Rho0 Analysis Update

December 11, 2023

Phoebe Sharp

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$$C12(\gamma, \pi^+ \pi^- p\ p)X$$

1. Reaction Filter
    1. Momentum and Energy Conservation
    2. Common Vertex
2. DSelector
    1. No extra tracks and showers
    2. Confidence Level Cuts on PID FOM > = 0.1 (Background cut)
    3. Confidence Level Cuts on Kin fit > = 0.01(Background cut)
    4. Beam energy between 6 GeV and 10.81 GeV
    5. Off time photon event weighting.
3. PreSelection
    1. T > 1 GeV^2 (less likely to be a hard knock out if under 1 GeV^2)
    2. Proton sorting
        1. Lead proton has momentum > 1 GeV
        2. Recoil has momentum between 300 MeV and 1 GeV
    3. Energy Balance between -3 and 3 GeV
4. Analysis Script
    1. Z-vertex cut
    2. mis identified pion and proton

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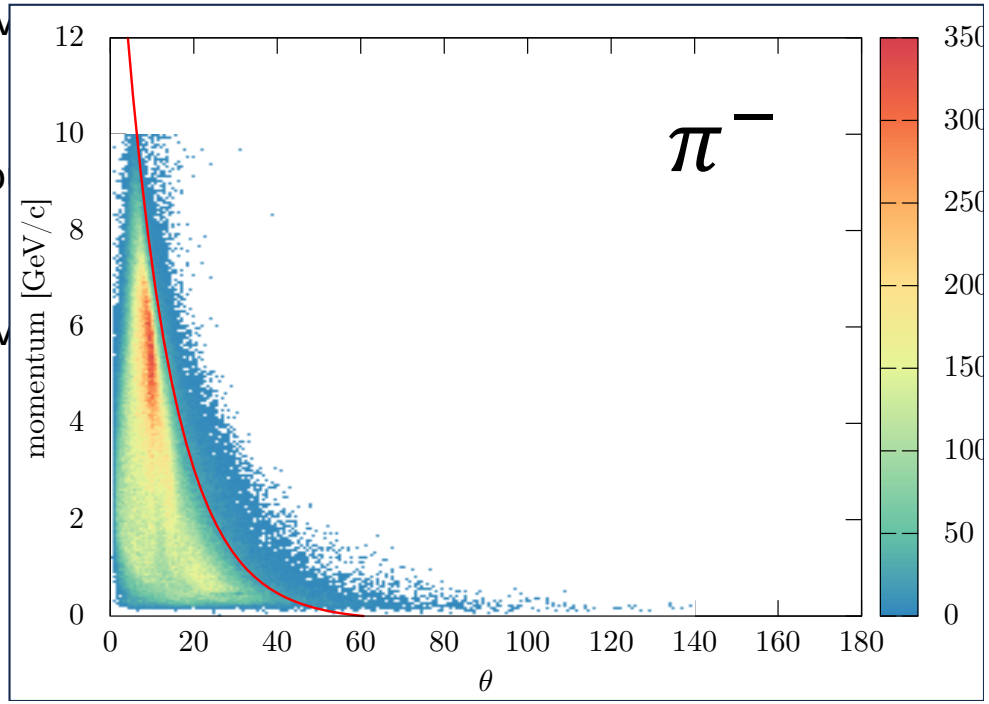

