

# MC-Data Differences

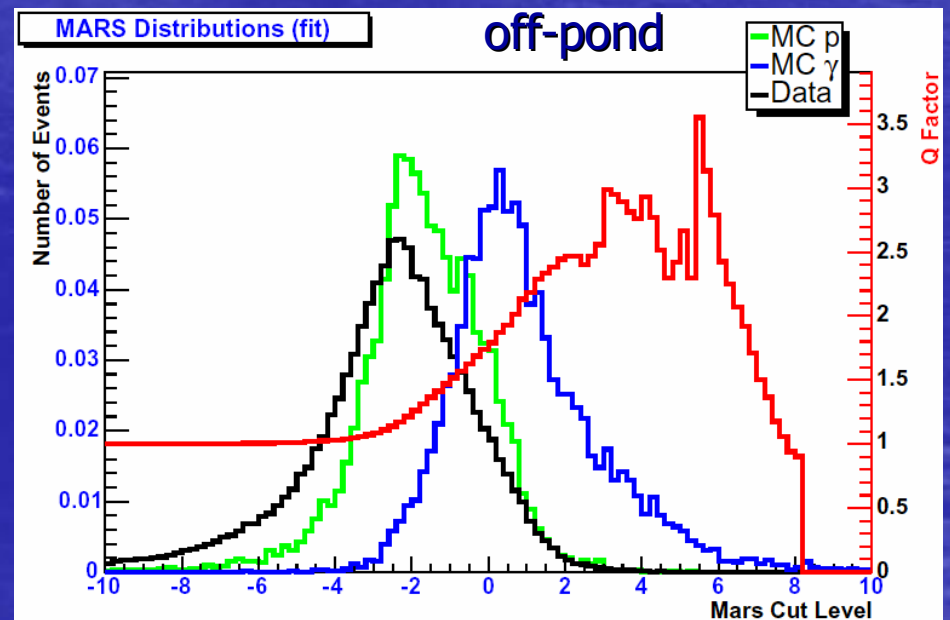
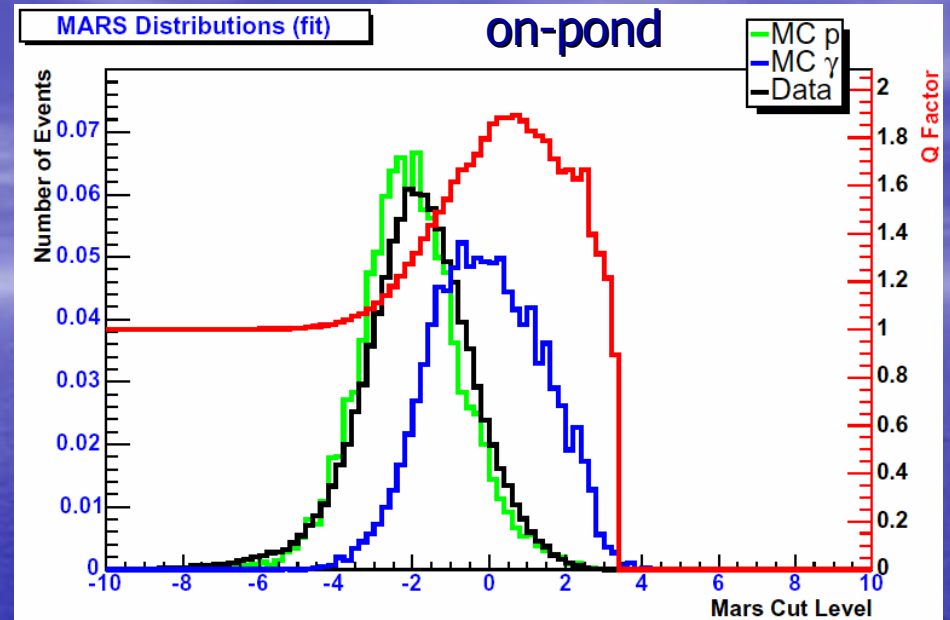
Curtis Lansdell  
Milagro  
University of Maryland

