MicroBooNE vs MiniBooNE flux

- compared flux at 3 locations to MiniBooNE (MB) flux (z along beam axis)

  1) z=541m (same as MB)

  2) z=526m, y=+5m (y shift with respect to MB center)

  3) z=526m, y=+10m (y shift with respect to MB center)

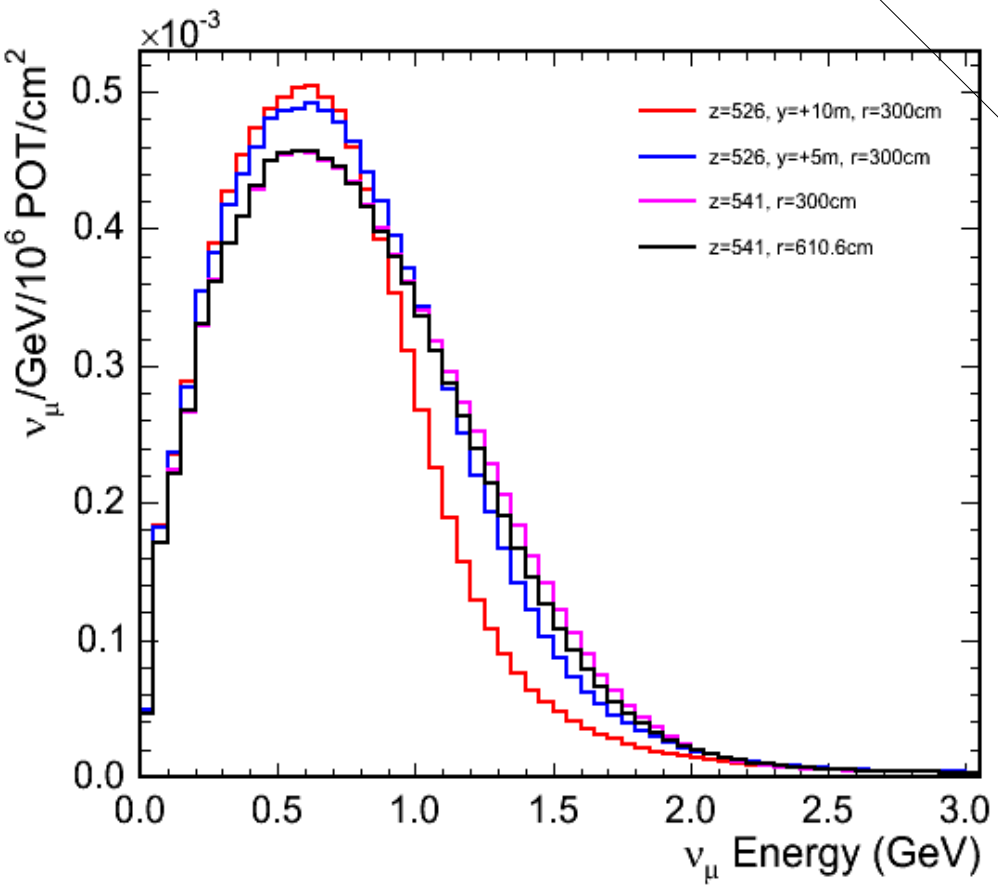
- For microboone integrate flux over R=300cm
- For MB integrate flux over R=610.6cm

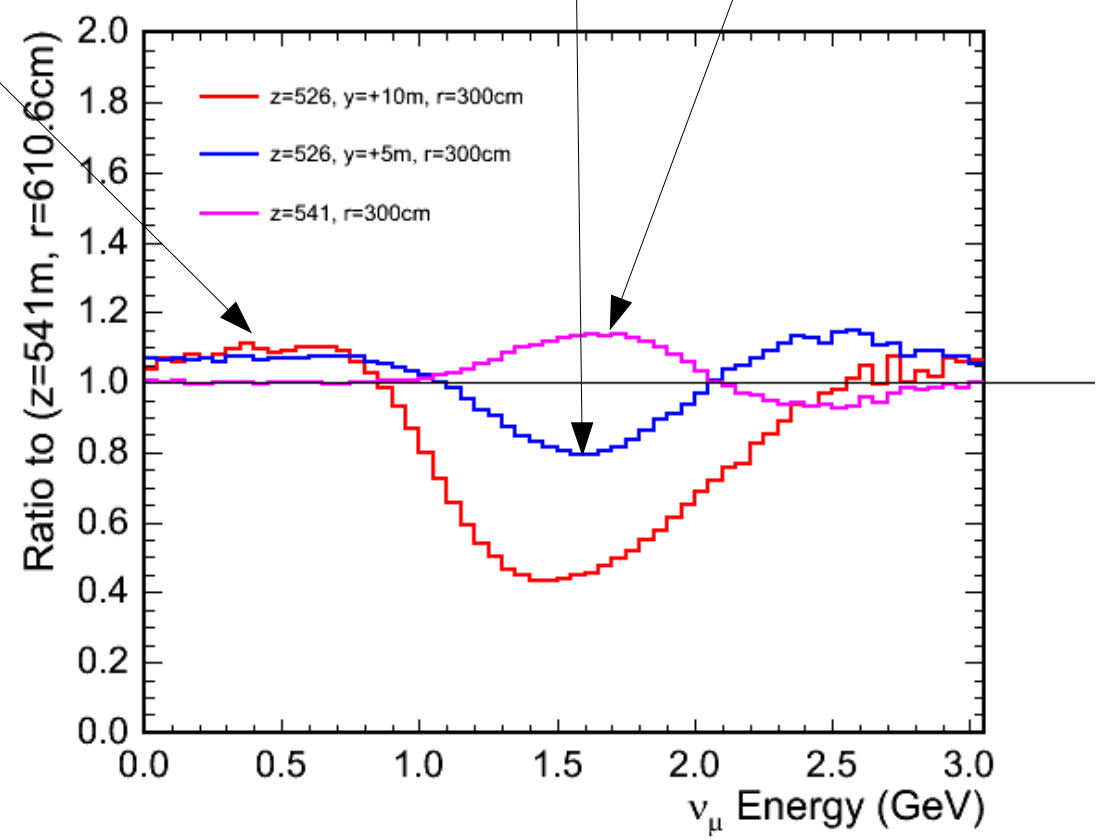
numu flux

slightly higher flux at 2 closer to source locations ~(541/526)^2

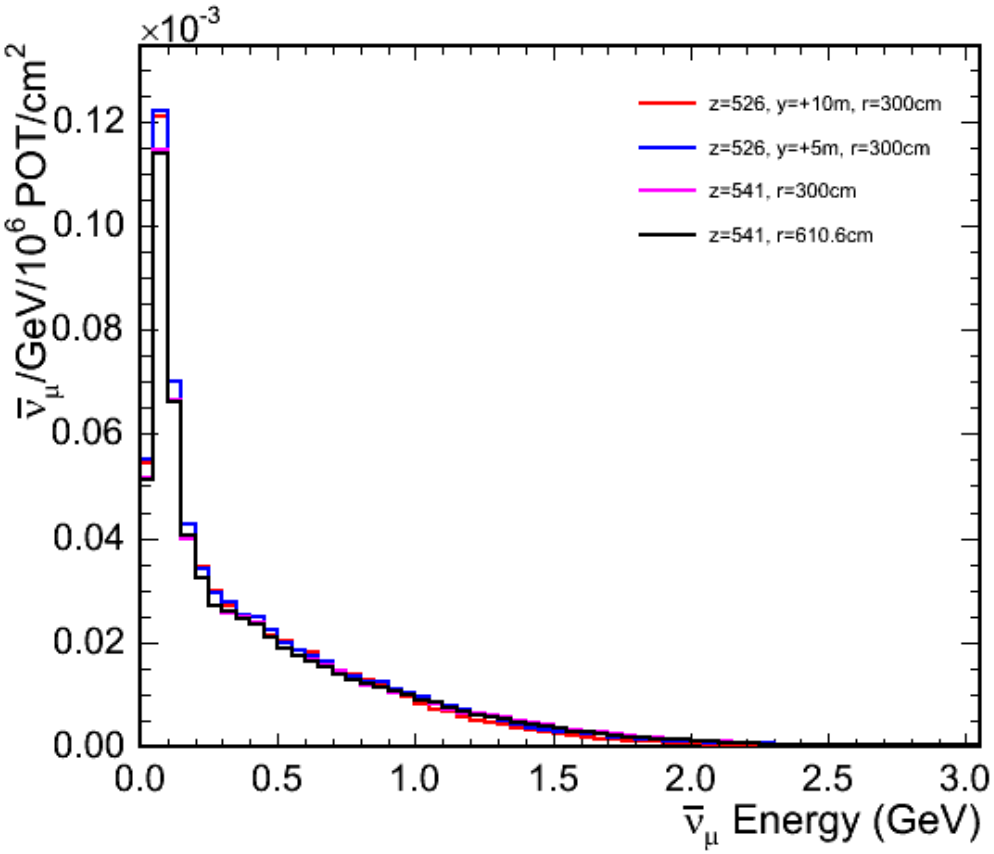
more high E neutrinos compared to MB since integrating over smaller radius

