$\gamma(n, \rho^- p)$ Channel

- 1 positive + 1 negative charged track, 2 neutral showers
- Kinematic fit:
 - Common vertex position

•
$$m_{\gamma\gamma} = m_{\pi^0}$$



Cut on CL>0.001



2-Pion Mass Spectrum



After CL Cut



Also r<1 cm

Mass Spectrum After Vertex Cut



Neutral Shower Position CutsFCALBCAL



Neutral Shower Timing Cuts



Mass Spectrum After Calorimeter Cuts



Measured Energy Spectrum



After Calorimeter Cuts

Mass Spectrum After Energy Cut After Total Energy Cut 500 **Signal Events** 400 Counts 300 200 100 Λ **0.0** 2.5 0.5 1.0 2.0 3.0 3.5 4.0 1.5 2-pion mass [GeV]



Examine possibility of π^+ track Assuming positive track = π + $\gamma N \rightarrow \omega(N)$ 1000 800 Counts 600 400 200 \mathbf{n} 0.0 2.5 2.0 0.5 1.0 1.5



Mass Spectrum After Omega-Background Cuts





Background fairly well-separated, but still needs further study **Background** $\gamma n \rightarrow \pi^+ \pi^- \pi^0 n$ Rho/Total Minus Momentum [GeV] Rho/Total Minus Momentum [GeV] **Pythia Simulation** 0.9 0.9 **Empty Cell Data** + Fermi Motion 0.8 0.8 0.7 0.7 0.6 0.5 0. 0.3 0.3 0.2 0.2 0.1 0.1 1.4 1.6 1.8 2 Total Minus Momentum [GeV] 1.8 1.6 0.6 0.8 1.2 1.4 0.4 1.4



Mass Spectrum After 3π Background Cuts



Energy Deficit (assuming standing neutron)

Beam Photons > 6 GeV



Beam Photon Timing





Events fall rapidly with |t|



