

# *MIPP Status*

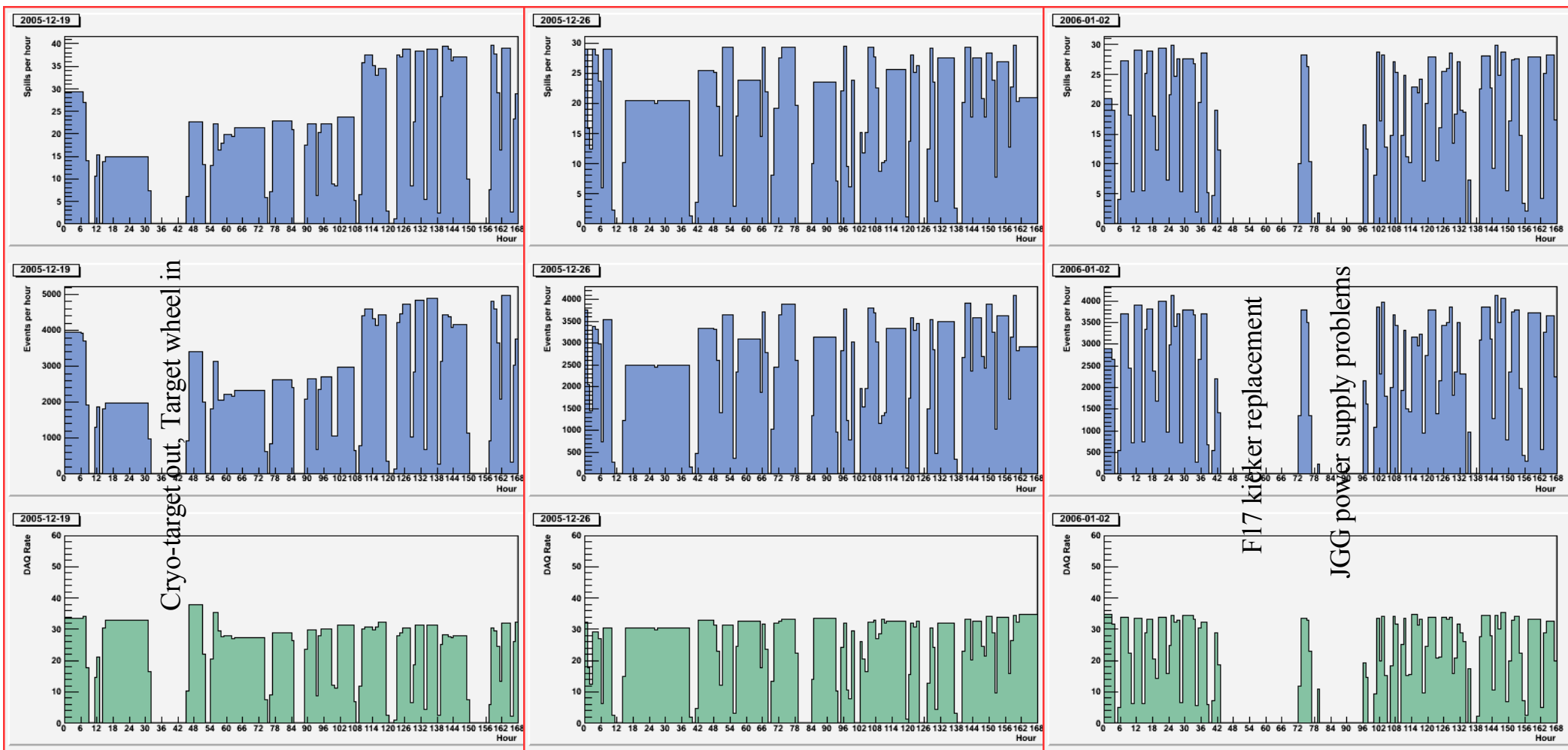
Holger Meyer  
Fermilab All Experimenters' Meeting  
1/9/06