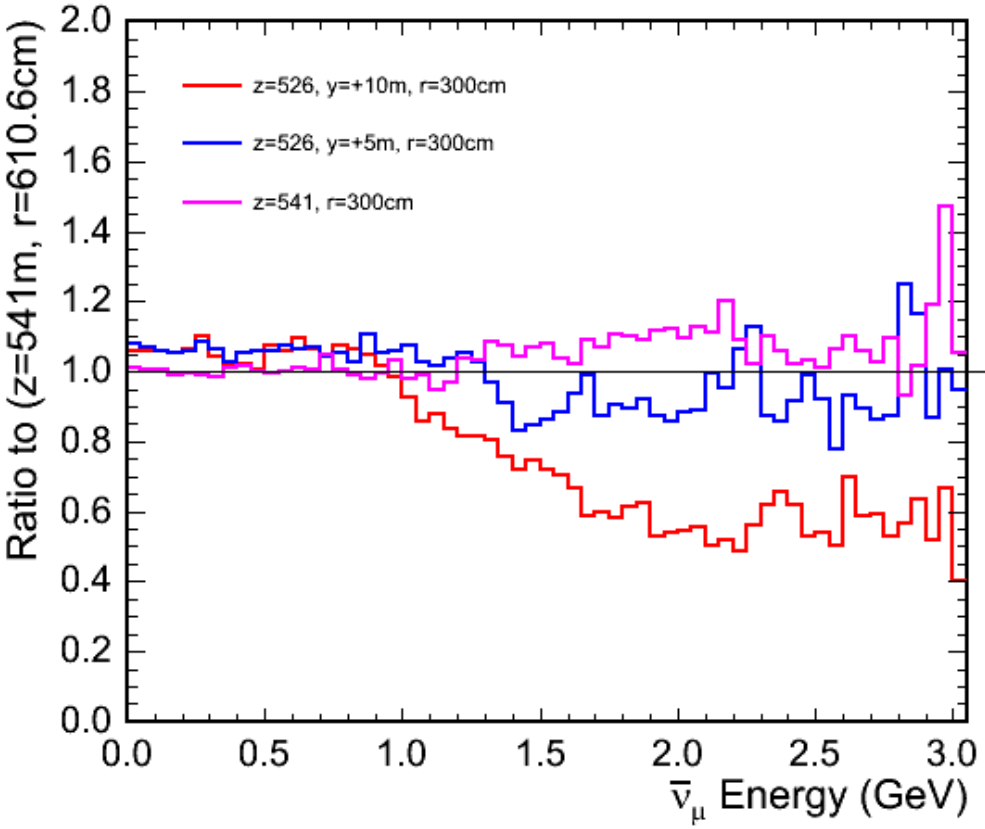
softer flux when going off-axis



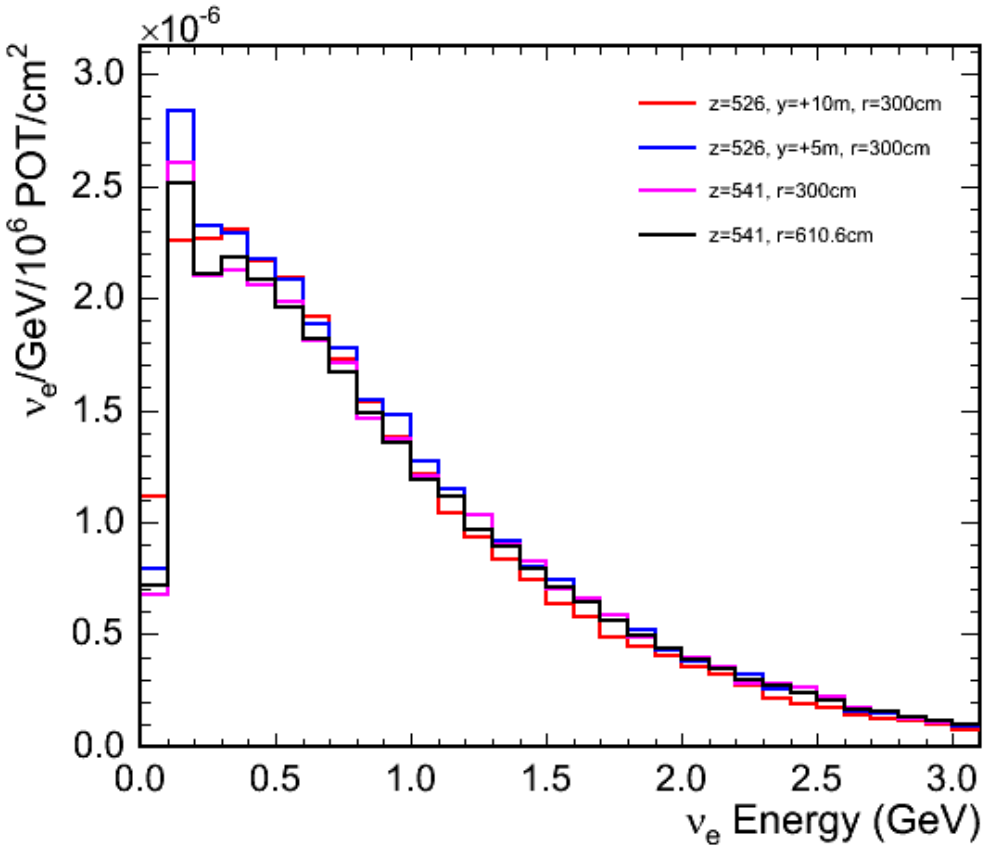


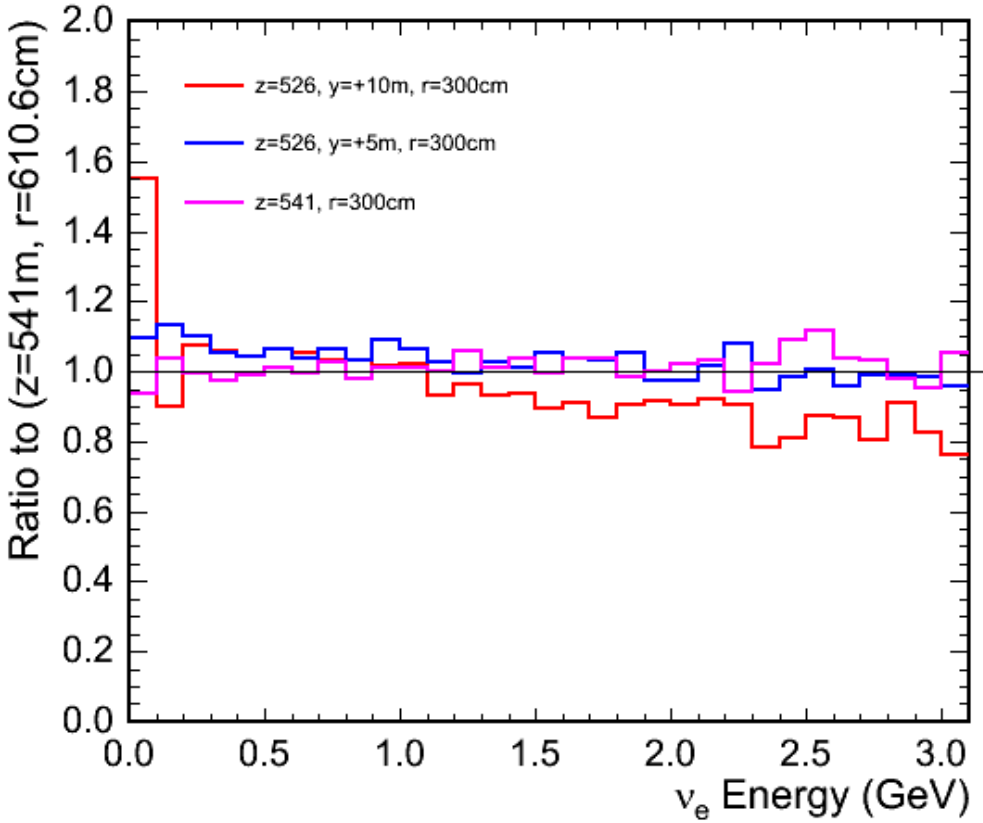
numubar flux



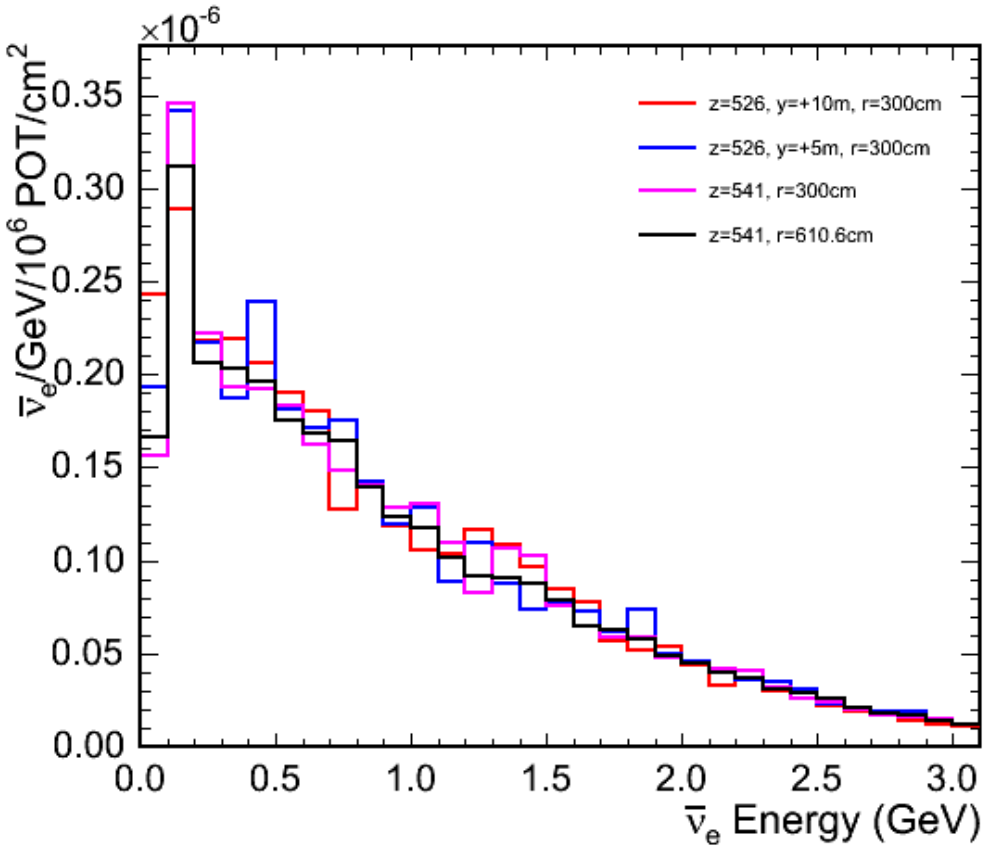


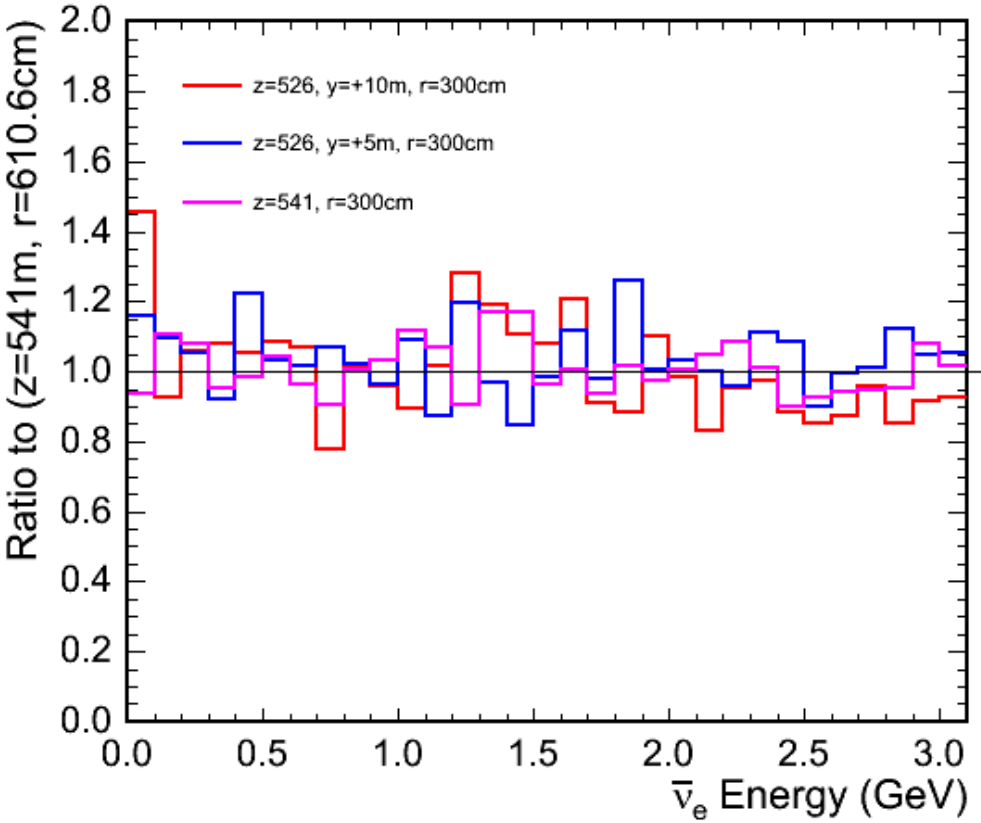
nue flux


×10^-6
νe/GeV/10^6 POT/cm^2
z=526, y=+10m, r=300cm
z=526, y=+5m, r=300cm
z=541, r=300cm
z=541, r=610.6cm
