

μ CC interaction analysis status report

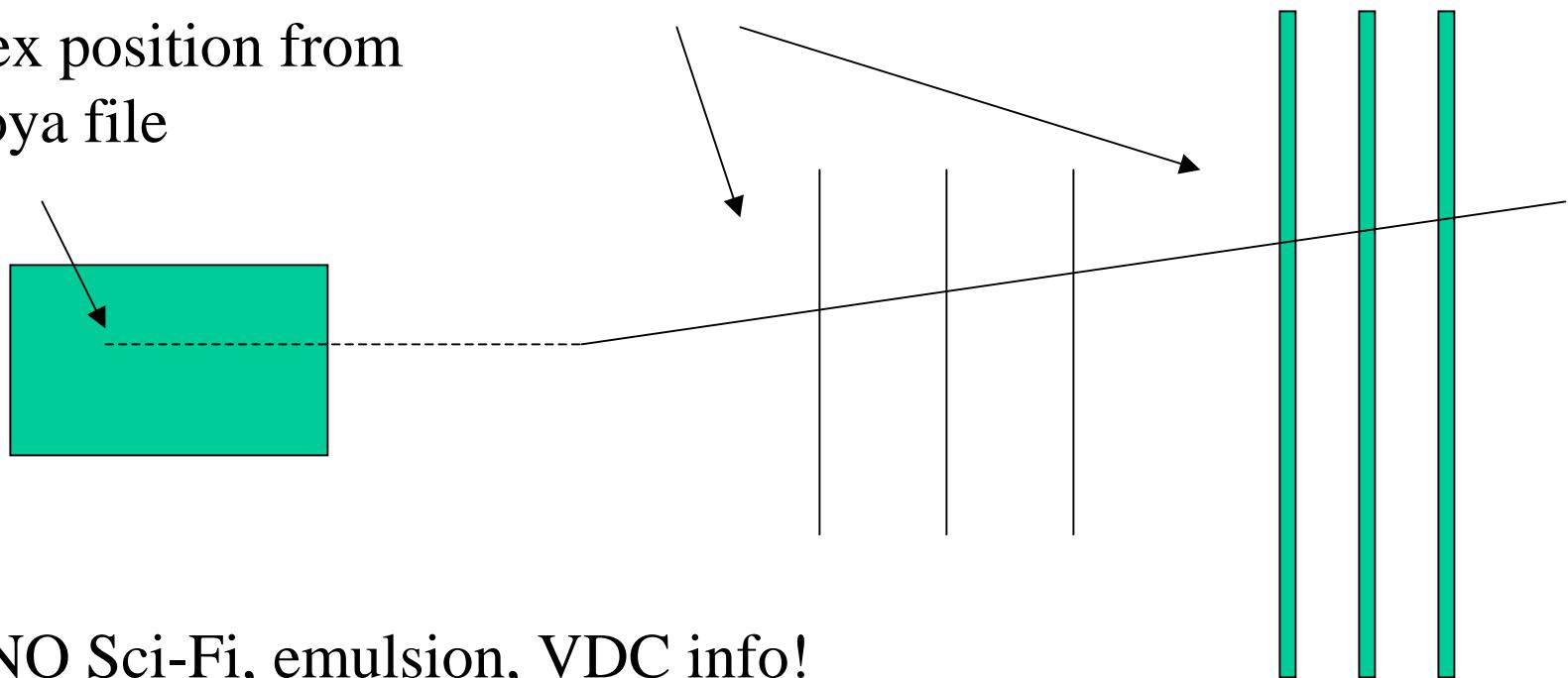
Patrick Berghaus
Kansas State University

06/05/00

Method

DC track + muon ID hits

Vertex position from
Nagoya file

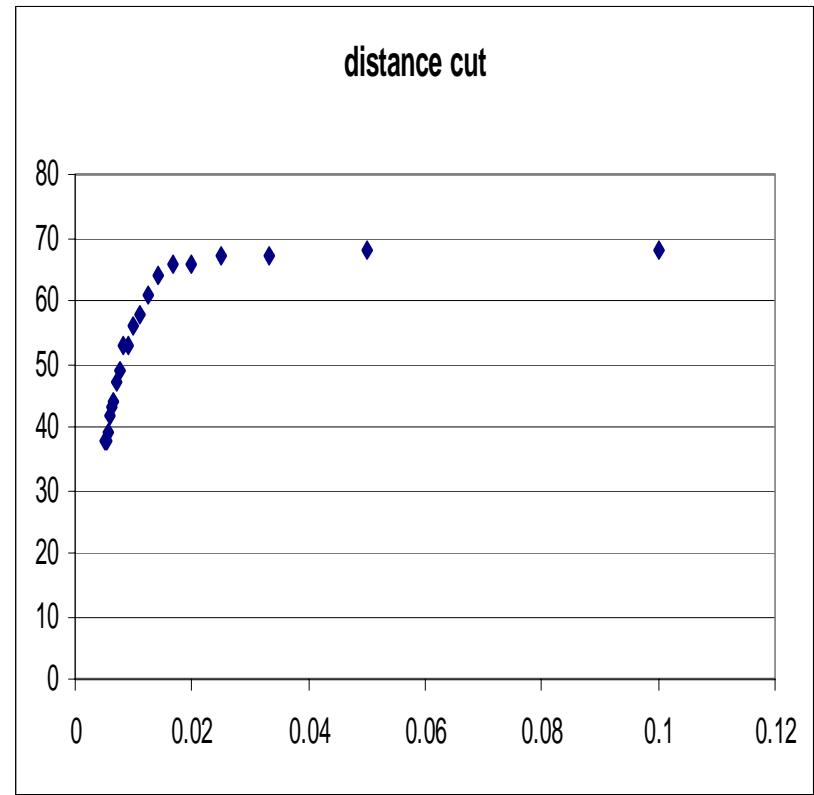
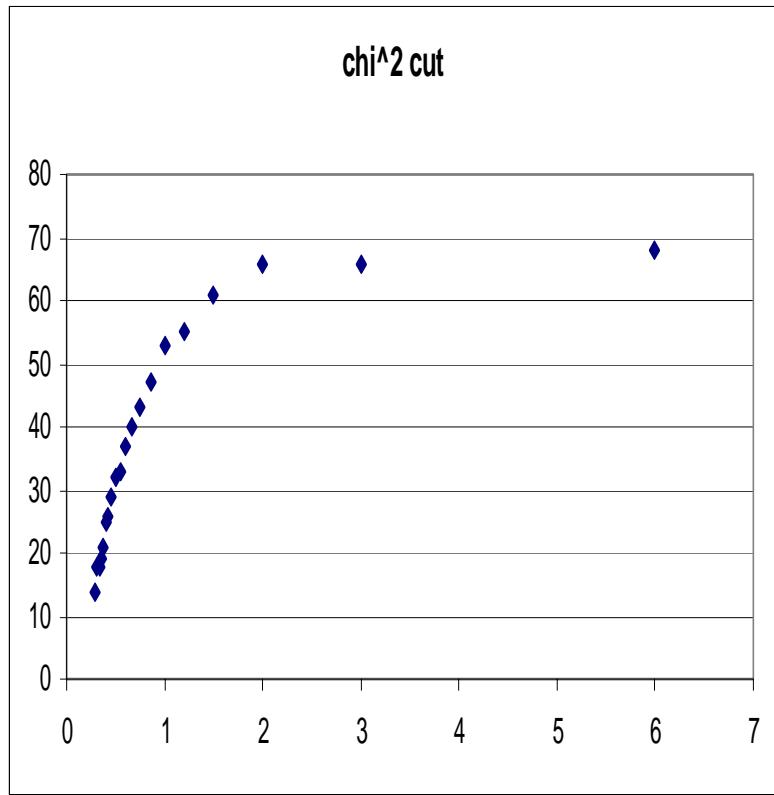


