

Preliminary Analysis of ρ Photoproduction

- 2017-01 Offline Monitoring ver15 -

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JLab

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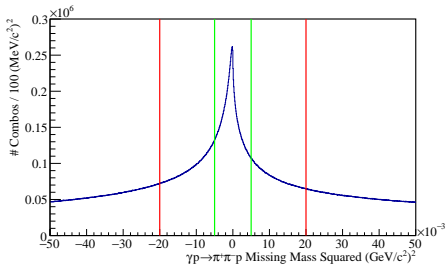
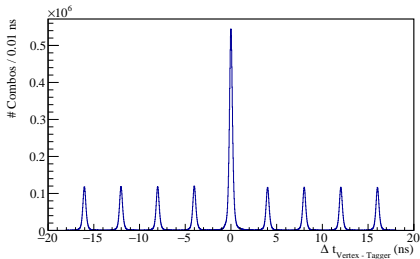
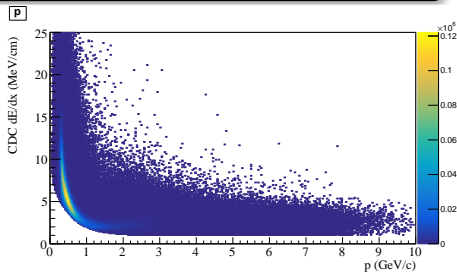
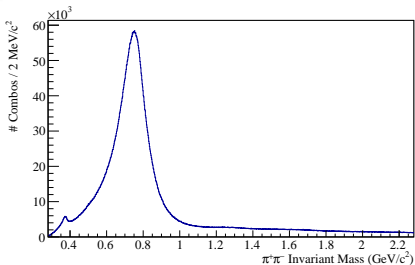


$$\gamma p \rightarrow \rho^0(770)p, \quad \rho^0(770) \rightarrow \pi^+\pi^-$$

- Offline Monitoring **Version 15**, 347 runs (0/45/90/135/amor: 69/69/78/74/57)
- Basic PID and convergence of kinematic fit
- $|\text{Missing Mass Squared}| < 0.02 \text{ (GeV}/c^2)^2 \rightarrow 0.005 \text{ (GeV}/c^2)^2$
- $-0.4 < \text{Missing Energy} < 0.5 \text{ GeV}$
- $0.60 < \text{Invariant Mass} < 0.88 \text{ GeV}/c^2$
- $50 < \text{Vertex Z} < 74 \text{ cm}$
- $|\text{Vertex Time} - \text{Tagger Time}| < 2.004 \text{ ns}$ (Accidentals $\in [6.012, 10.020] \text{ ns}$)
- $4\text{-momentum transfer squared} < 1 \text{ (GeV}/c)^2$

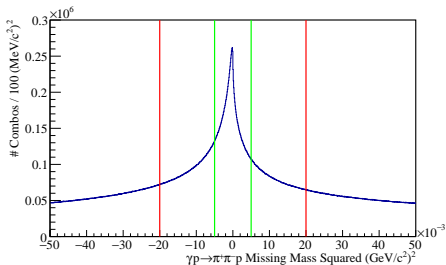
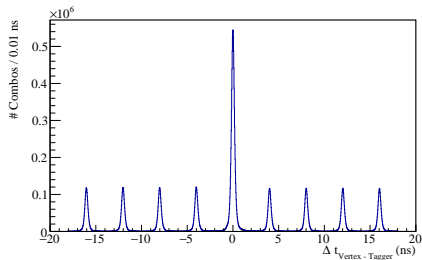
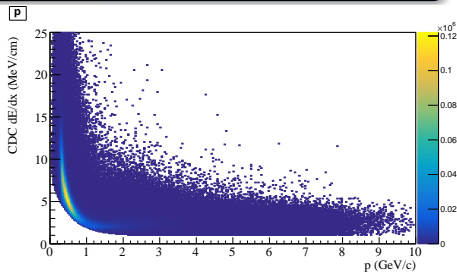
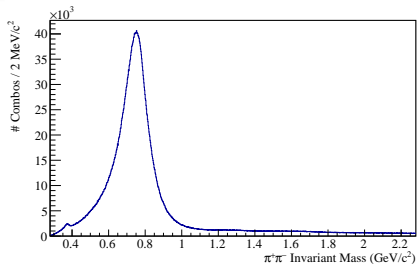
Event Selection