νe Energy (GeV)


Ratio to (z=541m, r=610.6cm)
z=526, y=+10m, r=300cm
z=526, y=+5m, r=300cm
z=541, r=300cm
νe Energy (GeV)

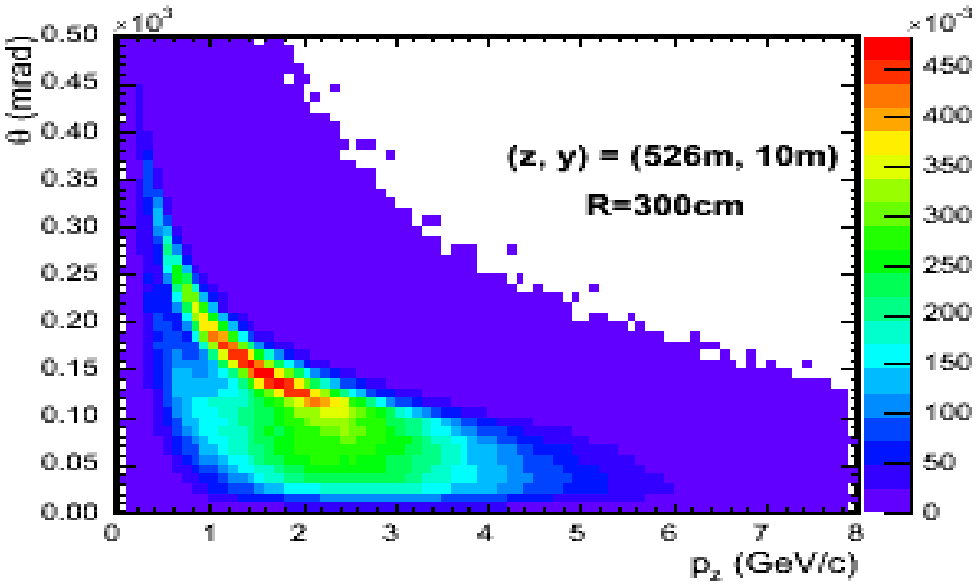
nuebar flux

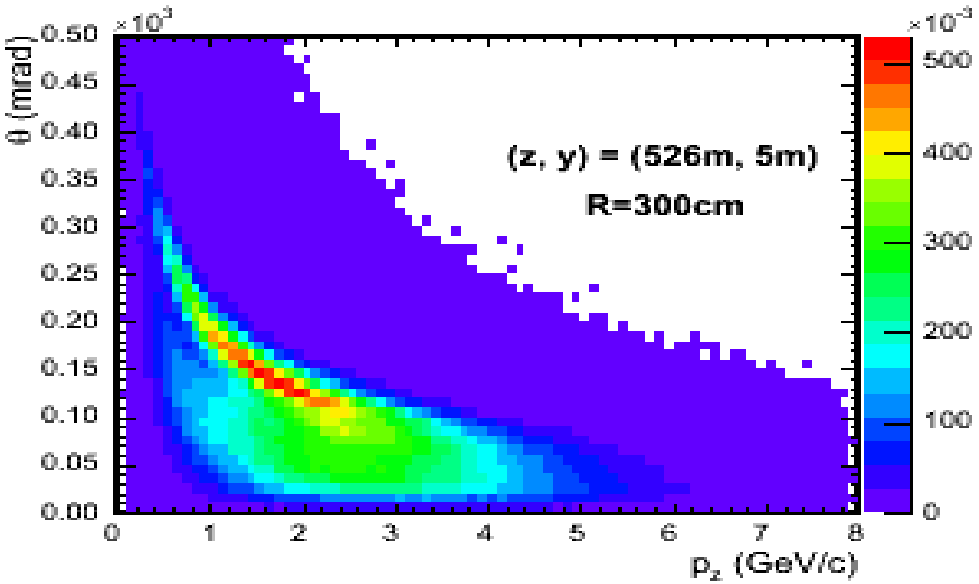

×10^-6
$\bar{\nu}_e$/GeV/10^6 POT/cm^2
z=526, y=+10m, r=300cm
z=526, y=+5m, r=300cm
z=541, r=300cm
z=541, r=610.6cm
$\bar{\nu}_e$ Energy (GeV)