NO Sci-Fi, emulsion, VDC info!

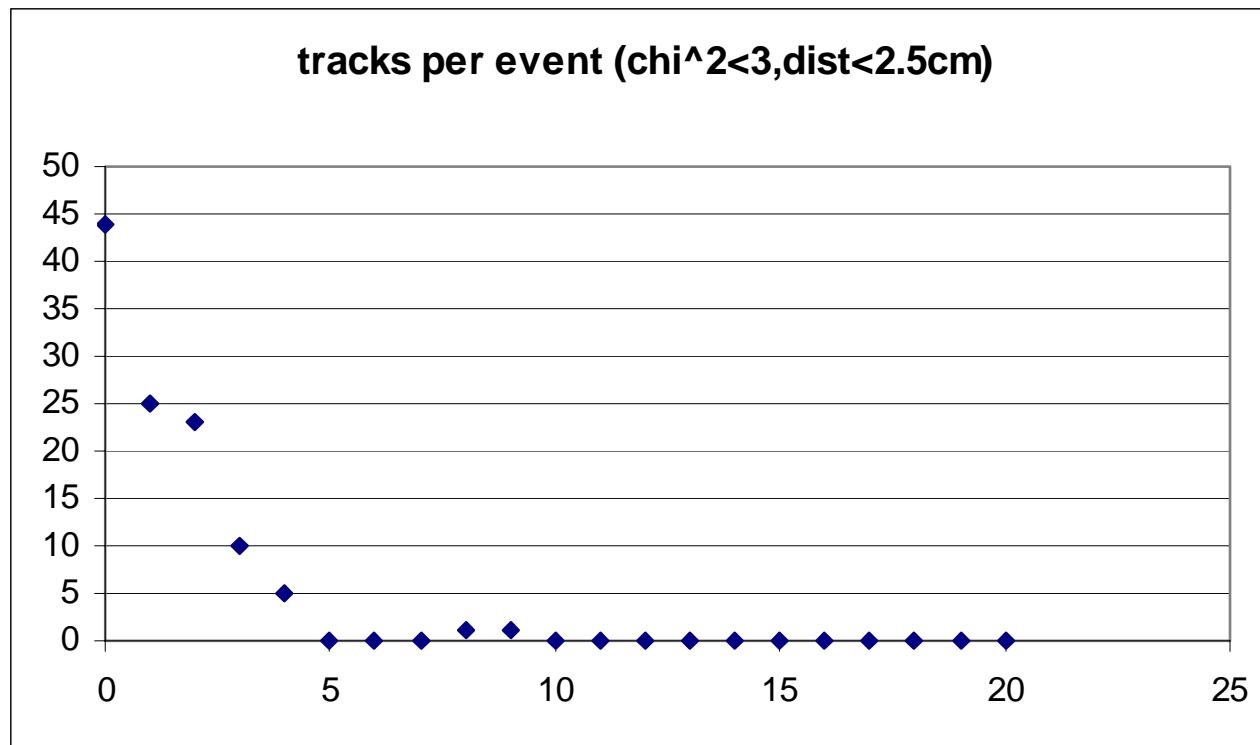
Cuts

- 109 visually selected candidate events
- 4 x-view hits in DC
- 2 u- or v-view hits in DC planes
- 5 hits in muon ID walls
- $p > 5 \text{ GeV}/c$
- $\chi^2 < 2.5$
- y projection $< 2.5 \text{ cm}$ from vertex position
- DC not “blitzed”
- **65 events remaining**

