

# PiM1 beam at 70 MeV/c

Data taken from our calorimeter calibration / energy scan.

(Elogs 2395 + 2396, for our reference.)

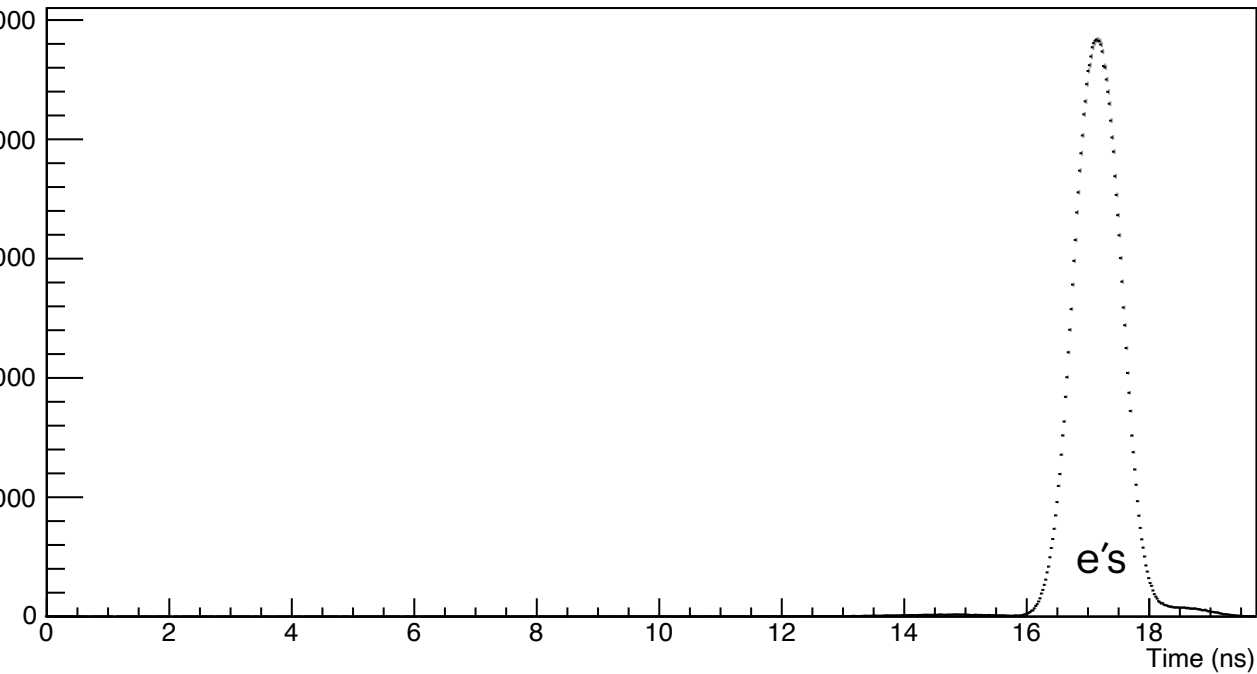
The data were taken at the start of a run period, with the GEMs not yet turned on, and with the RF system having an electronic glitch that led to a small should on the right side of the RF peaks.