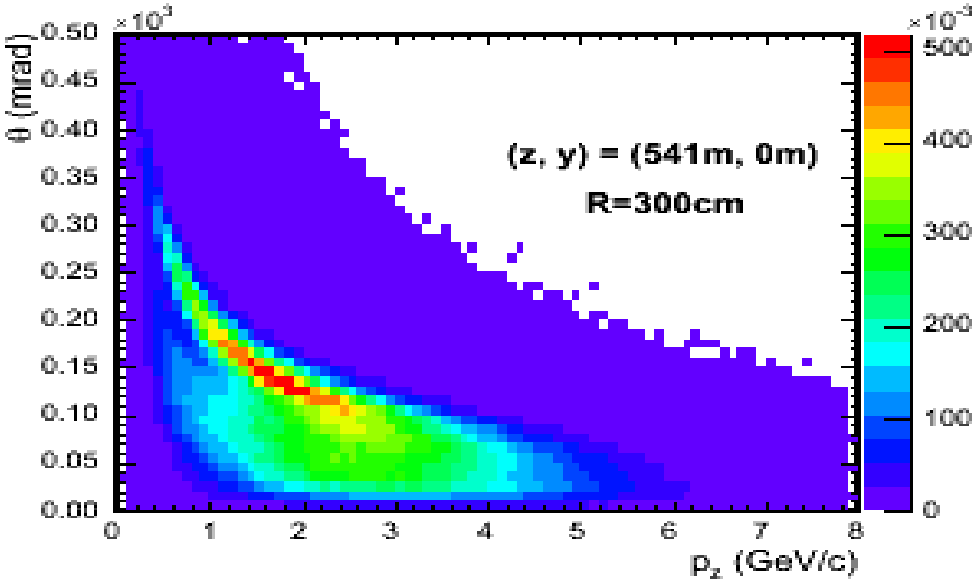

Ratio to (z=541m, r=610.6cm)
z=526, y=+10m, r=300cm
z=526, y=+5m, r=300cm
z=541, r=300cm
$\bar{\nu}_e$ Energy (GeV)