Effect of cuts

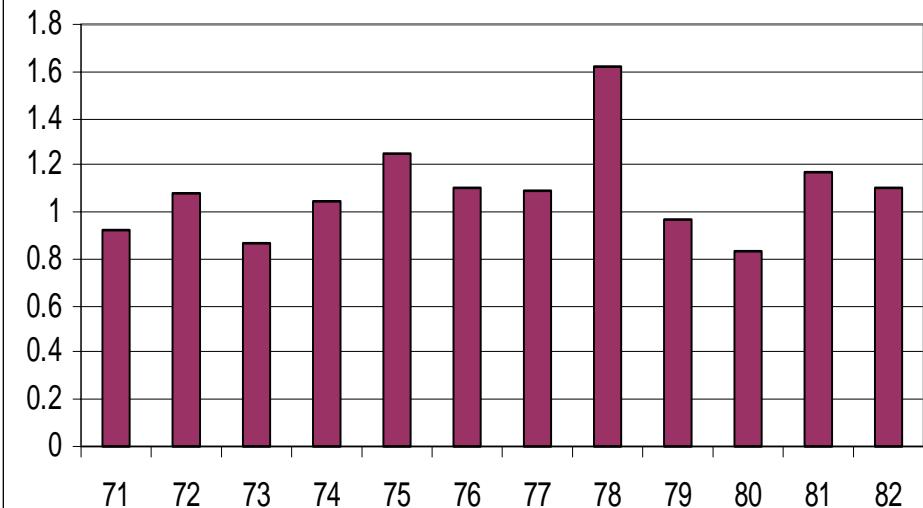


Tracks per event after cuts

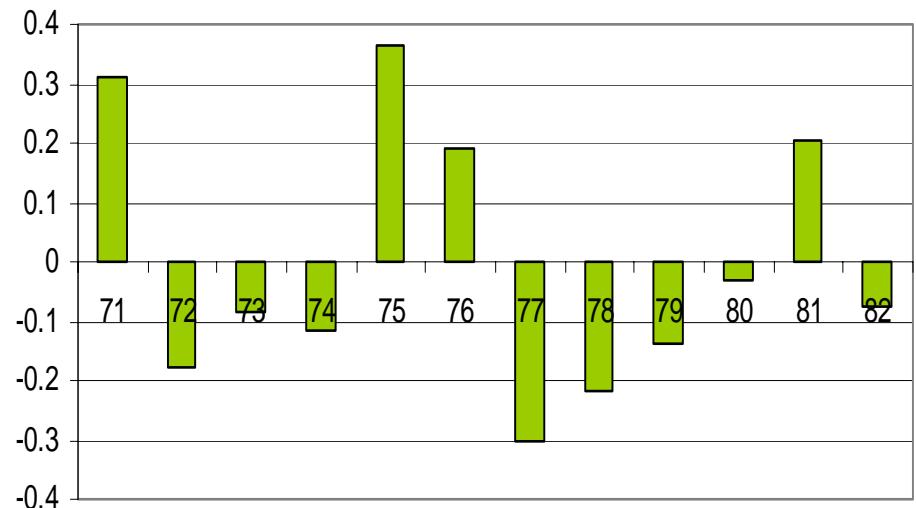


DC performance

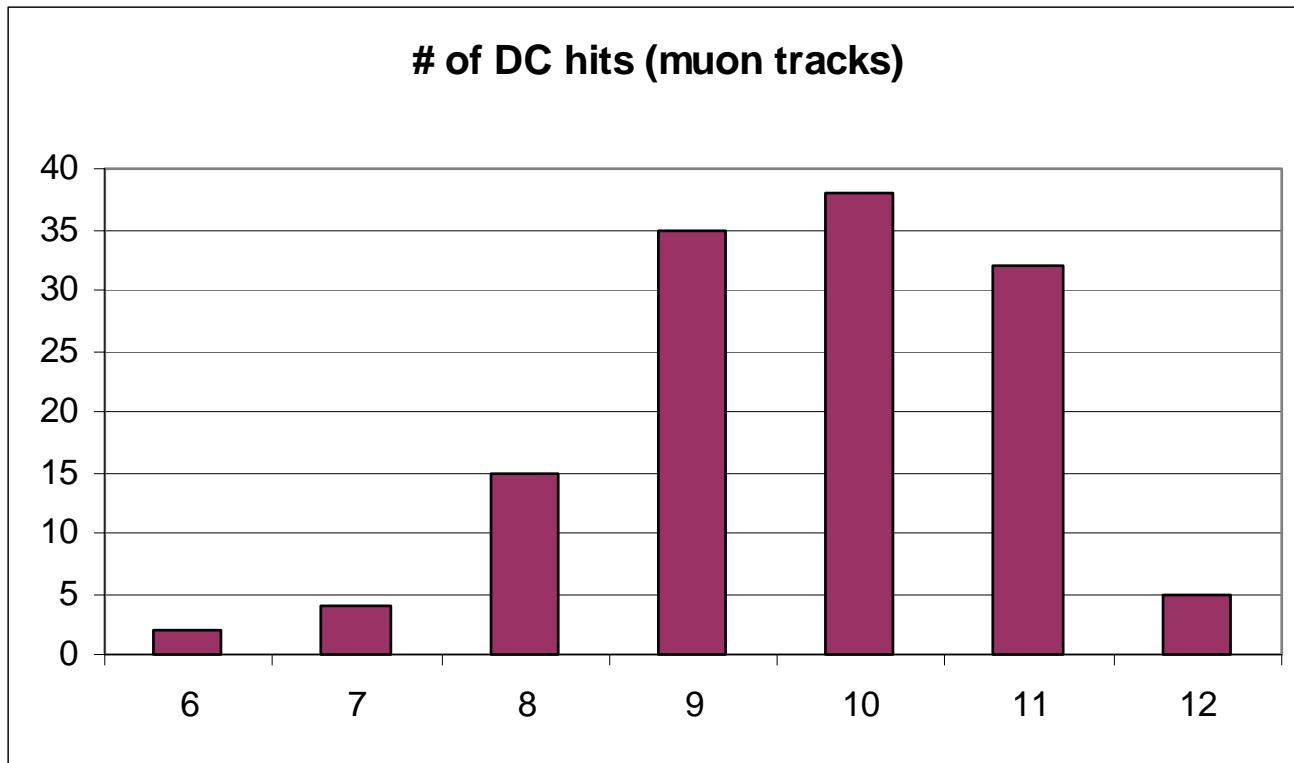
average absolute DC residuals by plane
(normalized to l1acon value)



average DC residual by plane
(normalized to l1acon value)