- Statistics
- Beam and detector status
- Kaon mass measurement

# *MIPP Event Statistics*

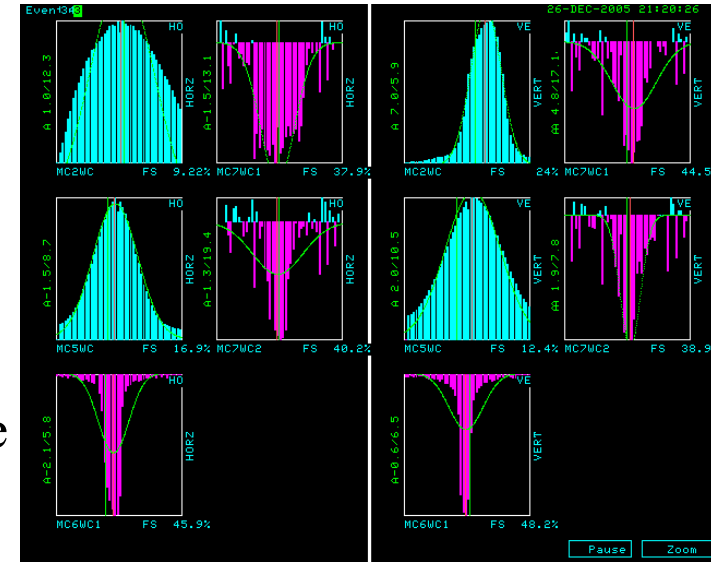
- +85 GeV/c  $\pi/K/p$  beam on LH<sub>2</sub> target until tuesday, 12/20
- +59 GeV/c  $\pi/K/p$  beam on uranium, bismuth, and copper since 12/20
- 19 Dec. '05 to 25 Dec. '05
  - 387909 events in 3139 spills with beam
- 26 Dec. '05 to 1 Jan. '06
  - 415167 events in 3211 spills with beam
- 2 Jan. '06 to 8 Jan. '06:
  - 309932 events in 2301 spills with beam

# MIPP Event Statistics



# MIPP Beam and Detector Status

- Beam over last 3 weeks:
  - No problems when beam was delivered
    - Good profiles, intensity, uniformity
  - Secondary beam polarity was changed on 12/20
- Detector:
  - Steady data taking whenever beam was available except for a few hours on 1/5/06
- Notable events:
  - 12/20/05 cryo-target → target wheel (8am to ~4pm) routine maintenance in MC7 and SY120
  - 1/1/06 TOF HV trip during TeV shot
  - 1/2/06 BC1 oscillating, grounding problem, fixed with copper tape minimal impact on data due to redundancy with BC2, BC3 and good beam conditions
  - 1/5/06 JGG power supply problems last all day, main contactor coil replaced. Some downtime overlap with F-sector access



# Kaon mass measurement

- The last week of beam time before the shutdown will be dedicated to a measurement of the charged kaon mass at MIPP
- Physics motivation:
  - Current best measurements show some disagreement (PDG)
    - Measured on kaonic atoms ( $K^-$ )
  - Impact on  $V_{us}$  is significant!!!

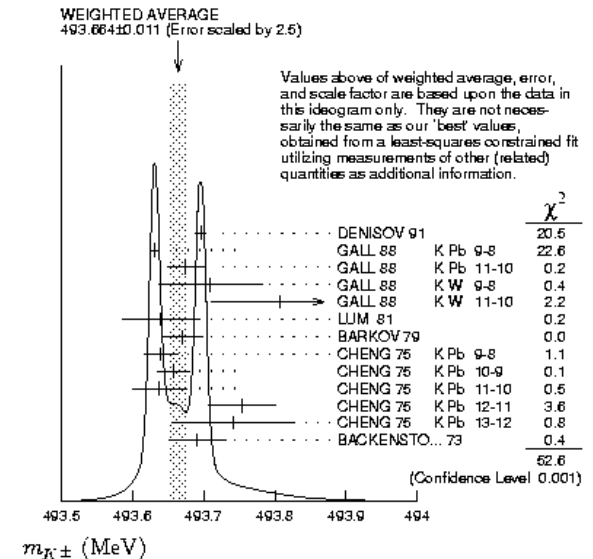


Figure 1: Ideogram of  $m_{K^\pm}$  mass measurements. GALL 88 and CHENG 75 measurements are shown separately for each transition they measured.

S. Eidelman *et al.* (Particle Data Group), Phys. Lett. B **592**, 1 (2004)

- For more details see MIPP Note 89  
(<http://ppd.fnal.gov/experiments/e907/notes/MIPPnotes/public/pdf/MIPP0089/MIPP0089.pdf>)

# *Kaon mass measurement*

- Method:
  - Use MIPP-RICH to compare ring radius of  $K^+$  to  $\pi^+$  and p
    - +40 GeV/c secondary beam, no secondary target
  - MC simulations indicate that low systematic errors can be achieved
  - Statistics starts to get competitive for 1 week of data at high rate
    - Don't read out the TPC for this run.
    - ~10 million events will give a measurement to 20ppm
- More information in MIPP Notes and slides from MIPP software meetings (on the web, linked from MIPP home page)

# *MIPP Summary*

- MIPP was running well over the last three weeks.
- Plan:
  - Switch to -60 GeV/c on uranium, bismuth, copper targets this week