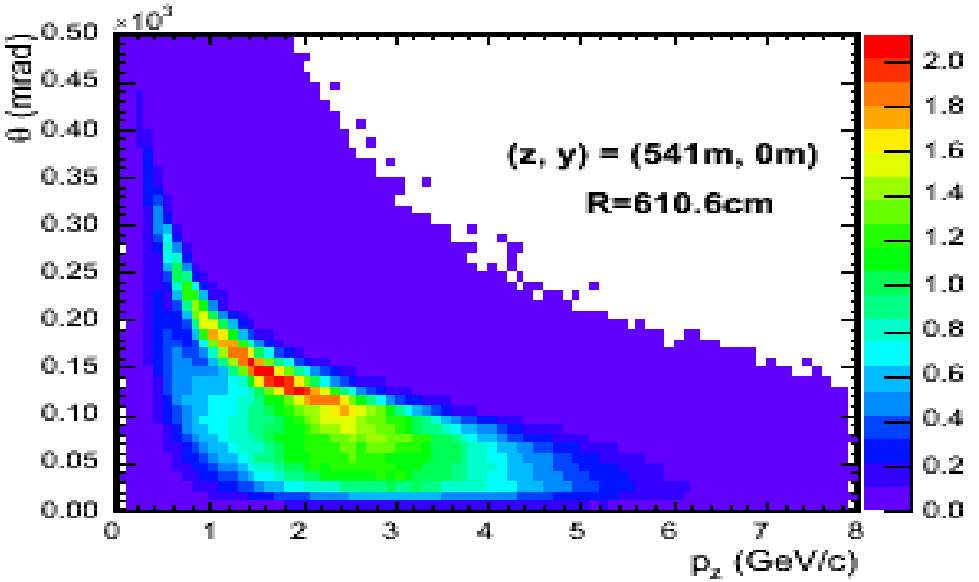
pi+ theta - pz

- Pi+ contributing to numu flux at different locations





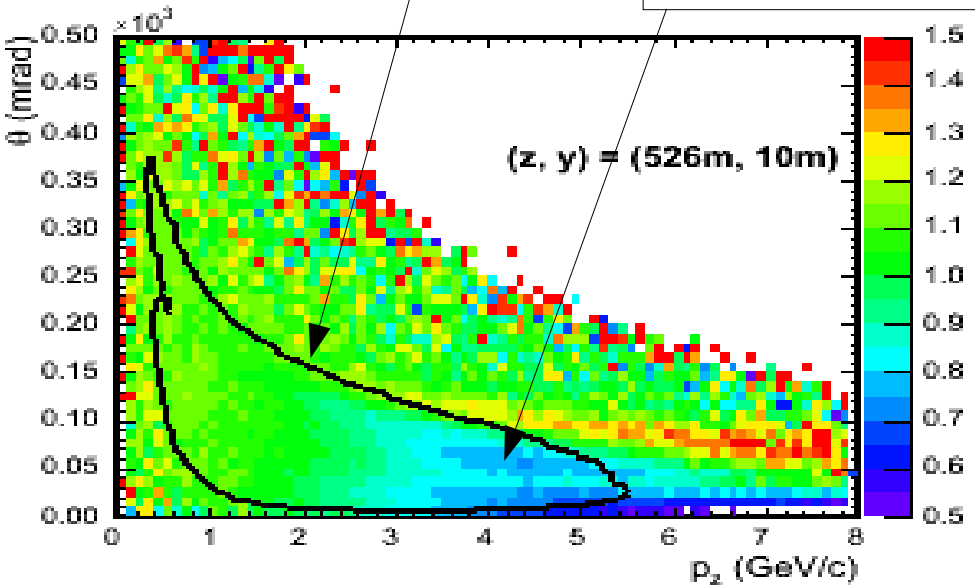


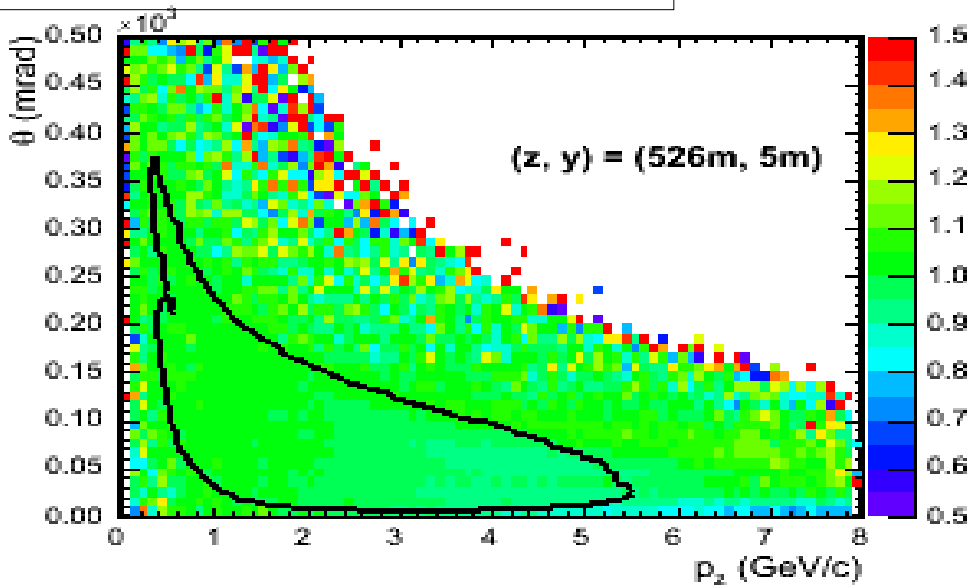


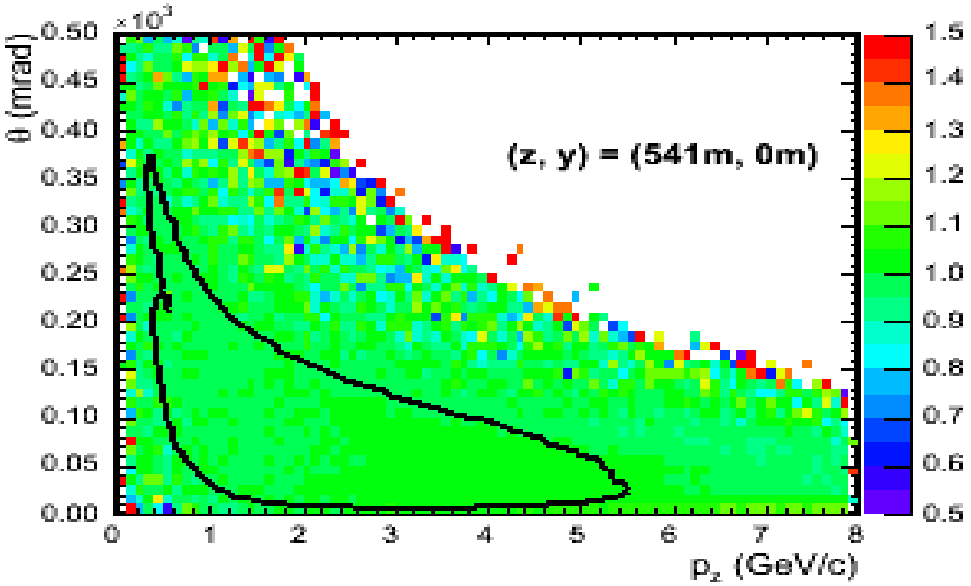
Ratio of pi+ theta-pz to MB

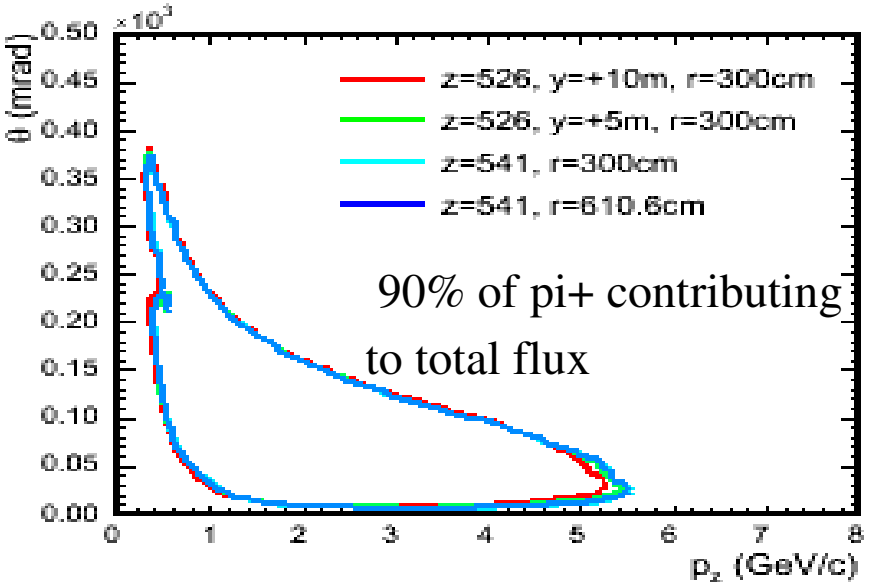
90% of pi+ that contribute to MB flux within this curve