November 16, 2003

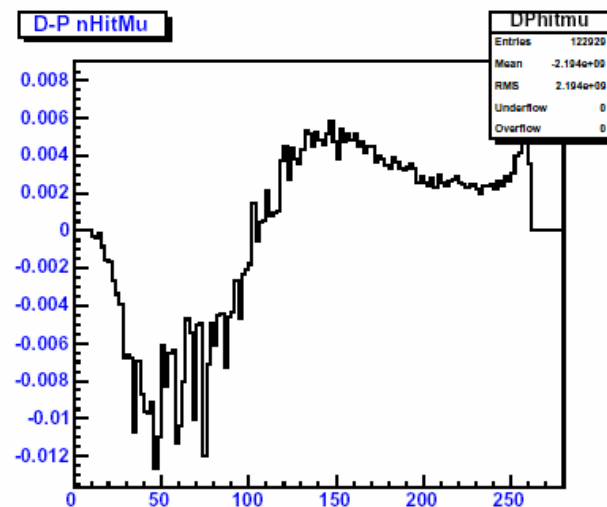
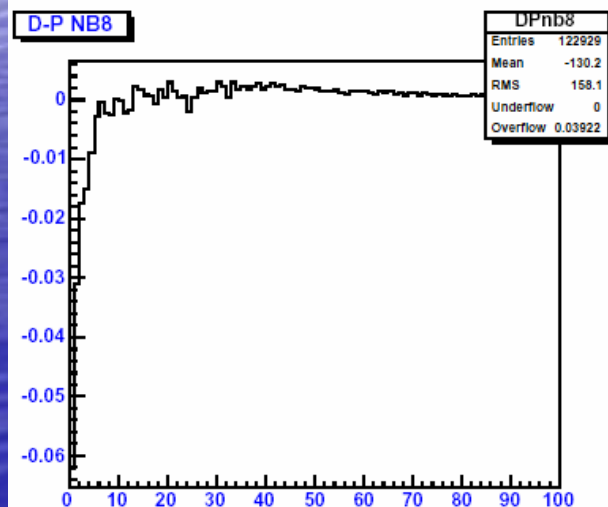
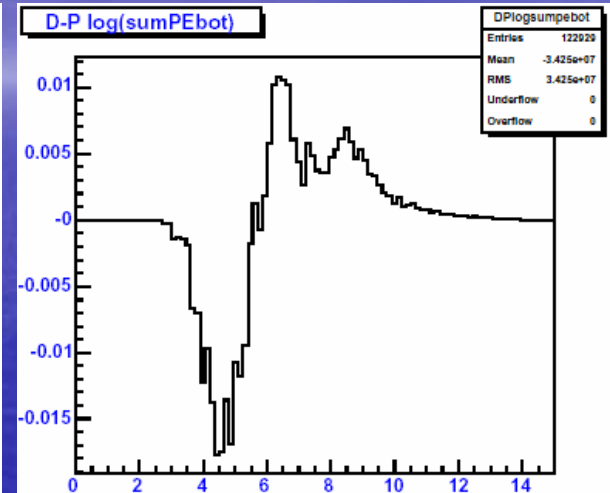
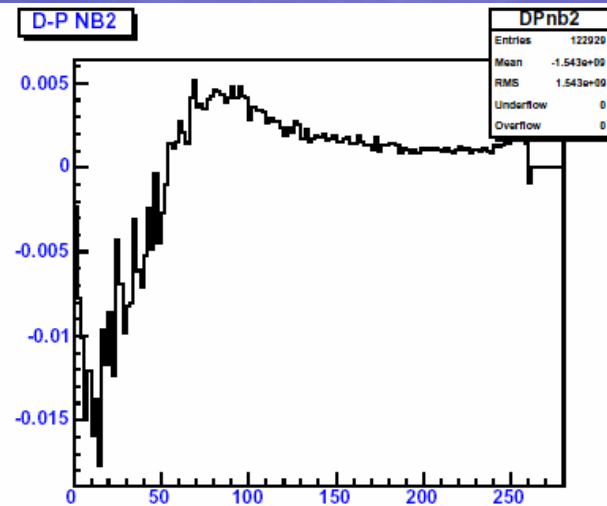
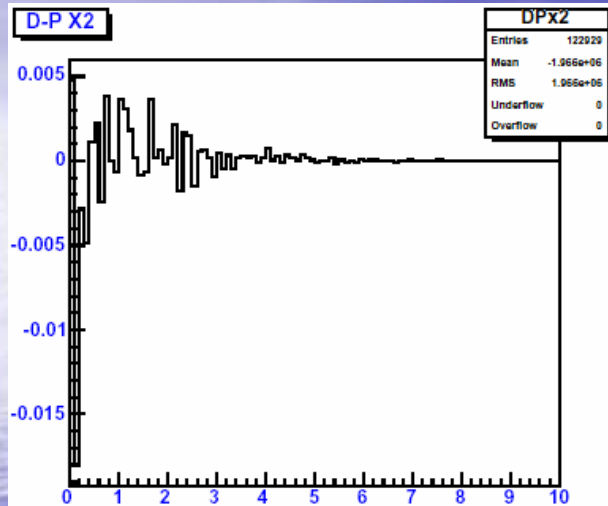
Milagro Collaboration Meeting