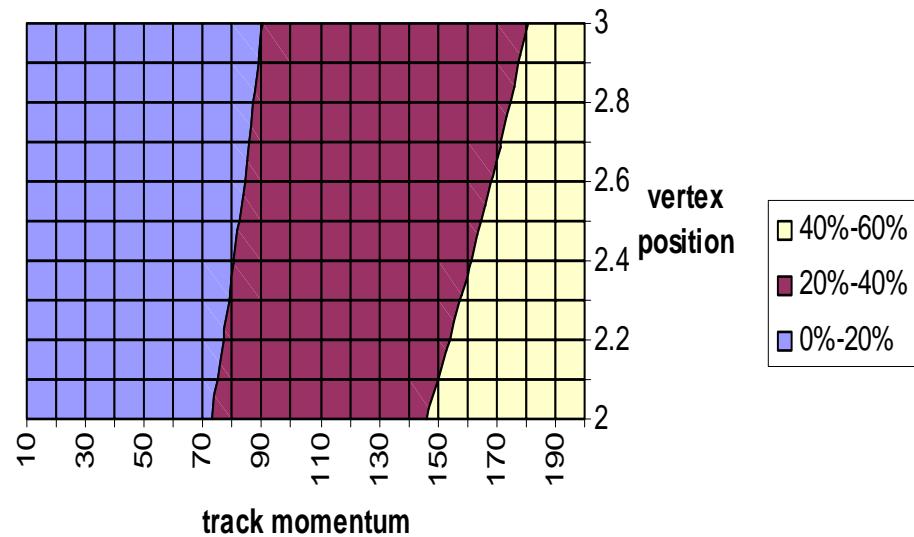


DC efficiency

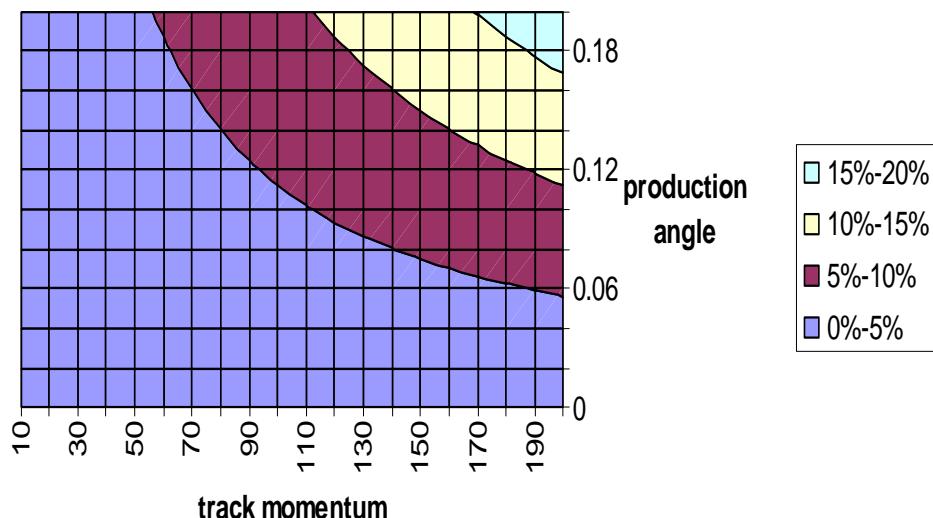


Error estimate

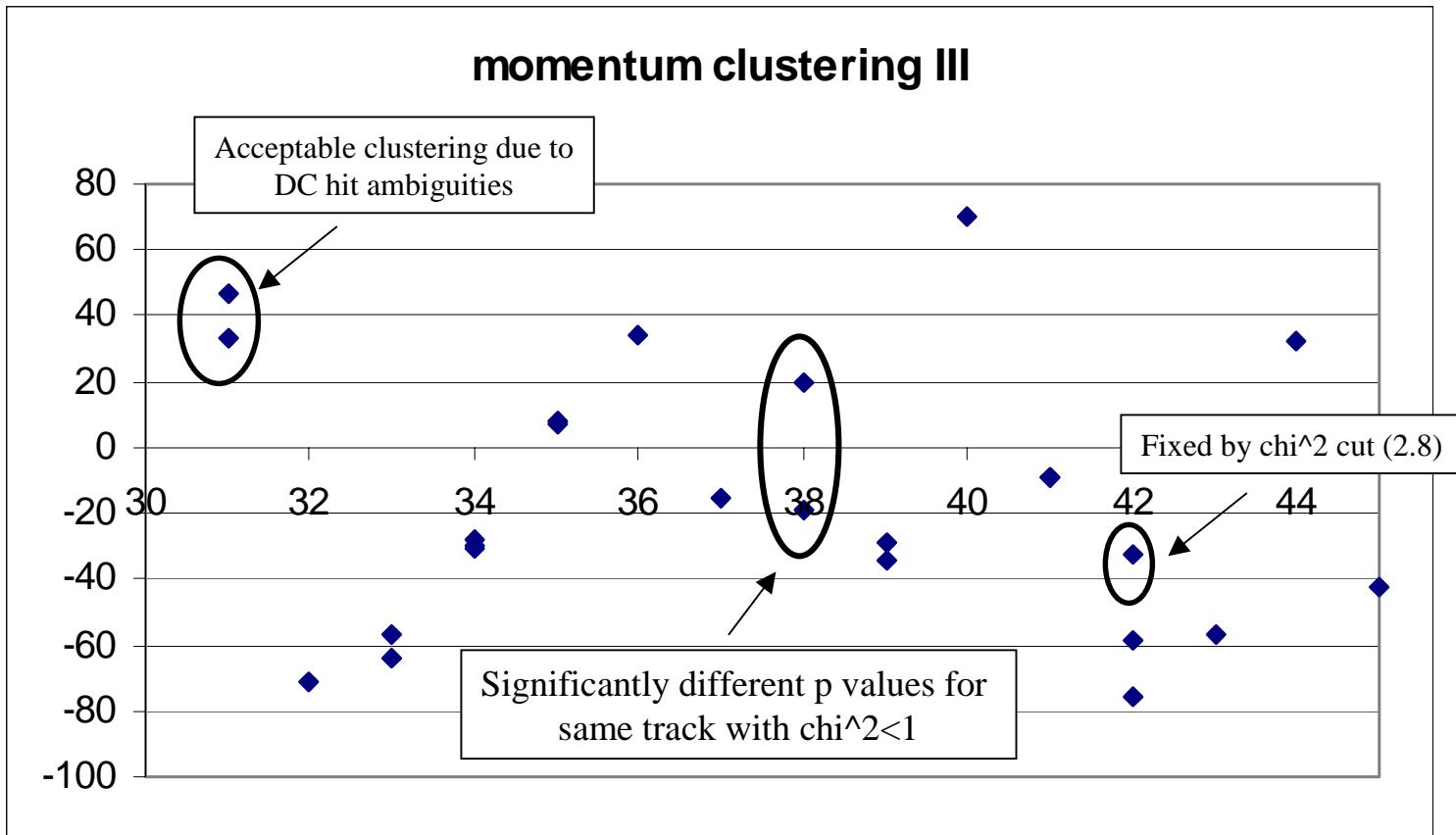
Momentum error (DC sigma .3 microns)