these contribute less to the off-axis flux



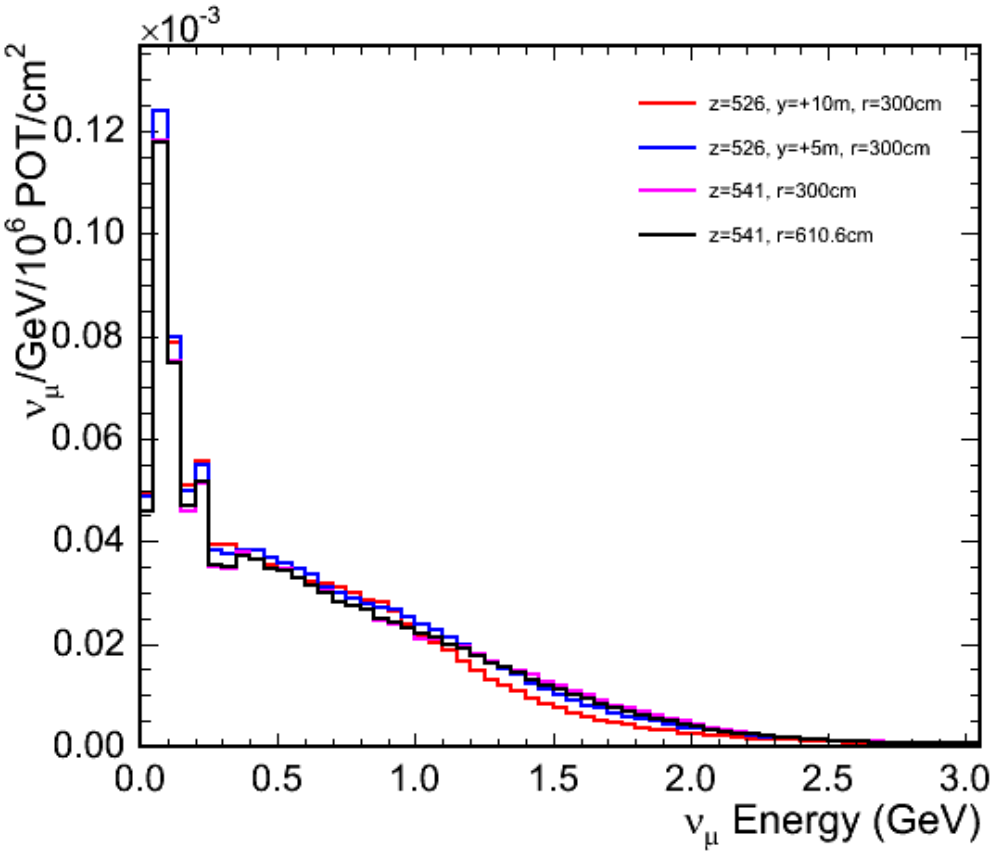


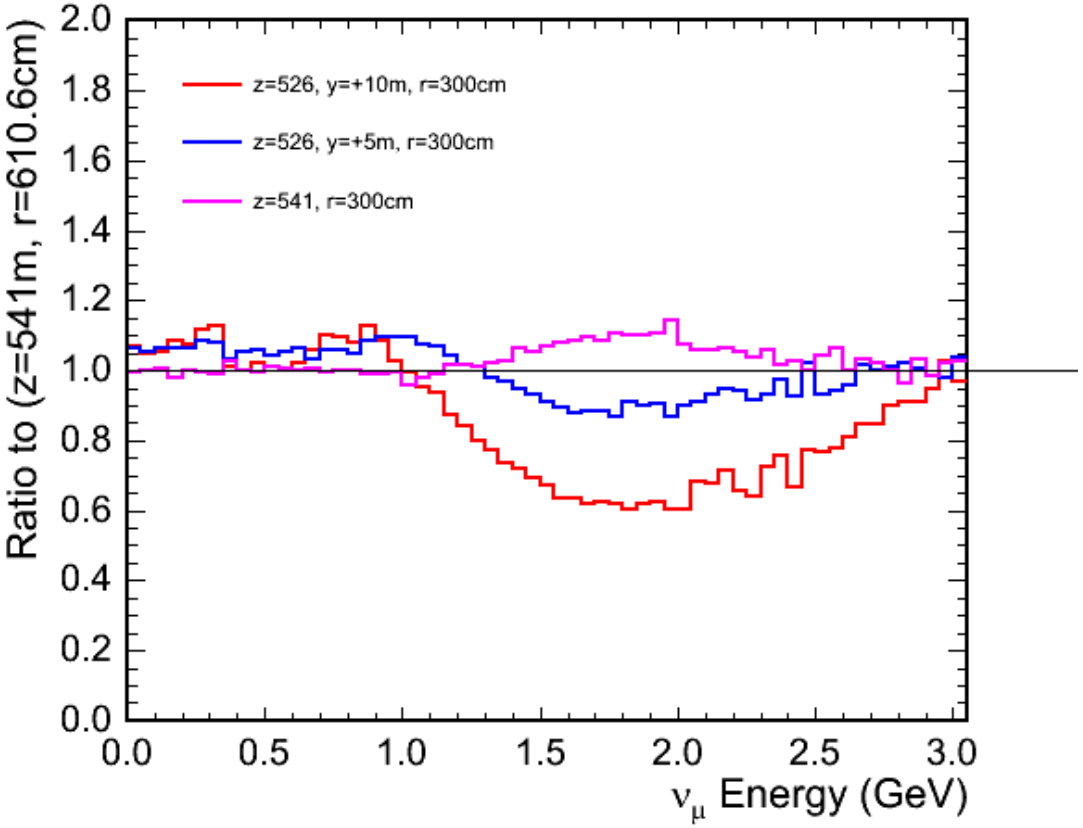




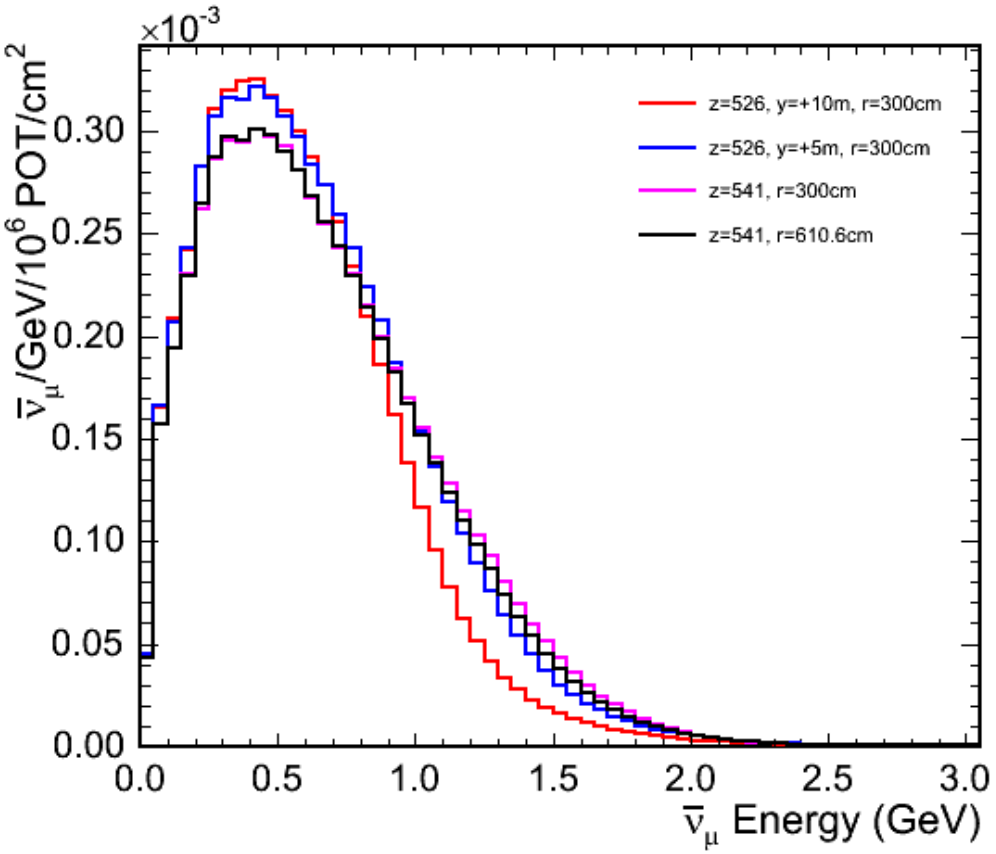
Anti-neutrino mode

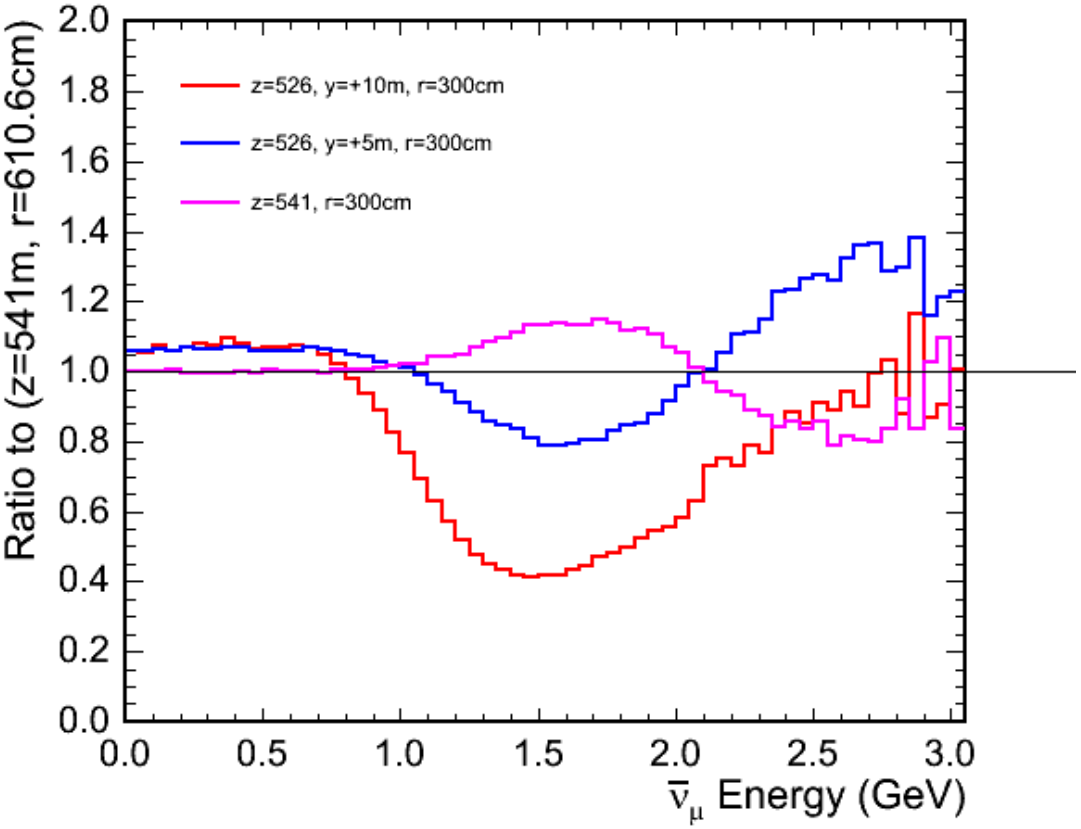
numu flux


×10^-3
νμ/GeV/10^6 POT/cm^2
z=526, y=+10m, r=300cm
z=526, y=+5m, r=300cm
z=541, r=300cm
z=541, r=610.6cm
νμ Energy (GeV)

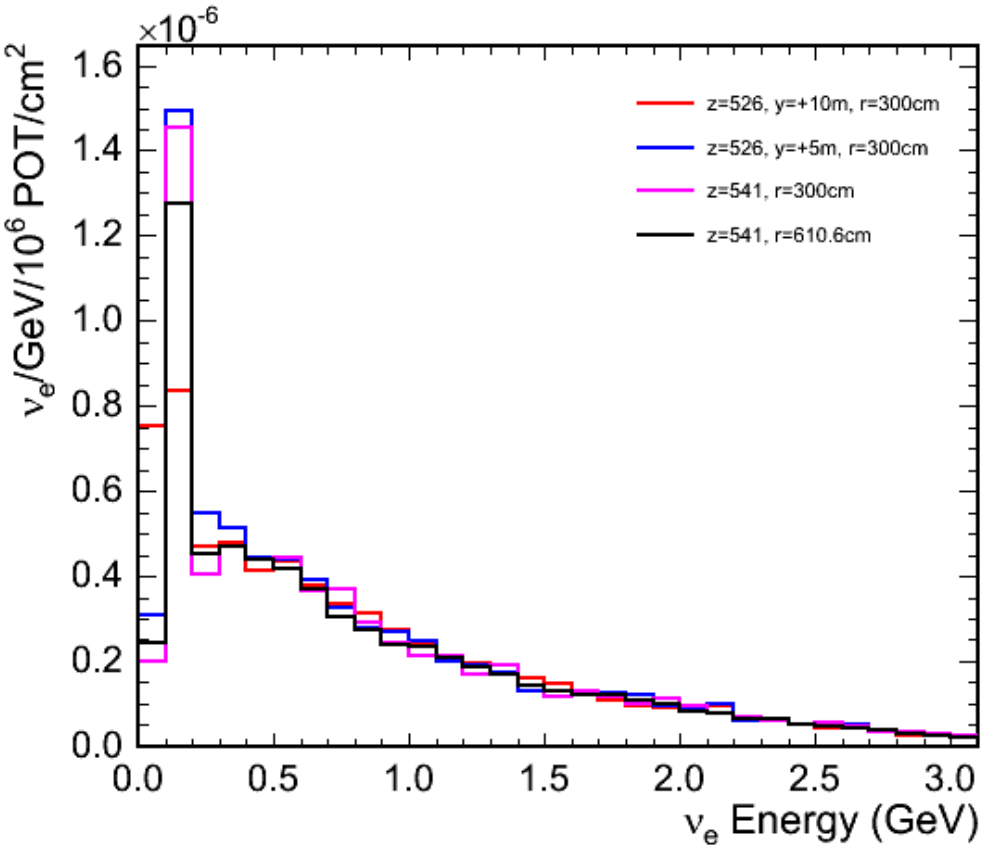

Ratio to (z=541m, r=610.6cm)
z=526, y=+10m, r=300cm
z=526, y=+5m, r=300cm
z=541, r=300cm
νμ Energy (GeV)