## Results:

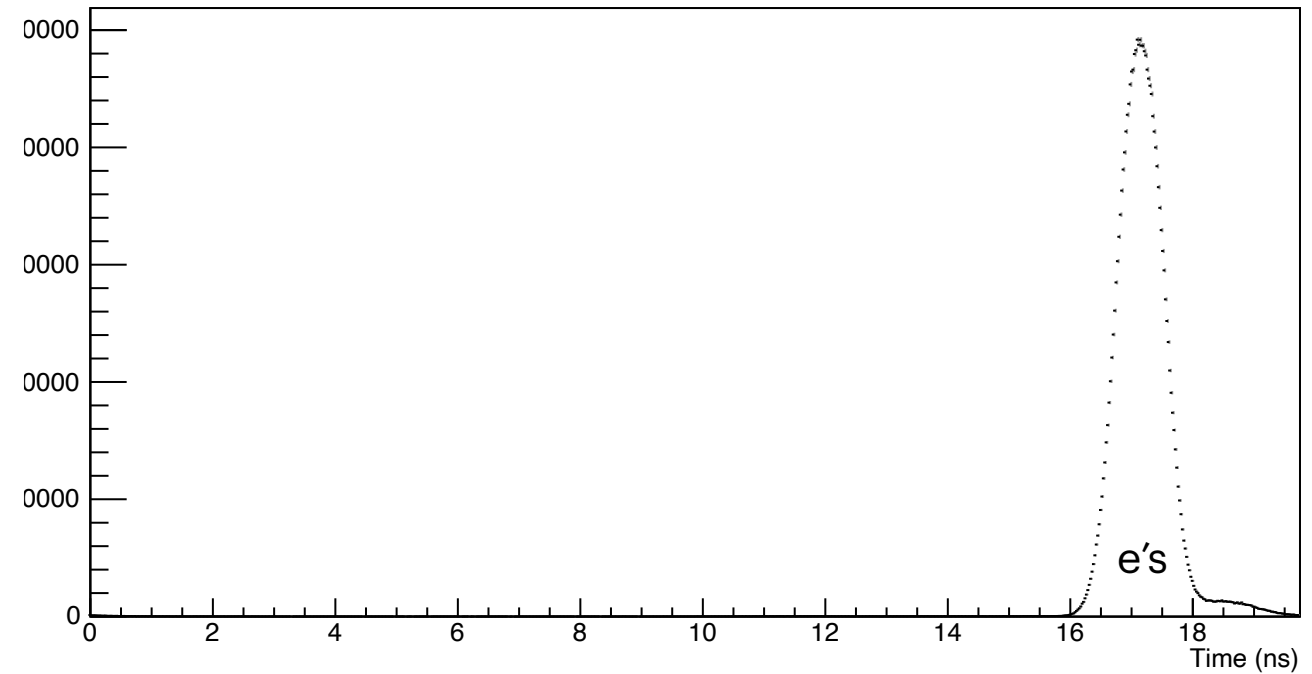
- The RF peaks indicate electron dominance.
- Electron / pion separation in analysis is available with good time or energy resolution.
- The beam gets broader and pions get fewer as the beam momentum is decreased.

# RF time distribution on a linear scale: see electrons and not much else

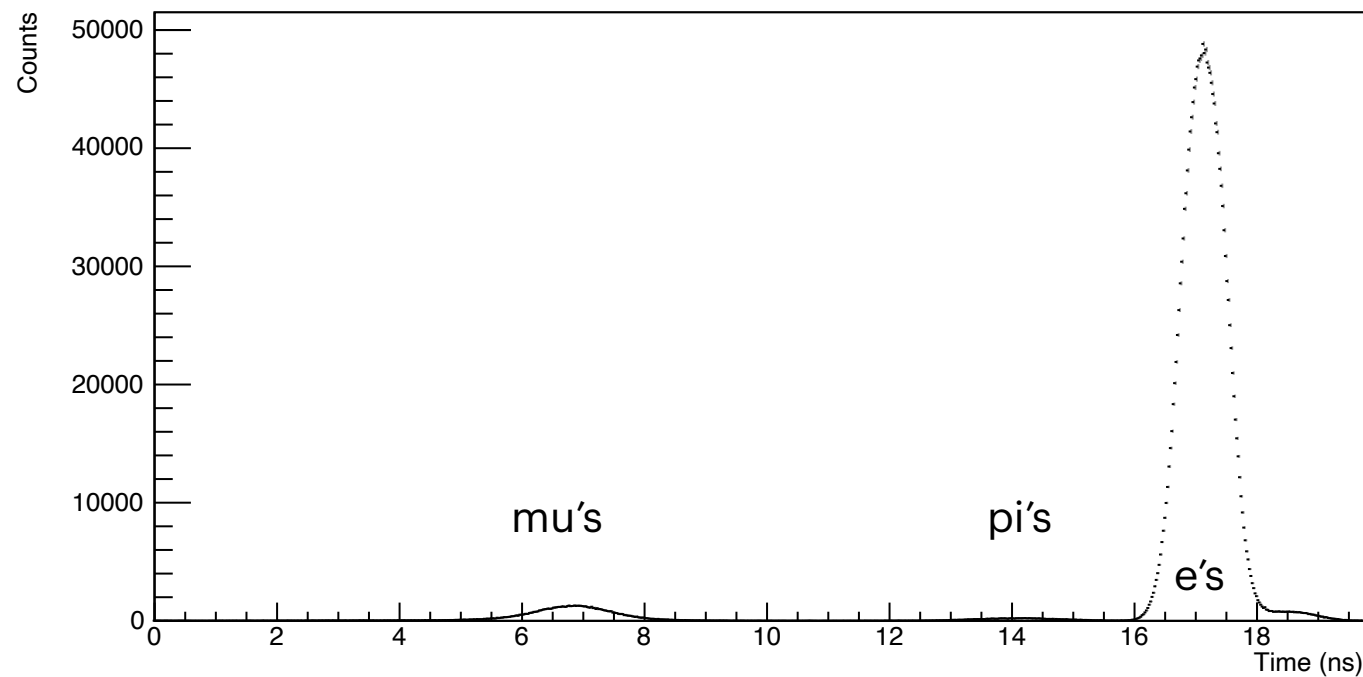
RF of All Planes,  $p = 60.17 \text{ MeV}/c$