# Symptoms

- 0.05-100 TeV MC protons examined
- Seen during MARS analysis
  - MC protons and real data mismatch



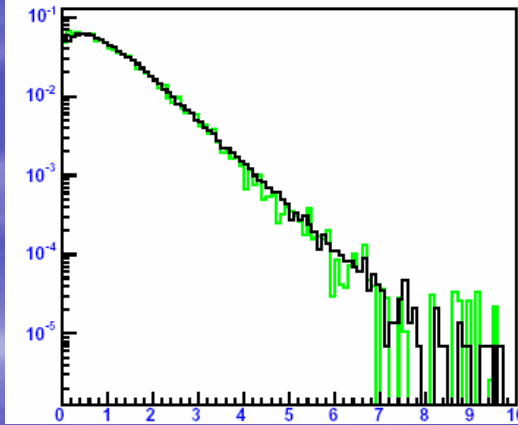
# Data-MC Comparison: On-Pond



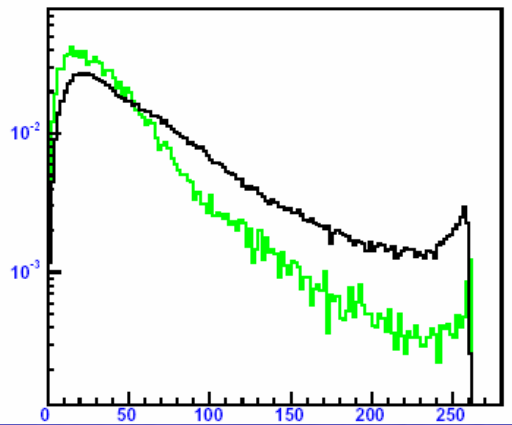
- MC proton: 23k events
- Data: 146k events
- nFit>5

