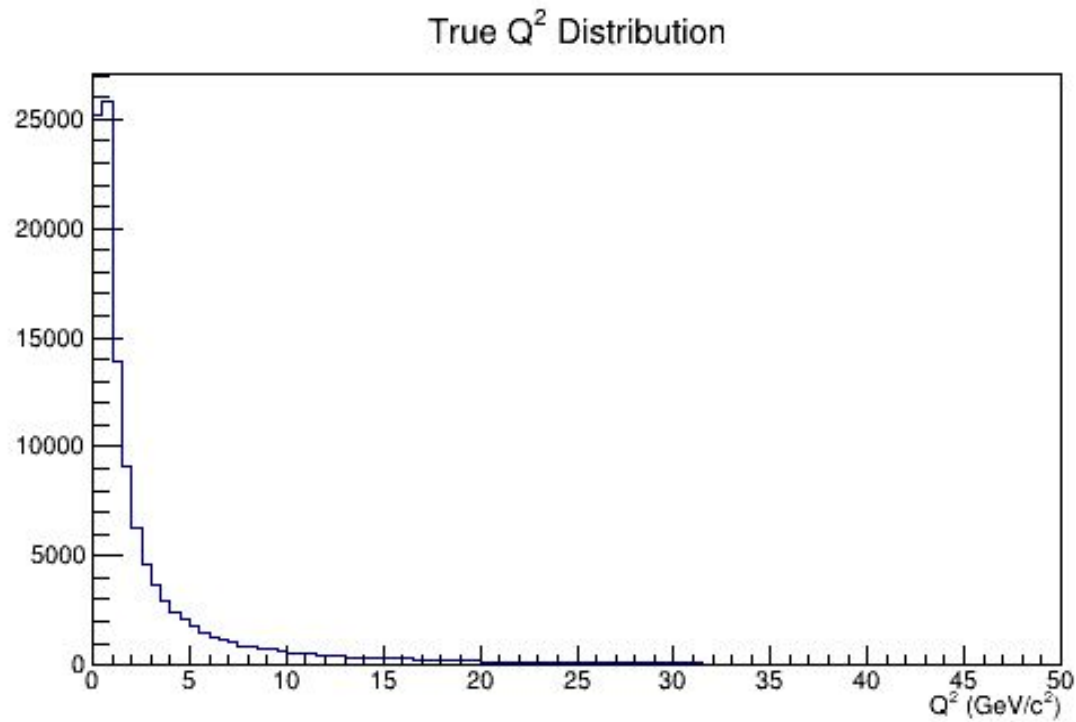
deltaQ2_e	
Entries	118063
Mean	-0.01328
Std Dev	0.3438



Q^2 Plots



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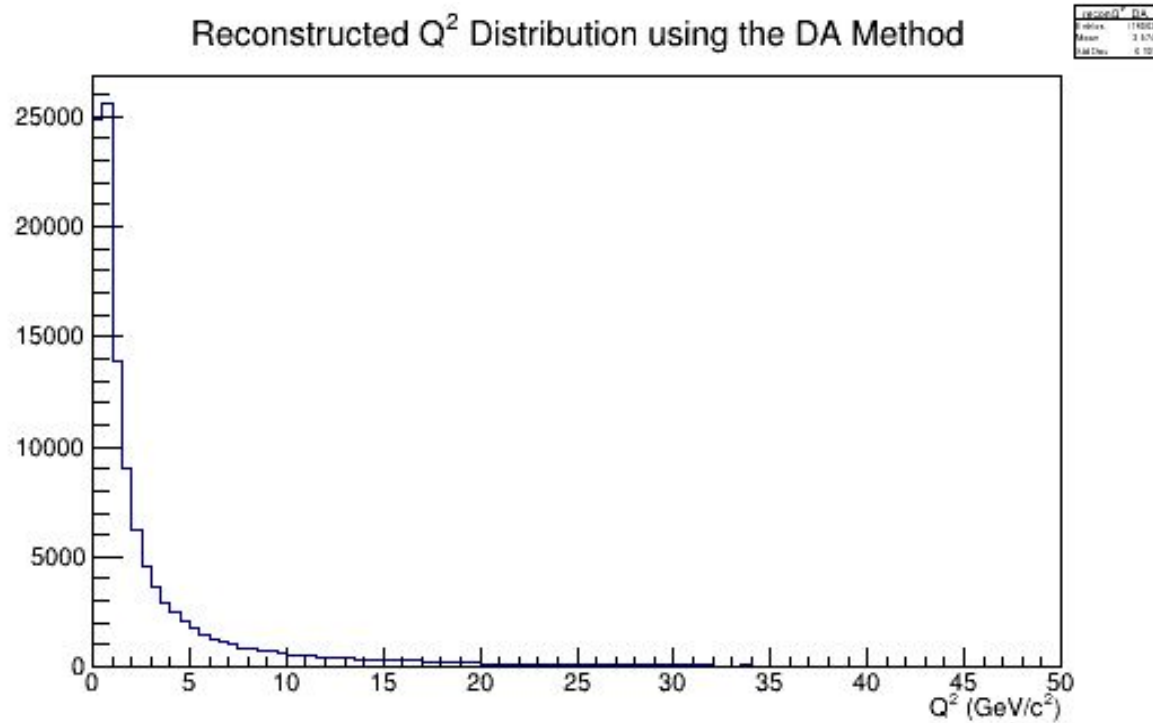