RF of All Planes,  $p = 70.04 \text{ MeV}/c$



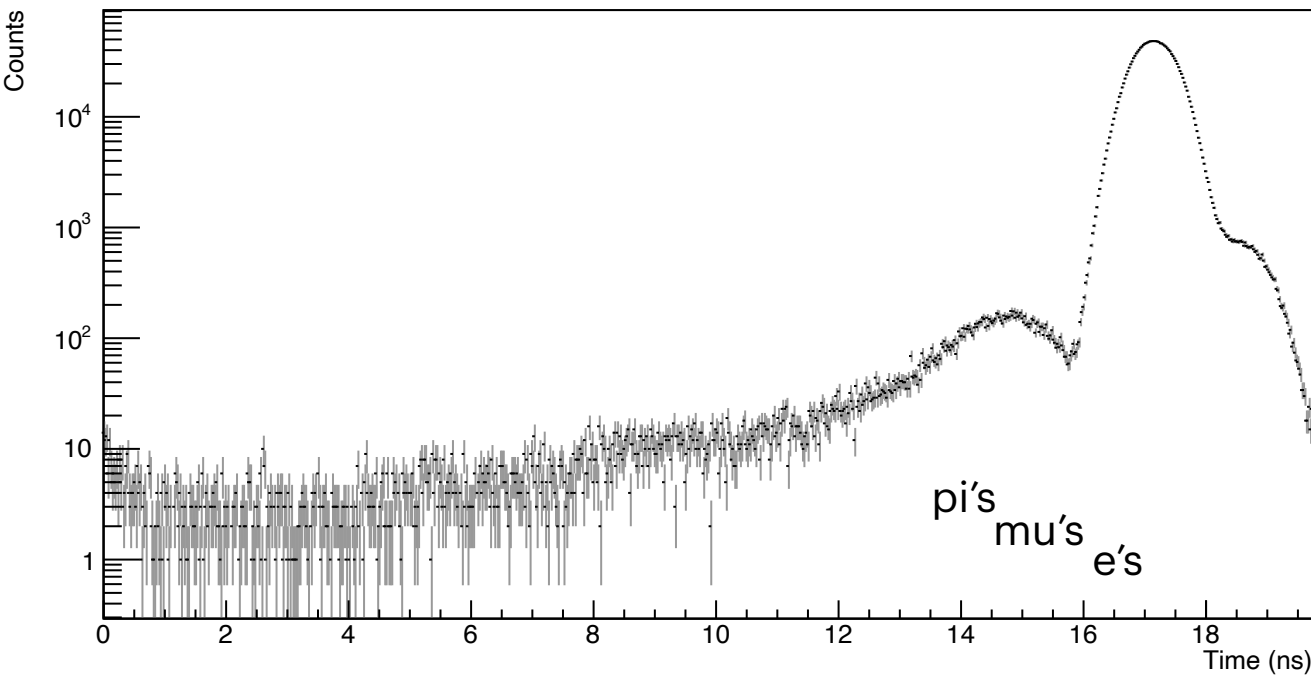
RF of All Planes,  $p = 80.16 \text{ MeV}/c$