# On-Pond Distributions

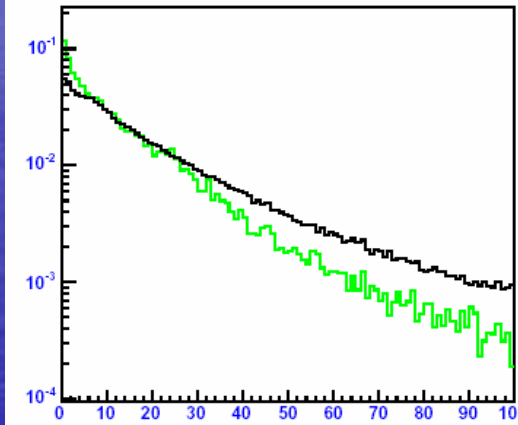
P (green), D (black) X2



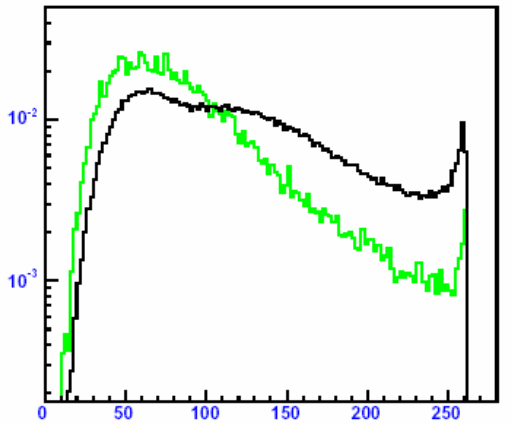
P (green), D (black) NB2



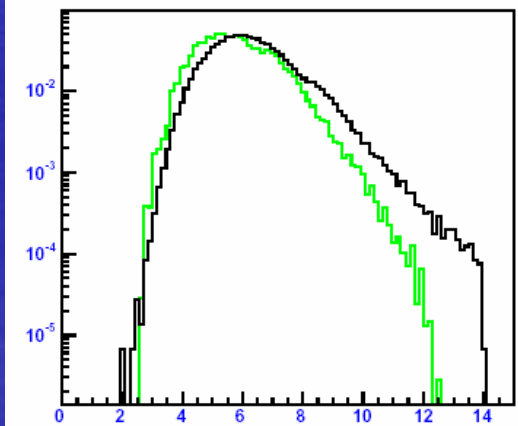
P (green), D (black) NB8



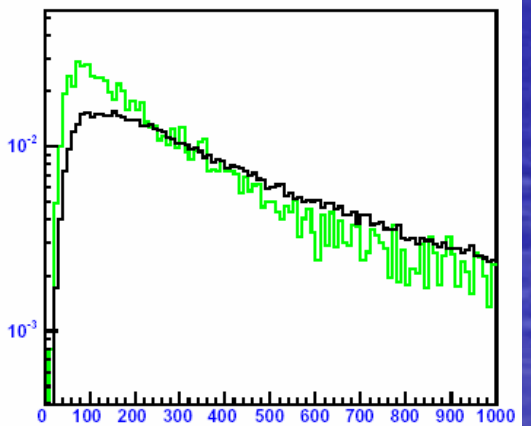