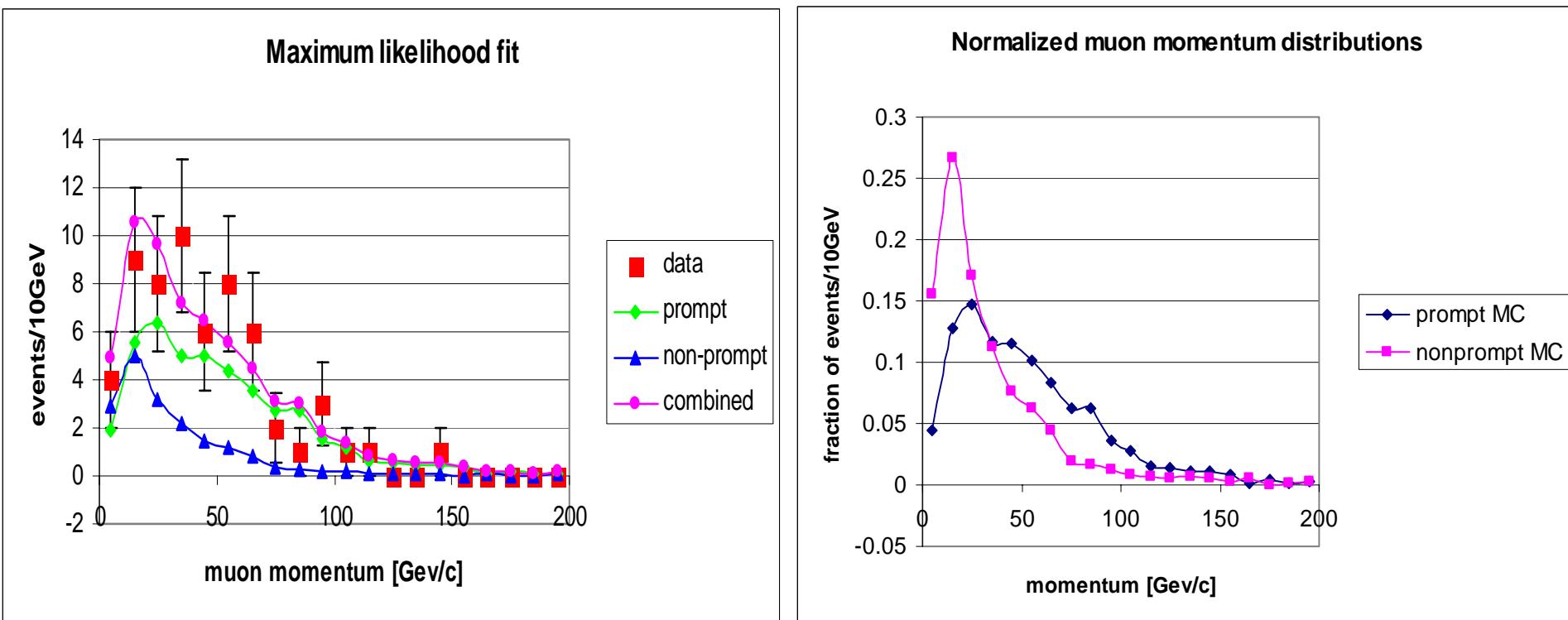
Momentum error ($\delta z(vtx)=2\text{mm}$, module 4)