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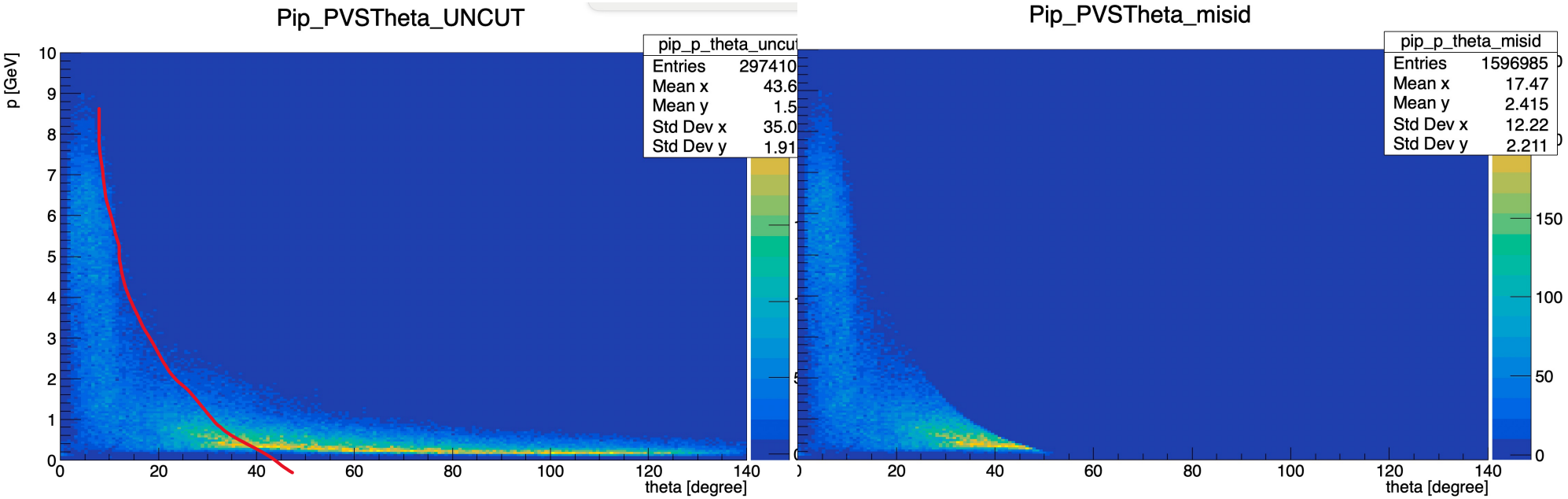
Mis-Identified Pi+ and Protons



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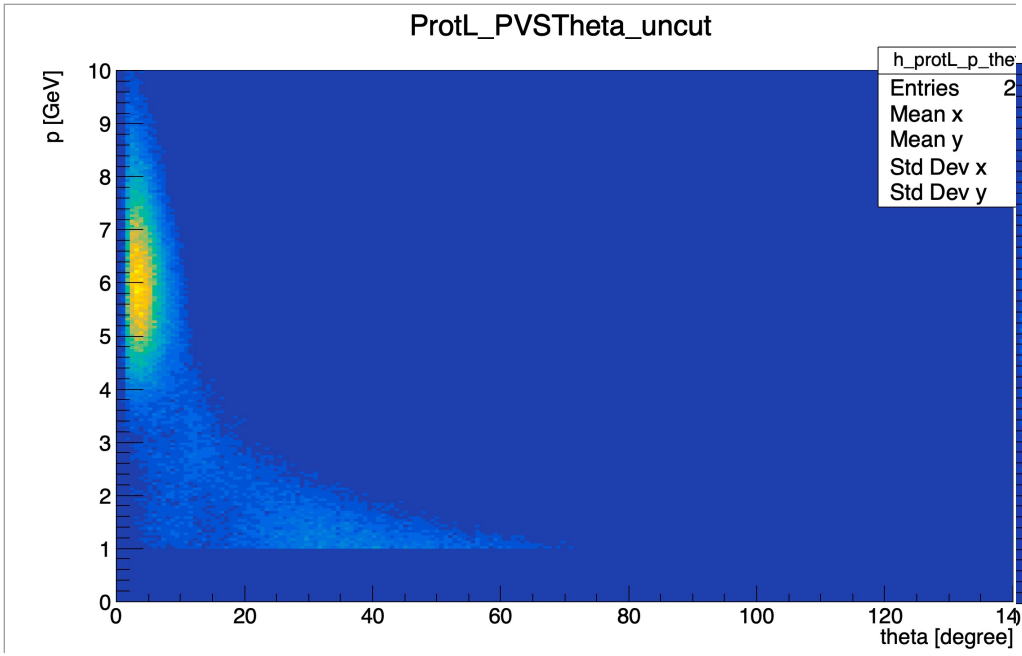