P (green), D (black) nHitMu



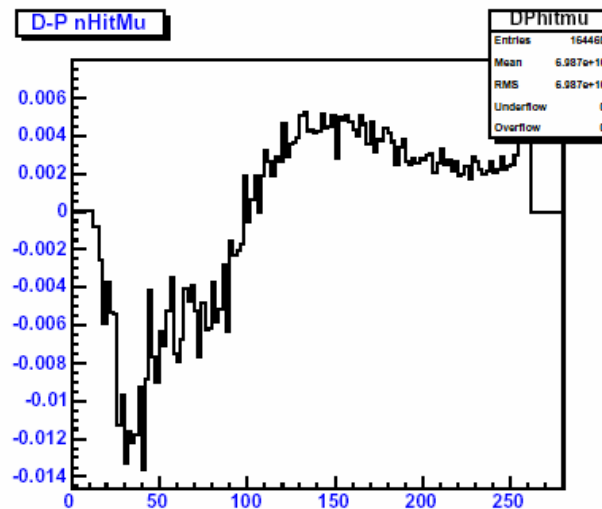
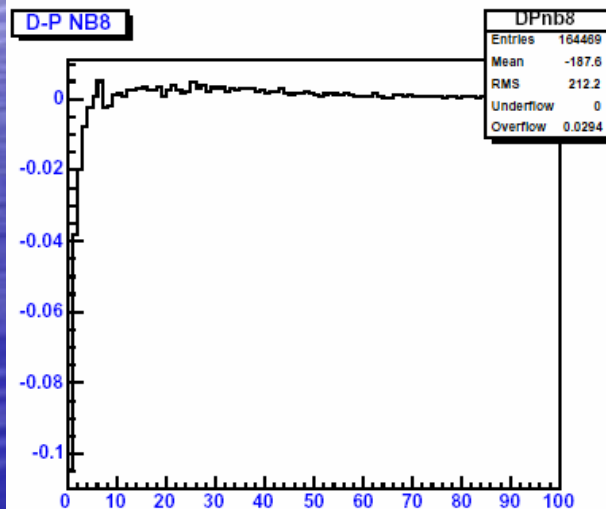
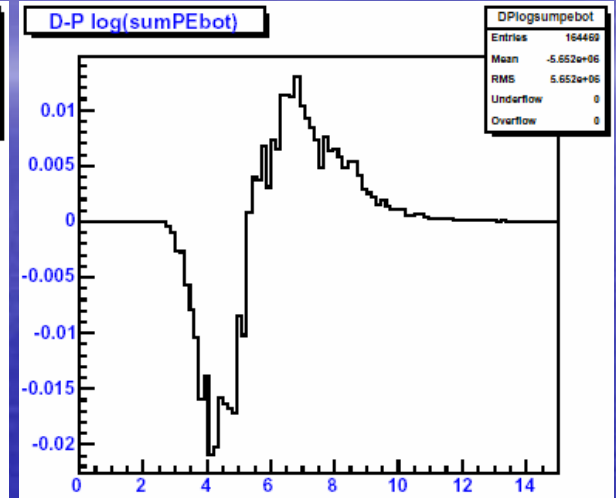
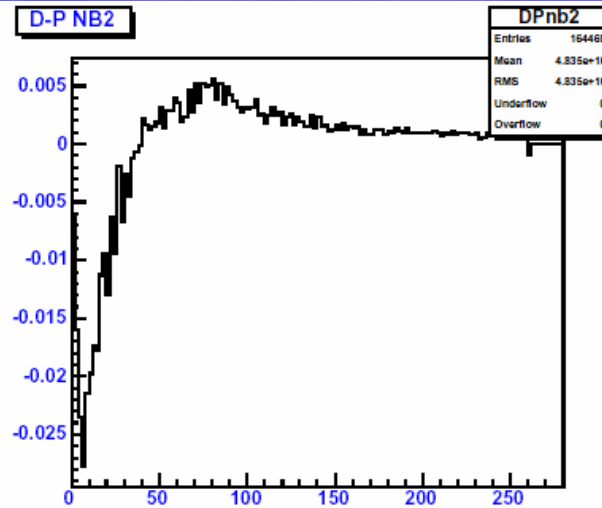
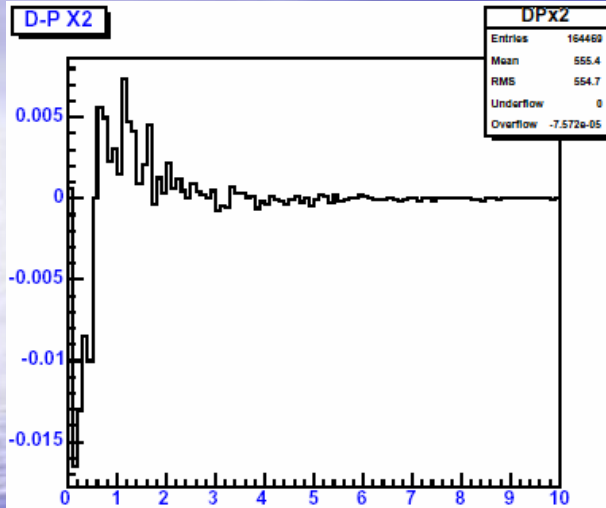
P (green), D (black) log(sumPEbot)