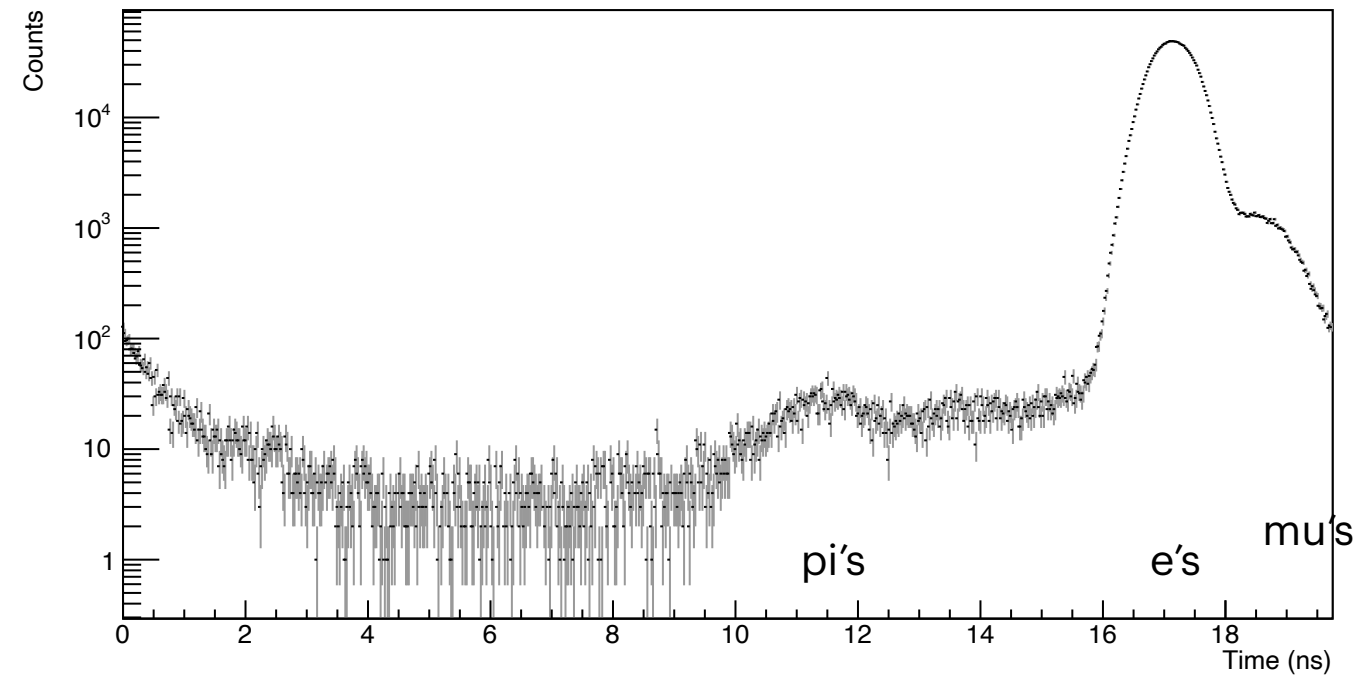
# Log scale: a small flux of muons and pions

Trigger here includes  $^{11}\text{C}$  activation and room background.