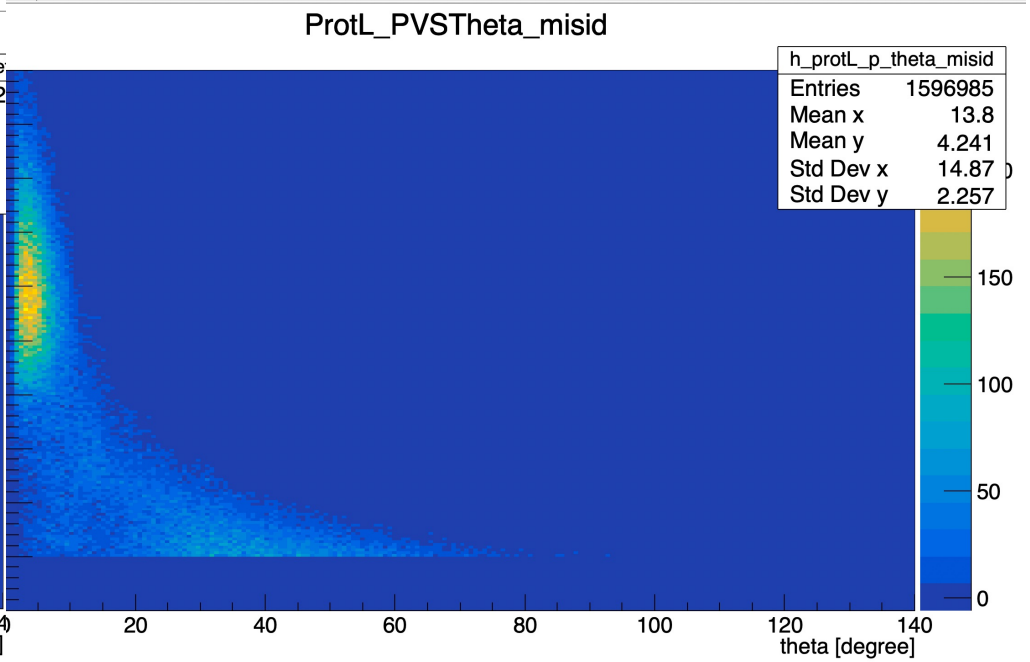

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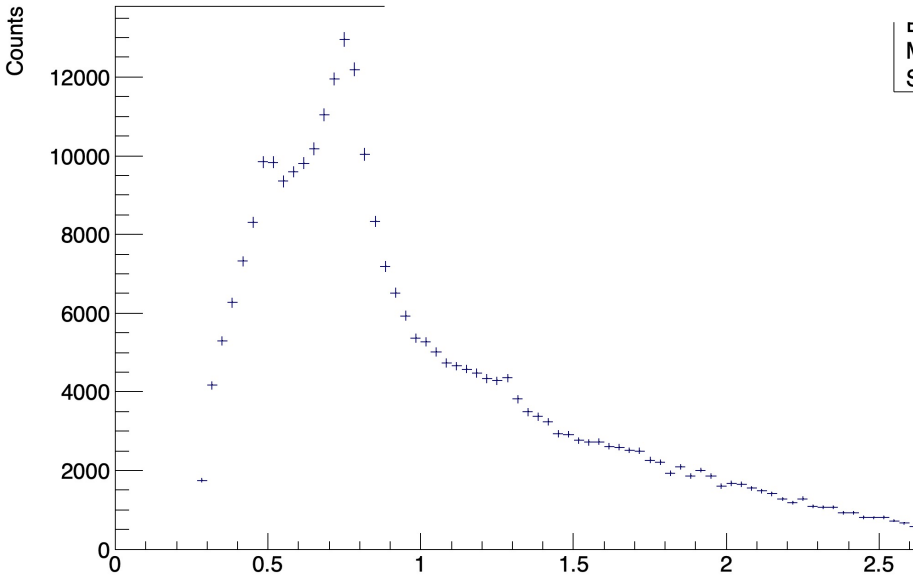
Before Cut