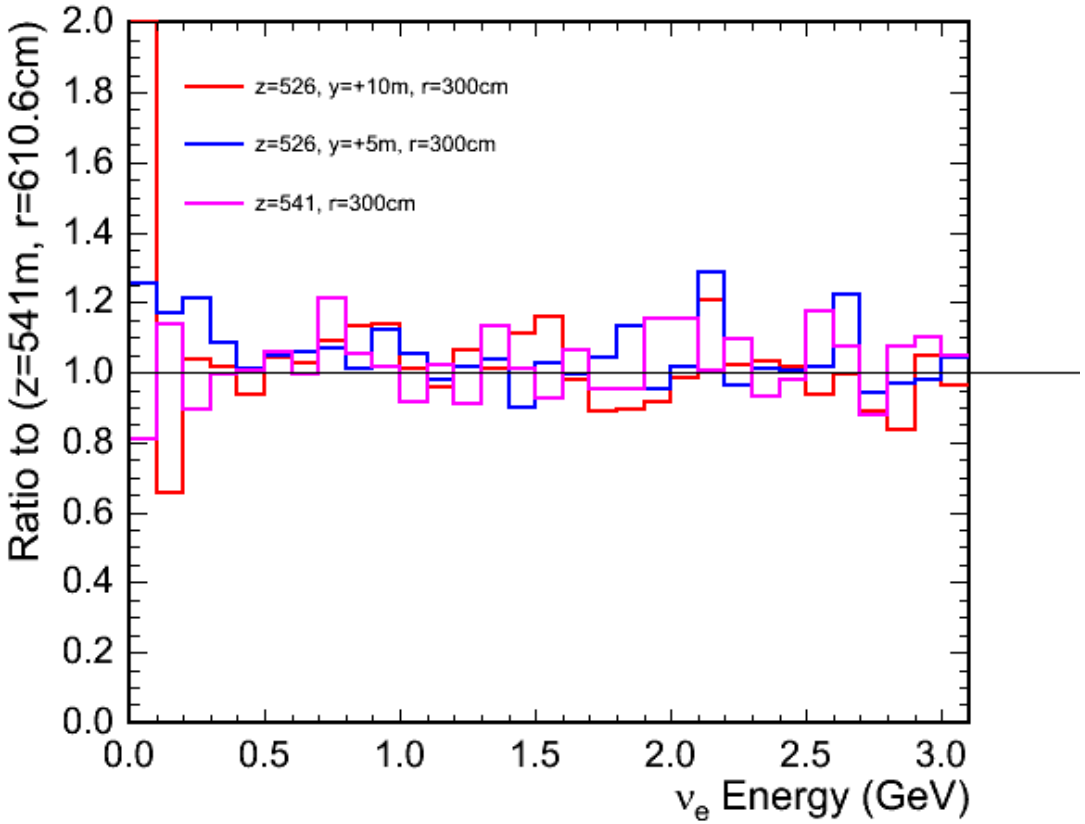
numubar flux



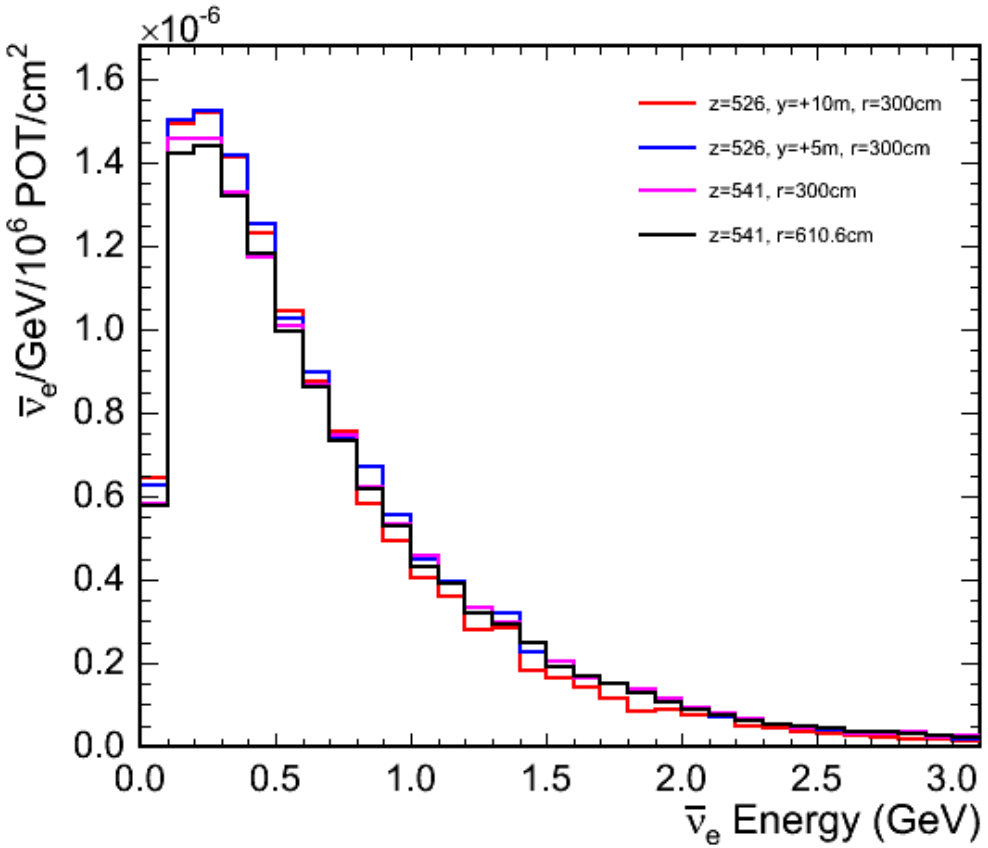


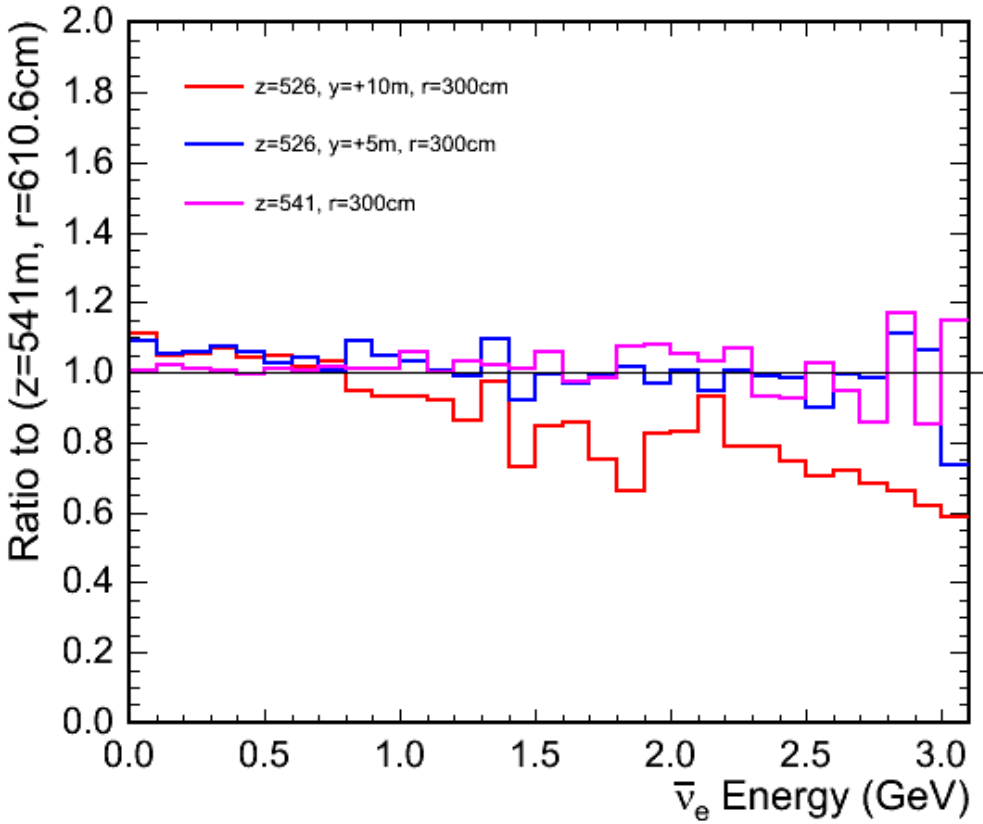
nue flux


×10^-6
νe/GeV/10^6 POT/cm^2
z=526, y=+10m, r=300cm
z=526, y=+5m, r=300cm
z=541, r=300cm
z=541, r=610.6cm
νe Energy (GeV)


Ratio to (z=541m, r=610.6cm)
z=526, y=+10m, r=300cm
z=526, y=+5m, r=300cm
z=541, r=300cm
νe Energy (GeV)