Q^2 Plots

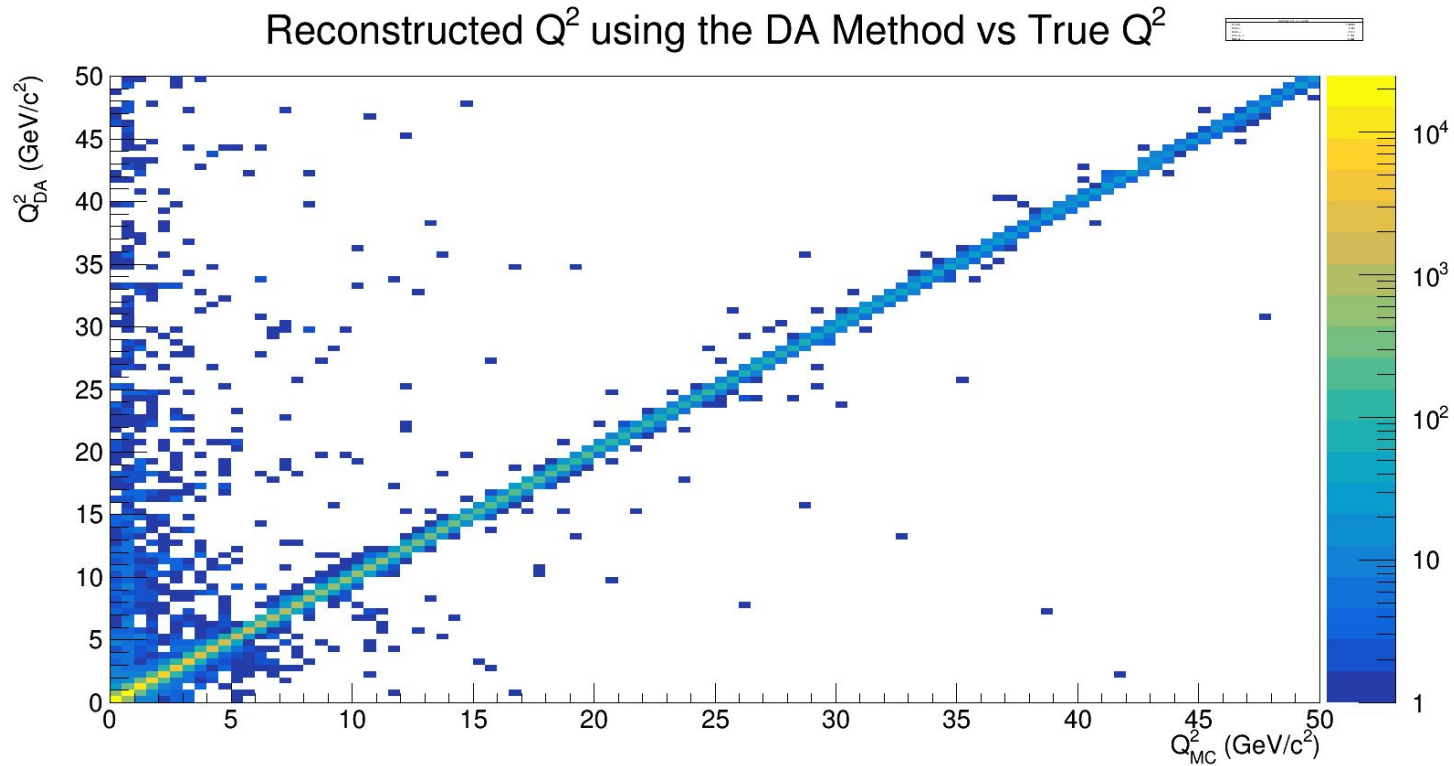


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Reconstructed Q^2 Distribution using the DA Method



Q^2 Plots



What to do?



- Several kinematic variable plots aren't working.
- Fix Protons.
 - Need reconstruction changes eicrecon?
- Make use of electron finder (or equivalent cuts).
- Use the muonID cuts.
 - Run analysis code on DIS backgrounds.