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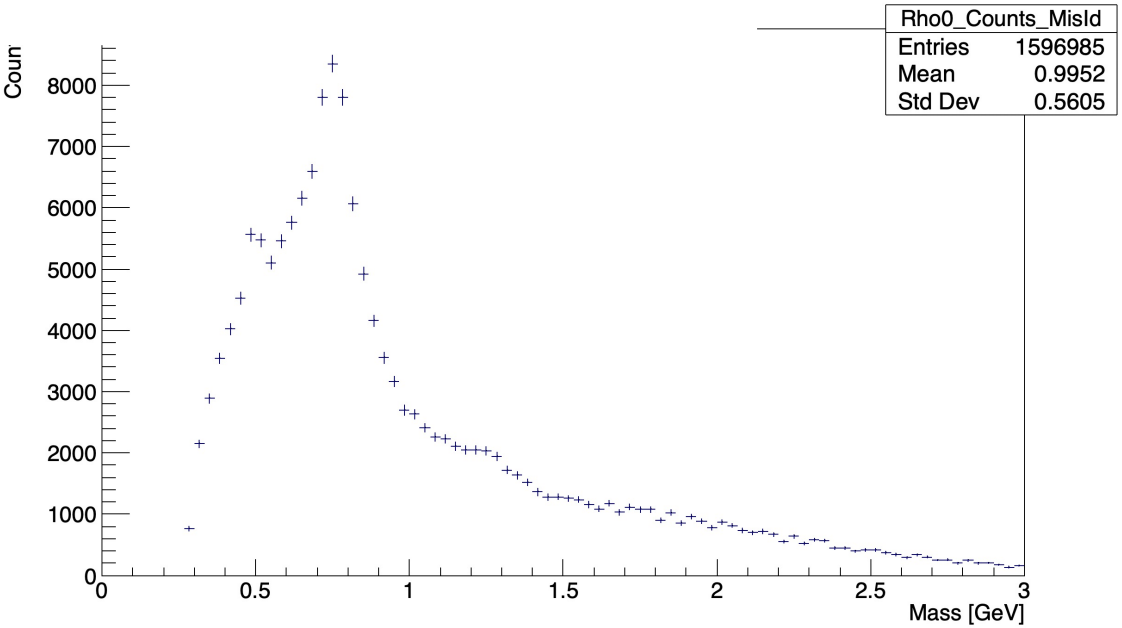