Remaining problems

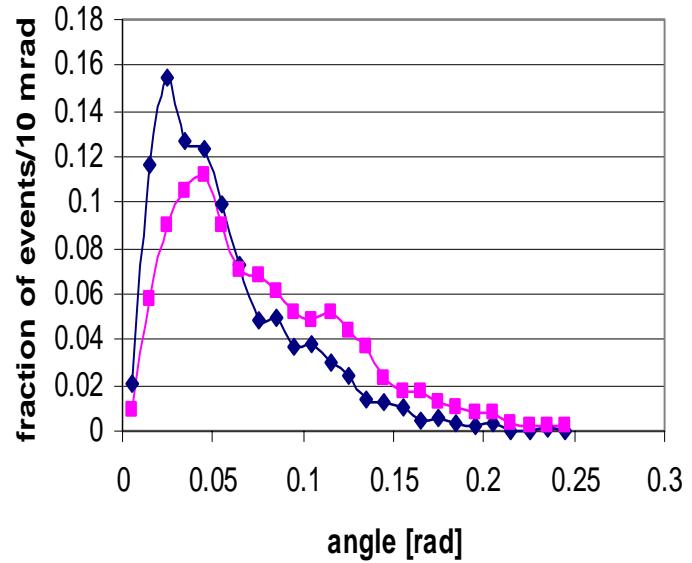


Momentum

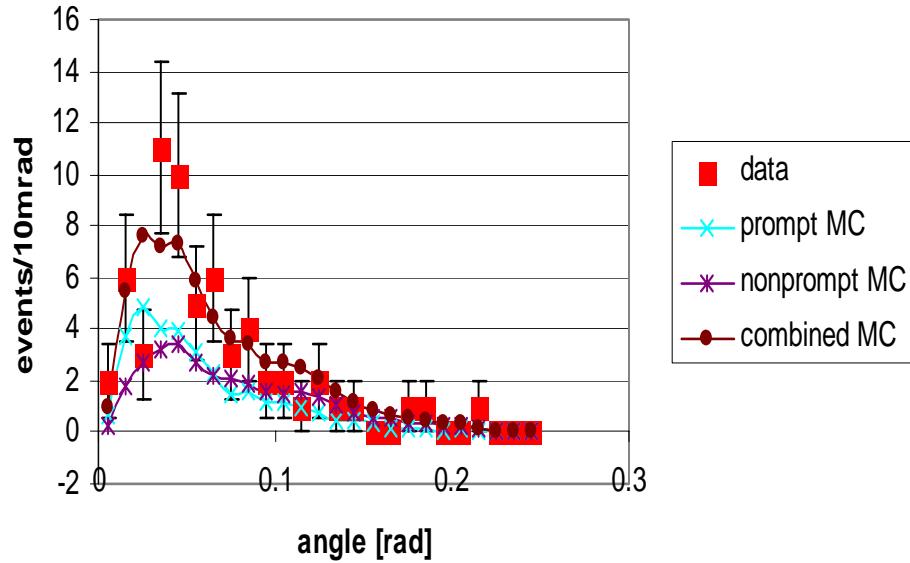


Production Angle

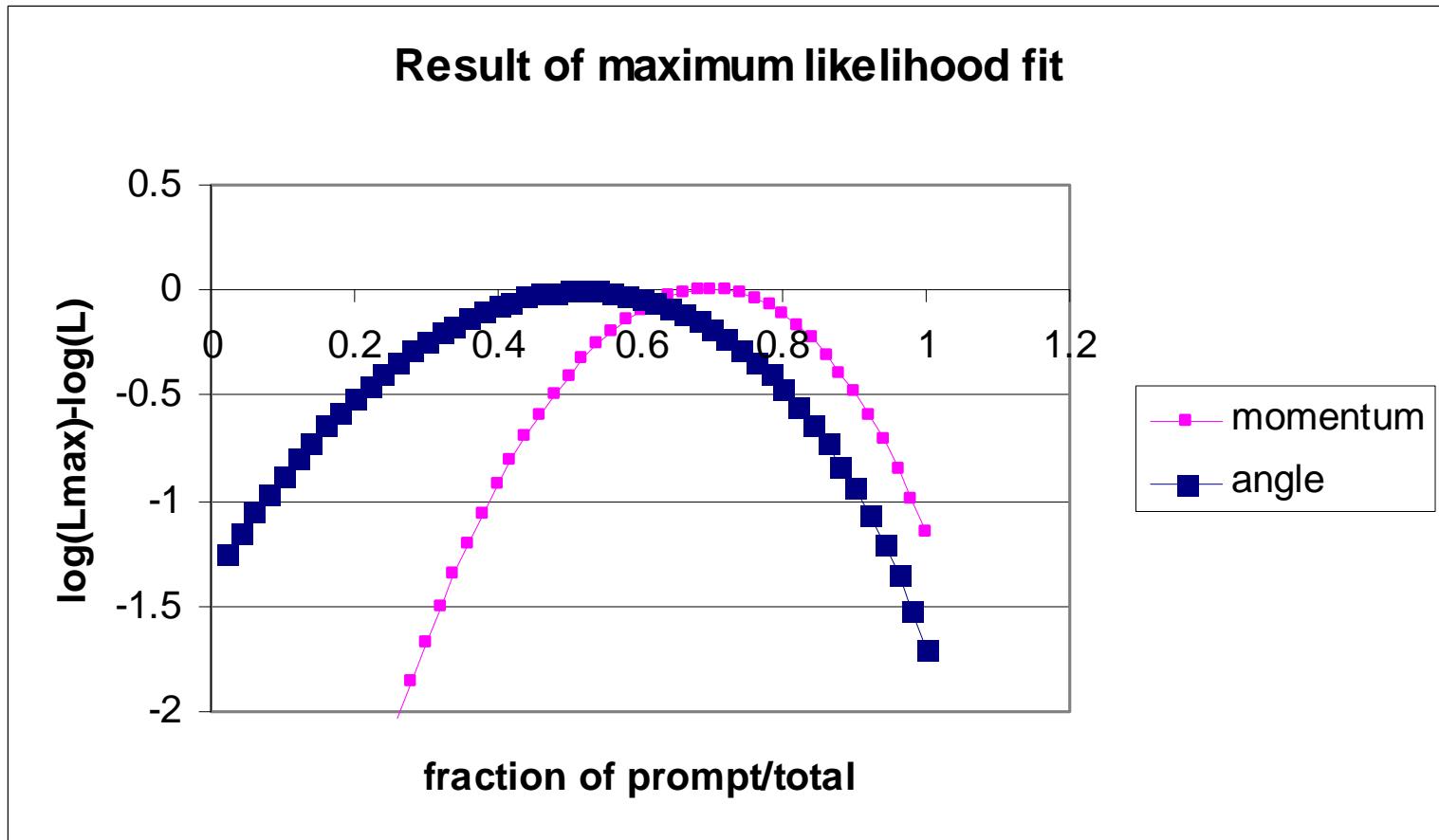
normalized muon production angle distribution