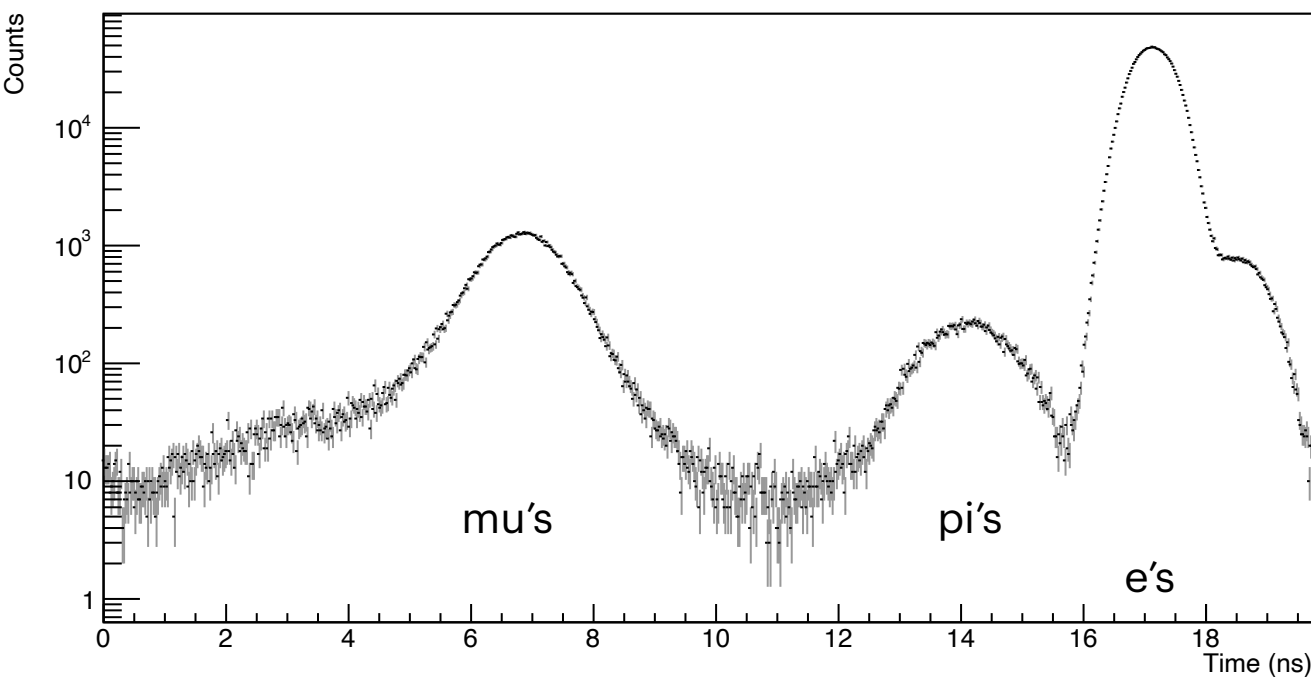
RF of All Planes,  $p = 60.17 \text{ MeV}/c$



RF of All Planes,  $p = 70.04 \text{ MeV}/c$



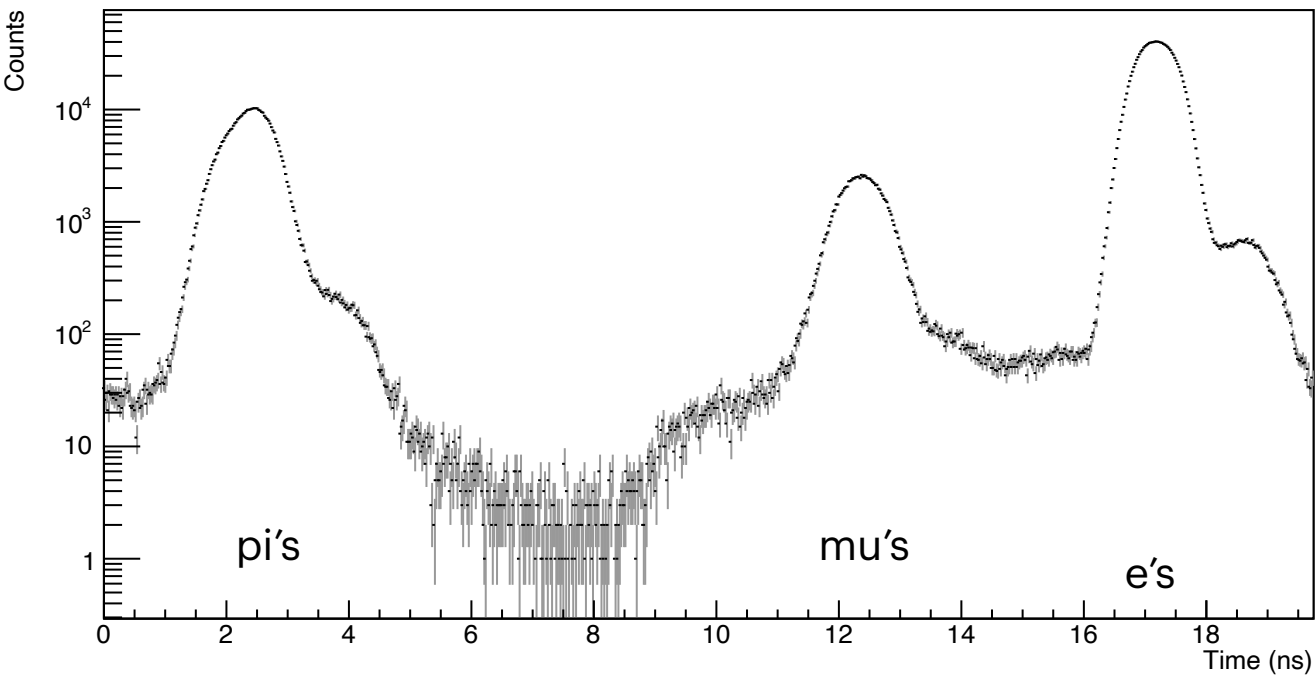
RF of All Planes,  $p = 80.16 \text{ MeV}/c$