P (green), D (black) sumPEbot



# Data-MC Comparison: Off-Pond

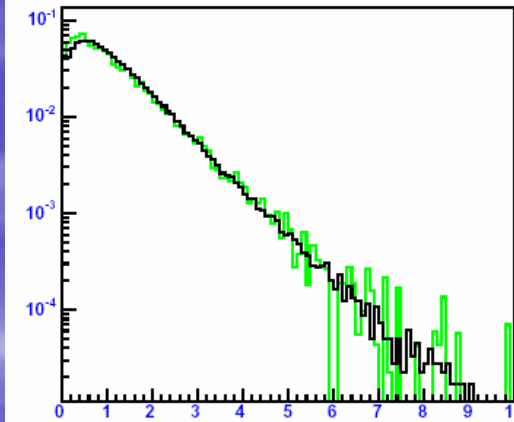


- MC proton: 16k events
- Data: 181k events
- nFit>5

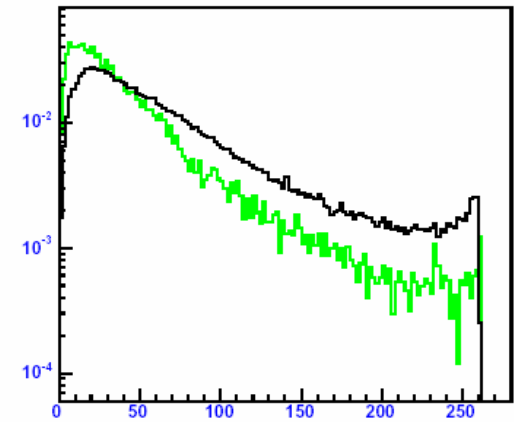


# Off-Pond Distributions

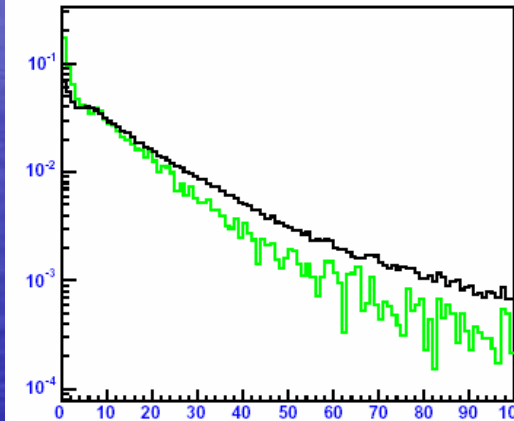
P (green), D (black) X2



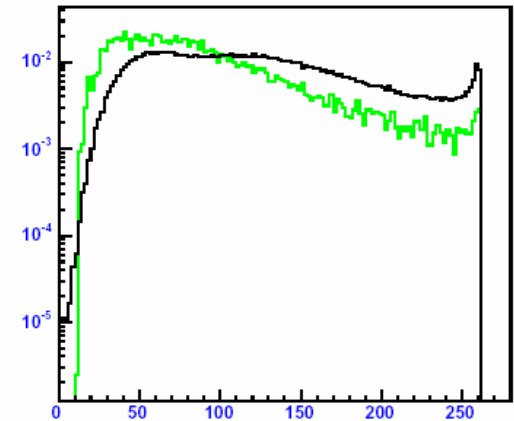
P (green), D (black) NB2



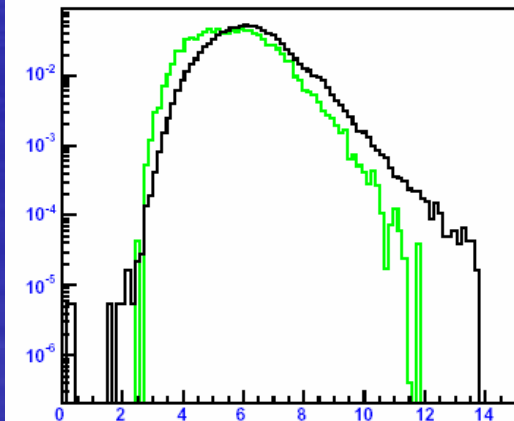
P (green), D (black) NB8



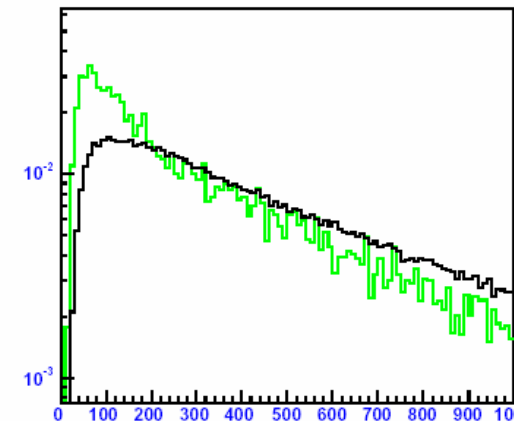
P (green), D (black) nHitMu



P (green), D (black) log(sumPEbot)