maximum likelihood fit

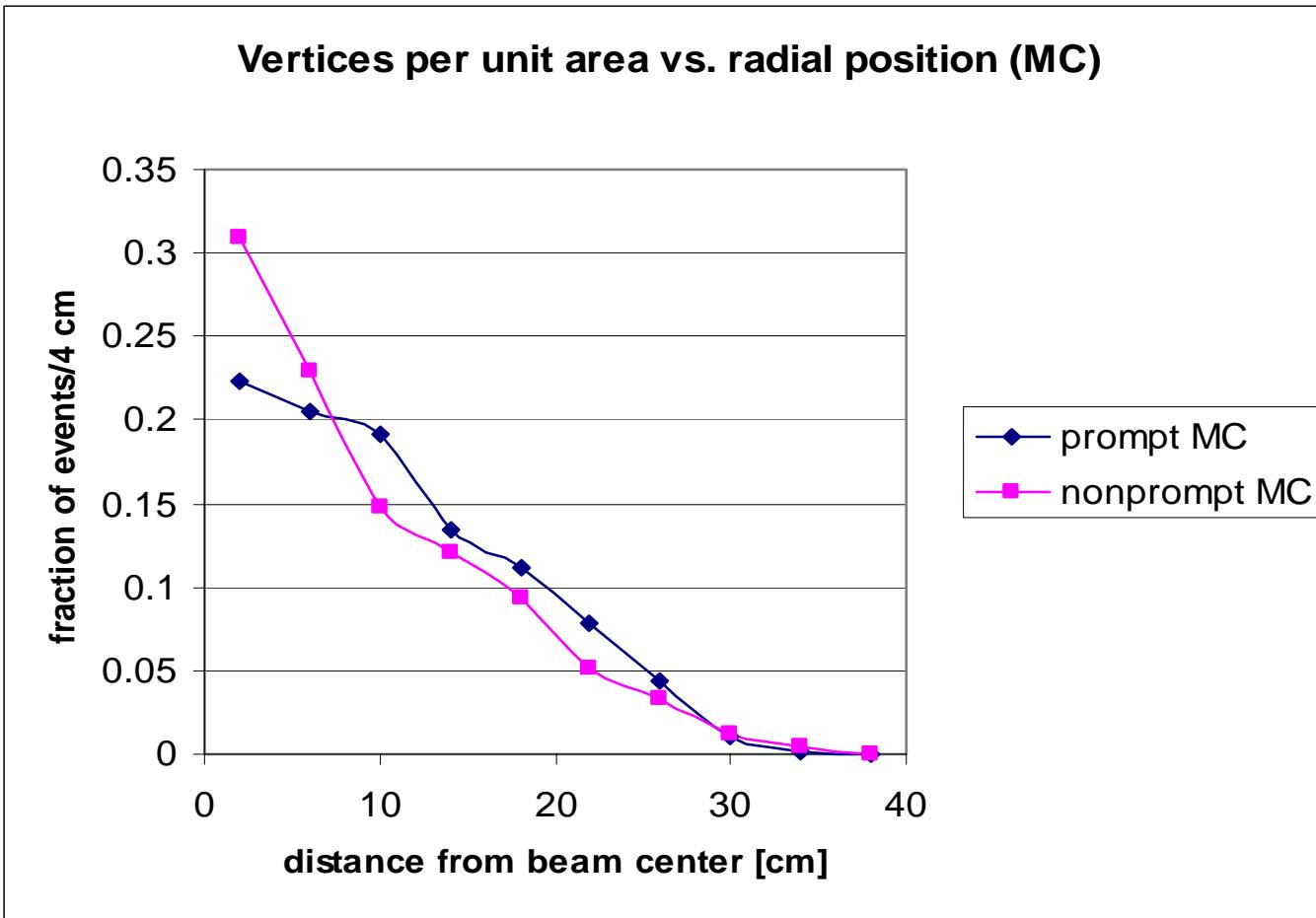


Result

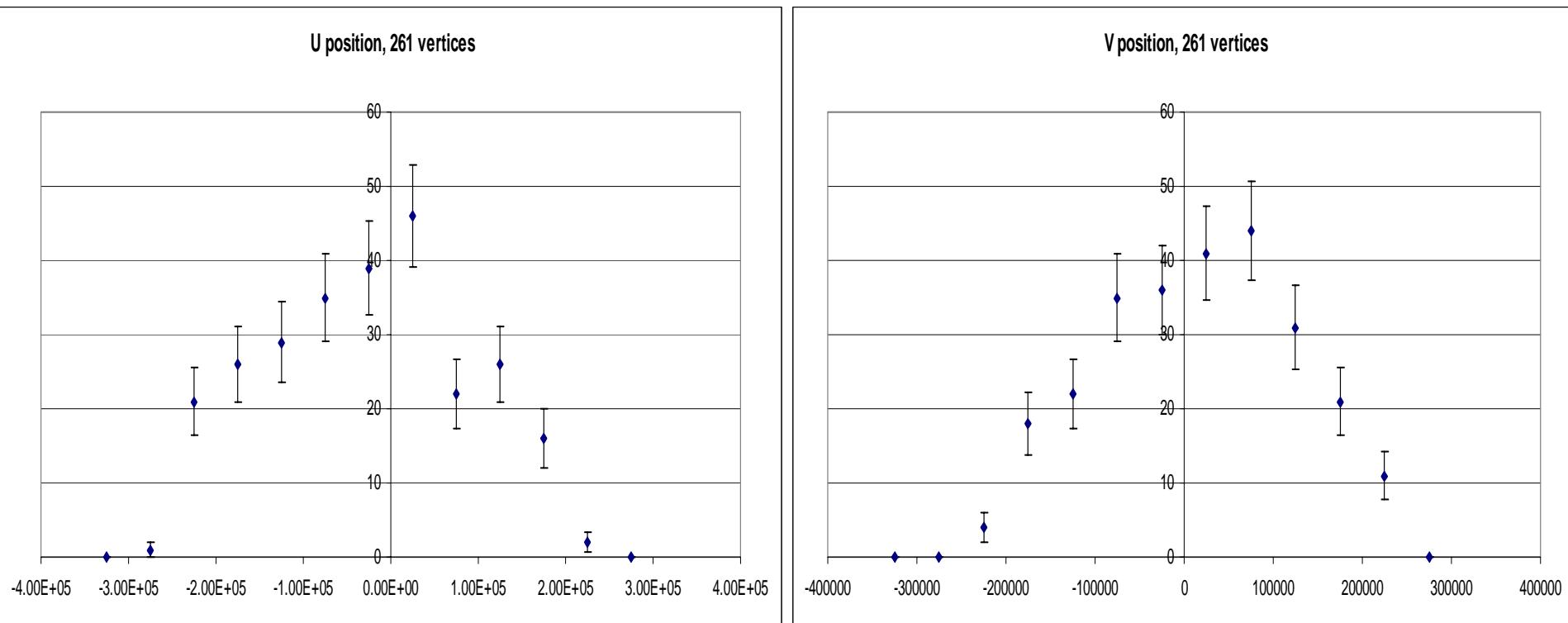


Prompt fraction: $70\% \pm 20\%$ (momentum fit)
 $52\% \pm 30\%$ (angle fit)

Radial vertex position (no correlation with p, angle)