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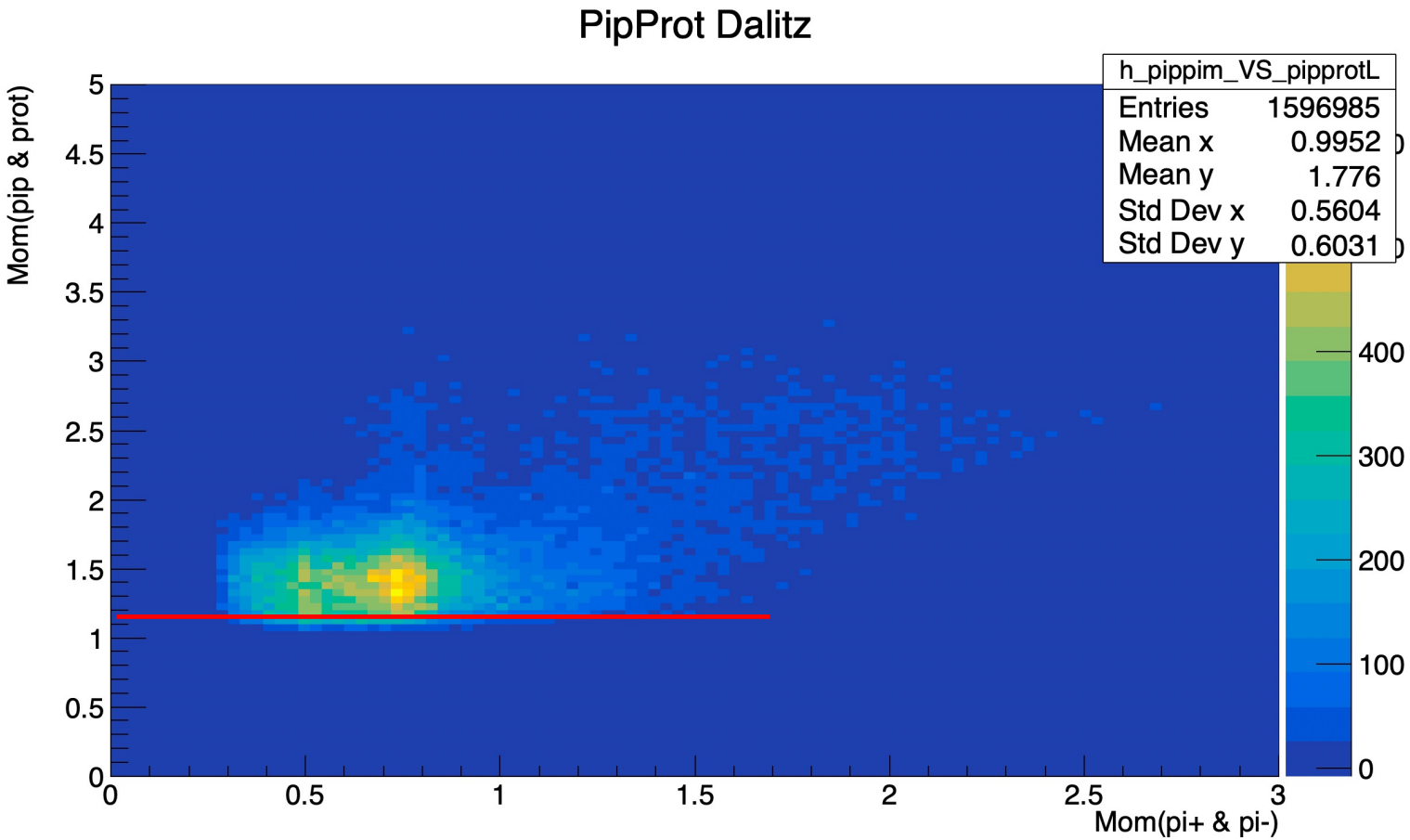

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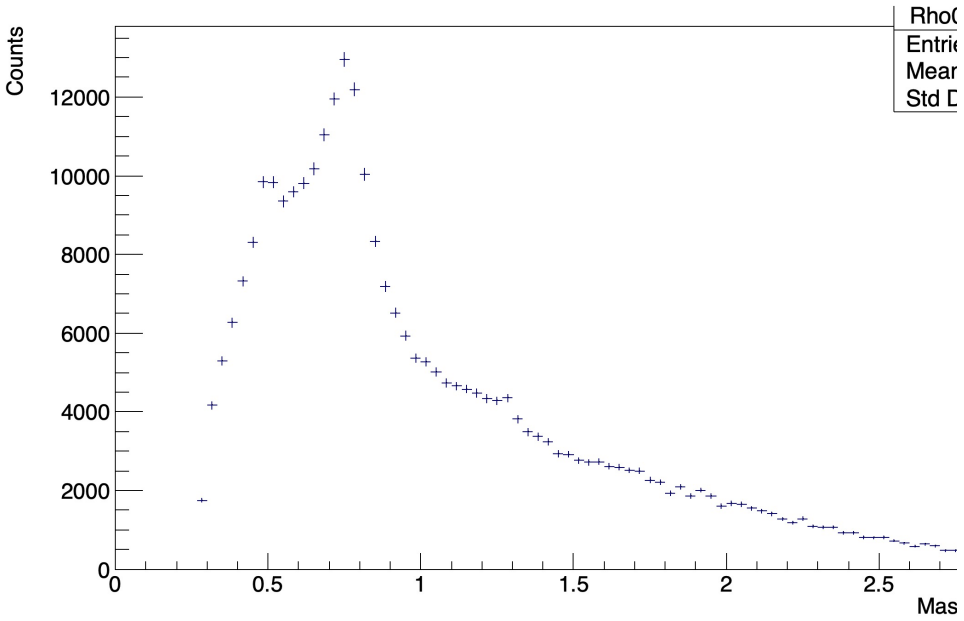

After Cut