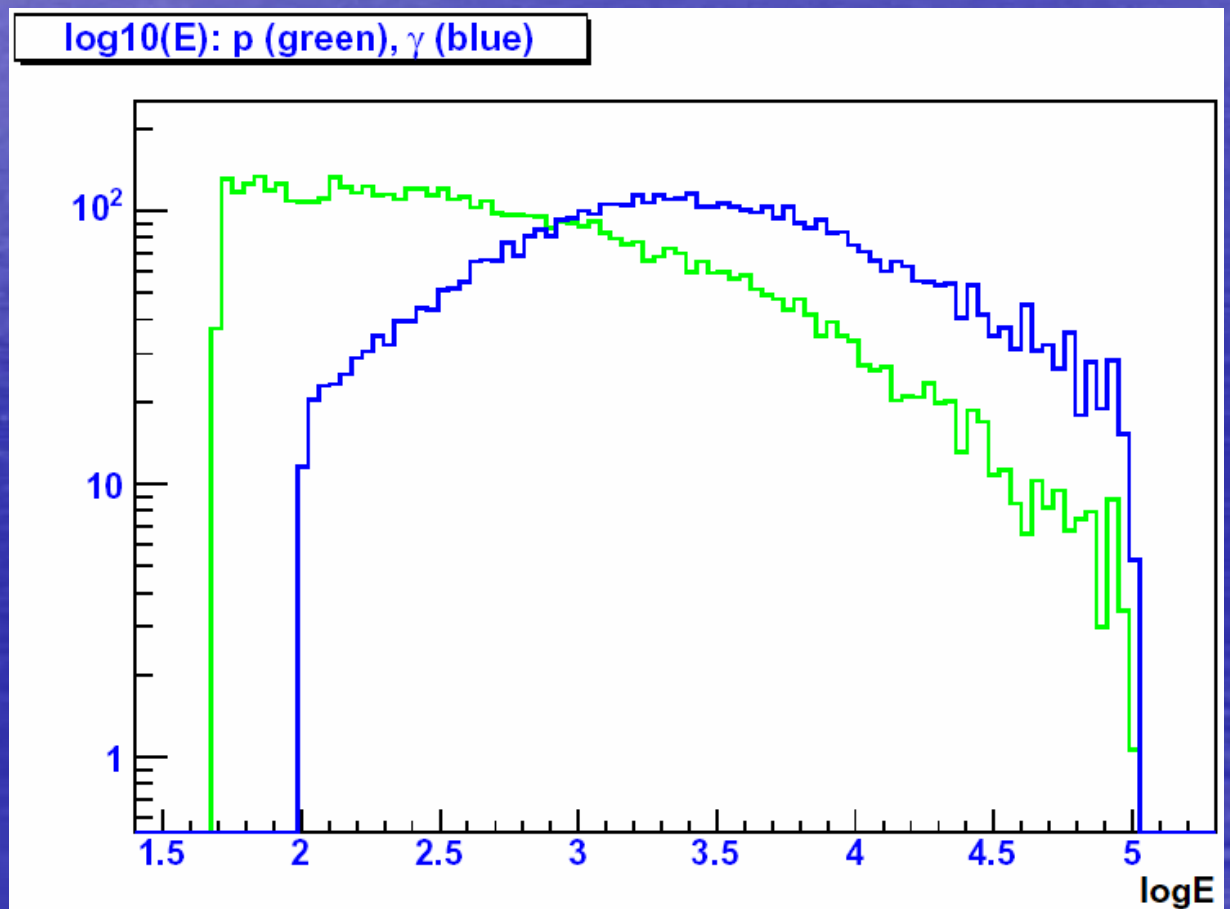


P (green), D (black) sumPEbot



# Primary Particle Energy

- MC particles: on+off pond
  - p: 0.05-100 TeV
  - $\gamma$ : 0.1-100 TeV



# Reasons

- MC protons not generated to low enough in E
  - Low E events were created, but “lost”
- Including MC helium events could produce better match to data
  - Not enough triggered MC events? Need more produced