8.2 - 8.8 GeV



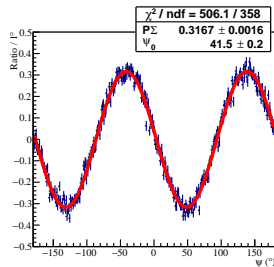
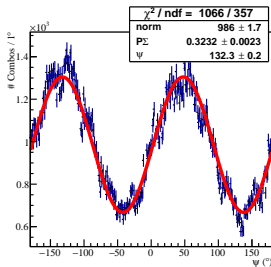
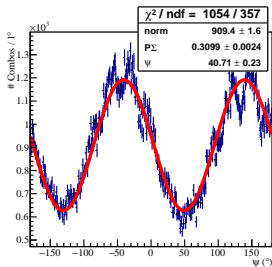
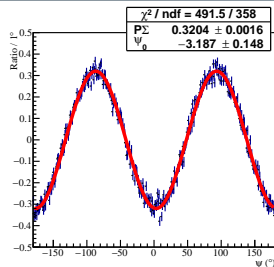
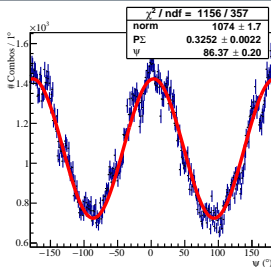
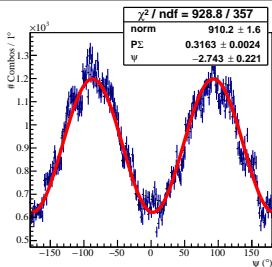
Event Selection