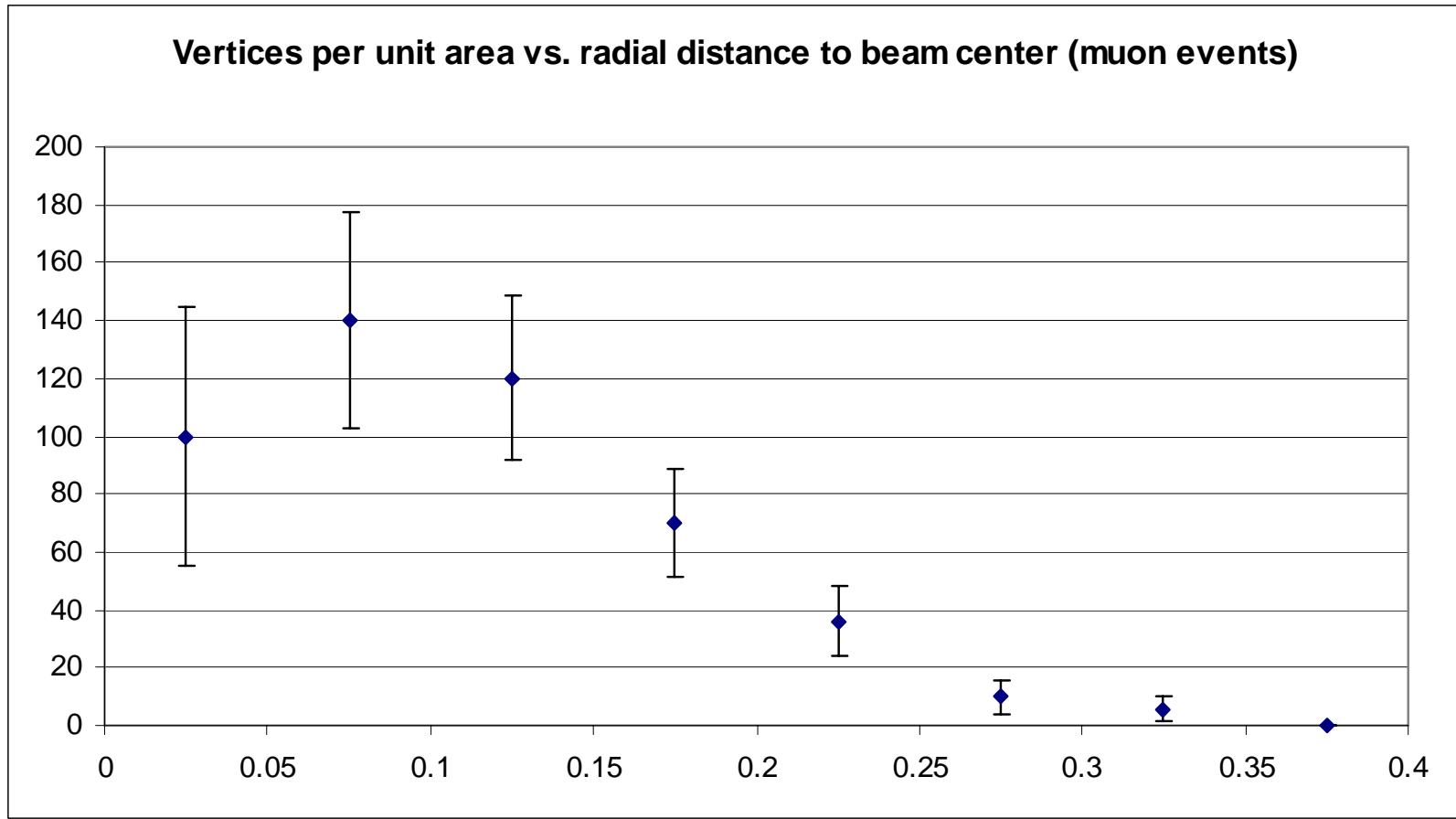


Vertex position (all located events)



Muon event data

($u,v = 0$ from mean)



Work in progress

- Center of beam at emulsion target
- Incorporation of KSU chambers
- MC improvements