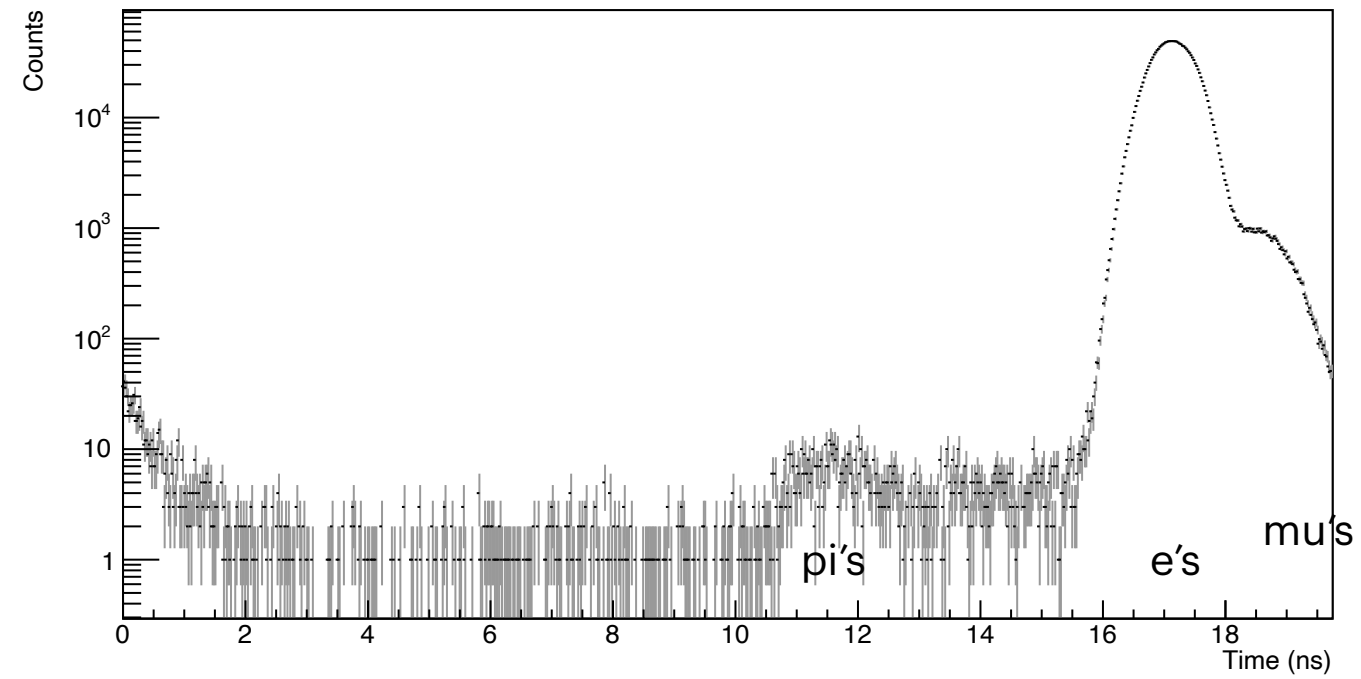
Total beam rate at  $70 \text{ MeV}/c$   
~ a few MHz, so a few 10s of kHz of pions.

# Negative polarity: electrons more dominant

RF of All Planes,  $p = -160.33 \text{ MeV}/c$



RF of All Planes,  $p = -70.04 \text{ MeV}/c$



# Hitmaps indicate spatial distribution of beam

Distributions at BH, ~ 50 cm upstream of focus  
Beam gets gradually broader as momentum gets lower,  
also shifts slightly to beam left with default tune scaling

160 MeV/c

70 MeV/c

40 MeV/c

Horizontal  
8-mm wide  
paddles

Vertical  
8-mm outer paddles  
4-mm inner paddles