8.2 - 8.8 GeV



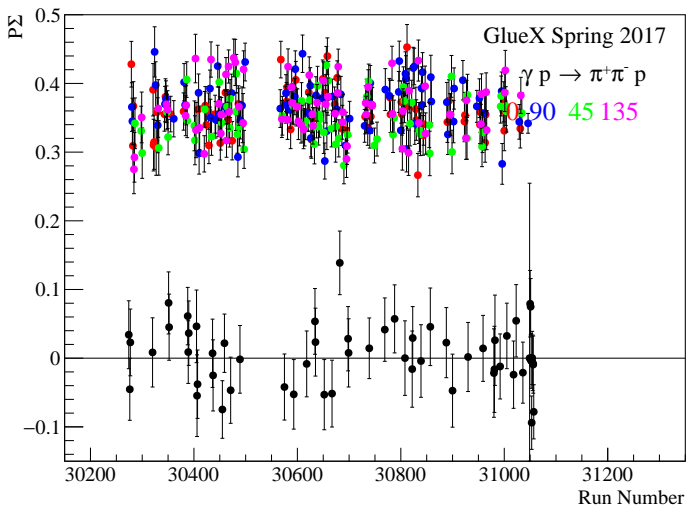
Coherent Peak

8.2 - 8.8 GeV



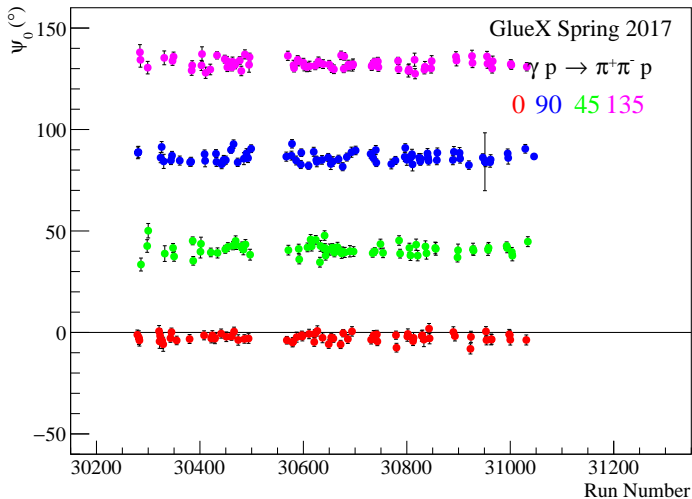
Coherent Peak

8.2 - 8.8 GeV

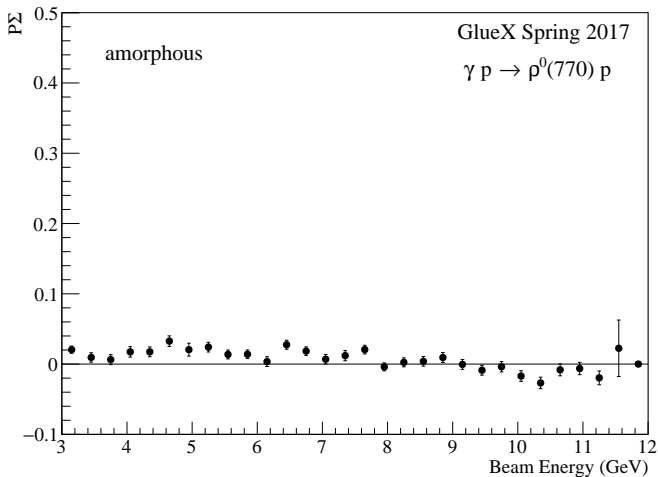


Coherent Peak

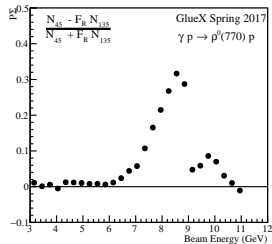
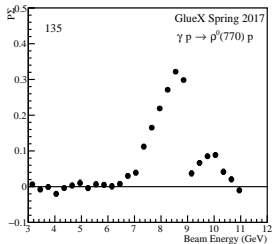
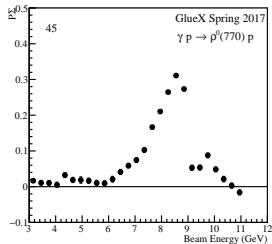
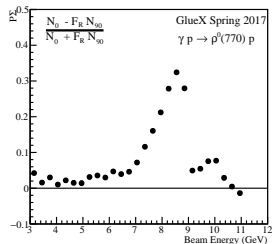
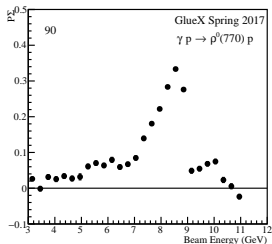
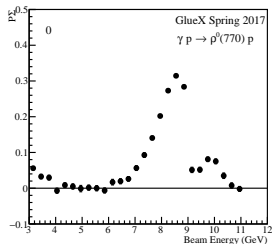
8.2 - 8.8 GeV



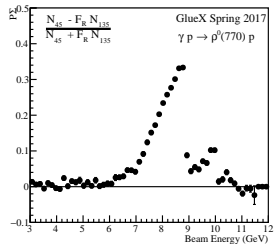
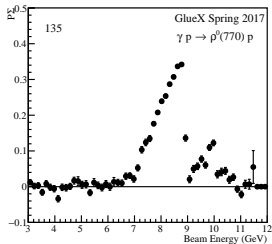
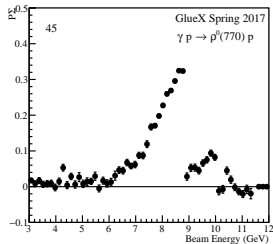
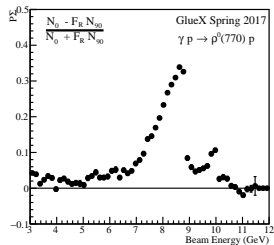
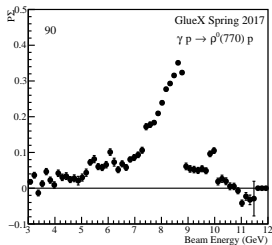
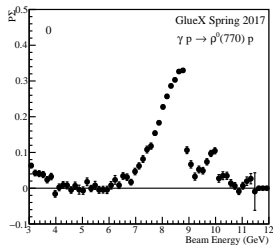
E_γ Dependence



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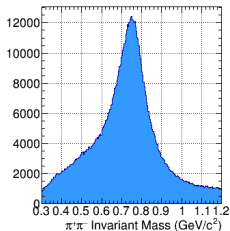
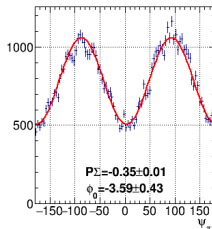
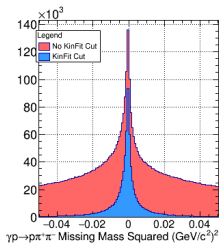
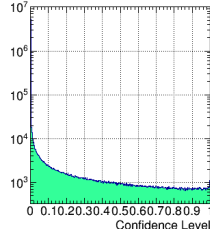


E_γ Dependence

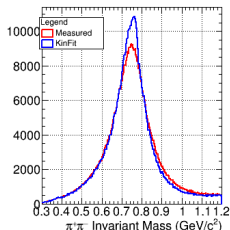


Comparison ver03 vs ver04

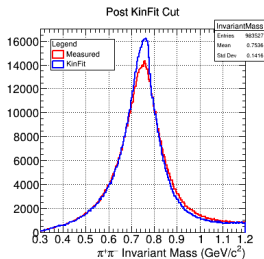
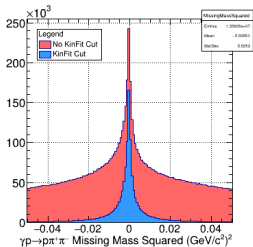
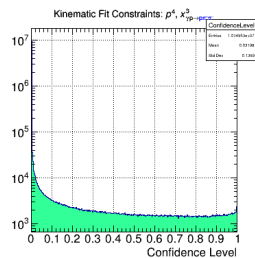
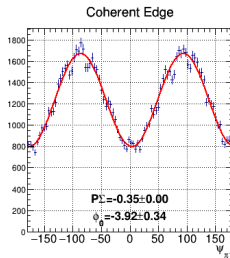
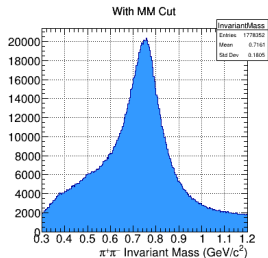
With MM Cut

 ψ_{π^+} vs E_{π^+} : Proton $dE/dx > 2.2$ Kinematic Fit Constraints: $p^4, x_{\pi^+}^3, x_{\pi^-}^3$ 

Post KinFit Cut



Comparison ver03 vs ver04



Post KinFit Cut

$$M(\rho) = 0.773 \text{ GeV}/c^2$$

$$N(\rho) = 4.96 / 1k \text{ Trigger}$$