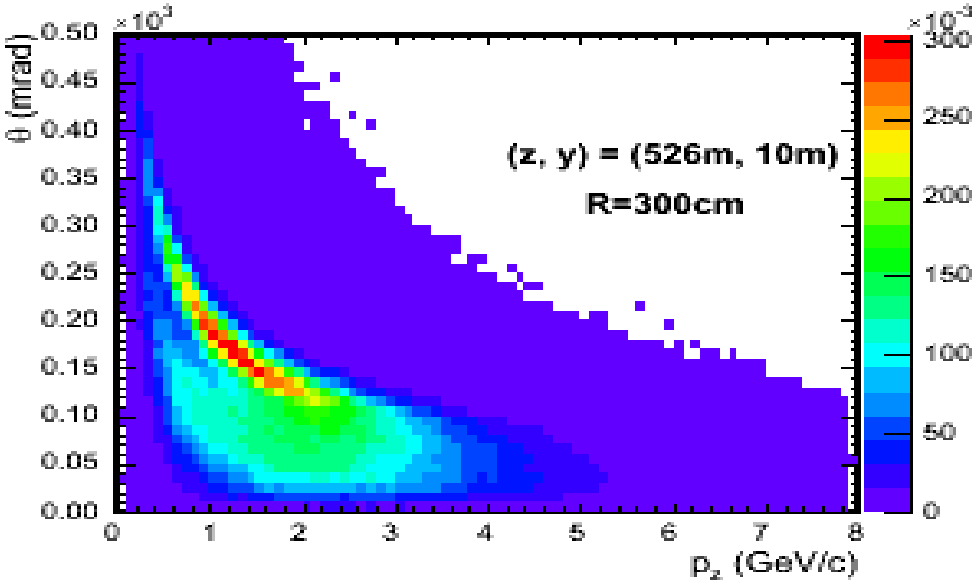
nuebar flux

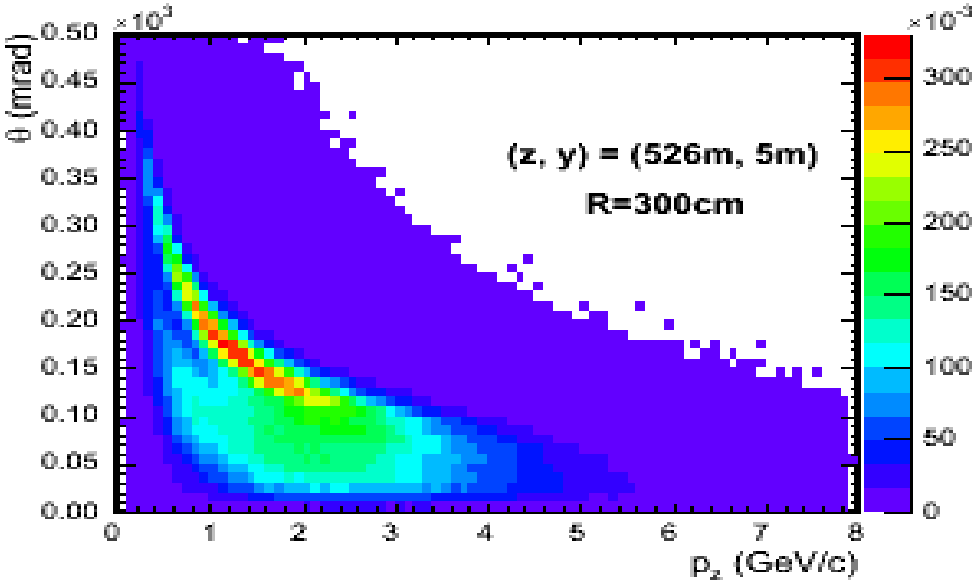

×10^-6
$\bar{\nu}_e$/GeV/10^6 POT/cm^2
z=526, y=+10m, r=300cm
z=526, y=+5m, r=300cm
z=541, r=300cm
z=541, r=610.6cm
$\bar{\nu}_e$ Energy (GeV)

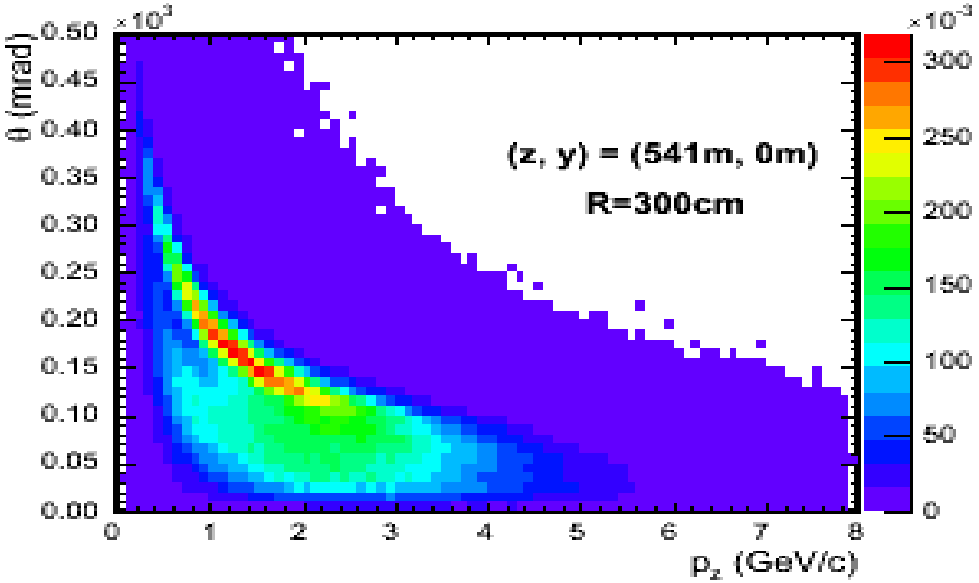

Ratio to (z=541m, r=610.6cm)
z=526, y=+10m, r=300cm
z=526, y=+5m, r=300cm
z=541, r=300cm
$\bar{\nu}_e$ Energy (GeV)

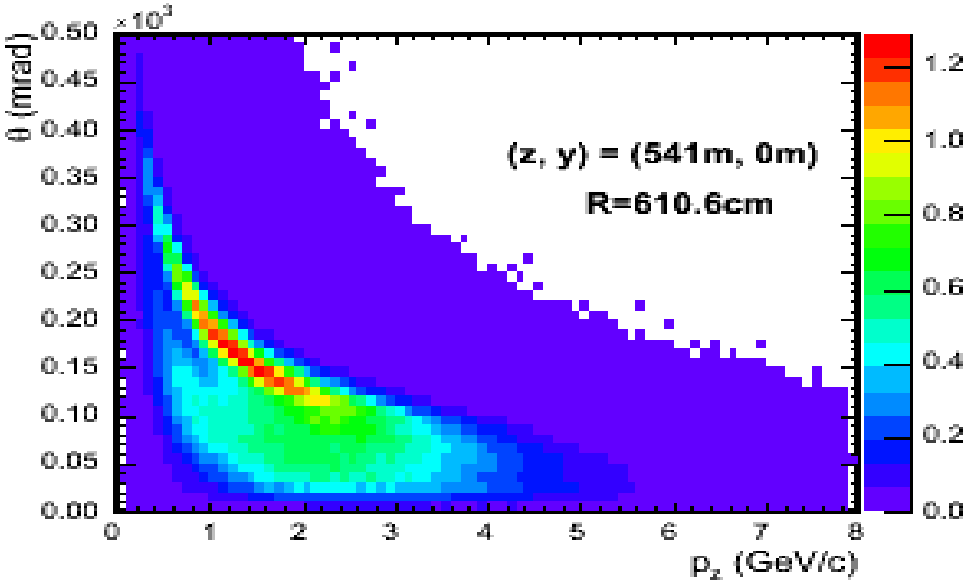
pi- theta - pz

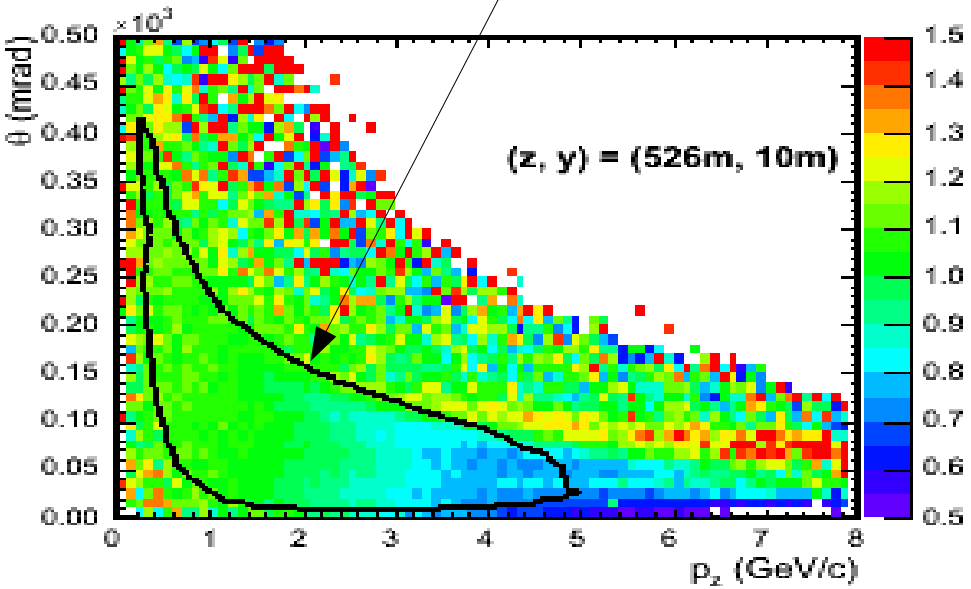
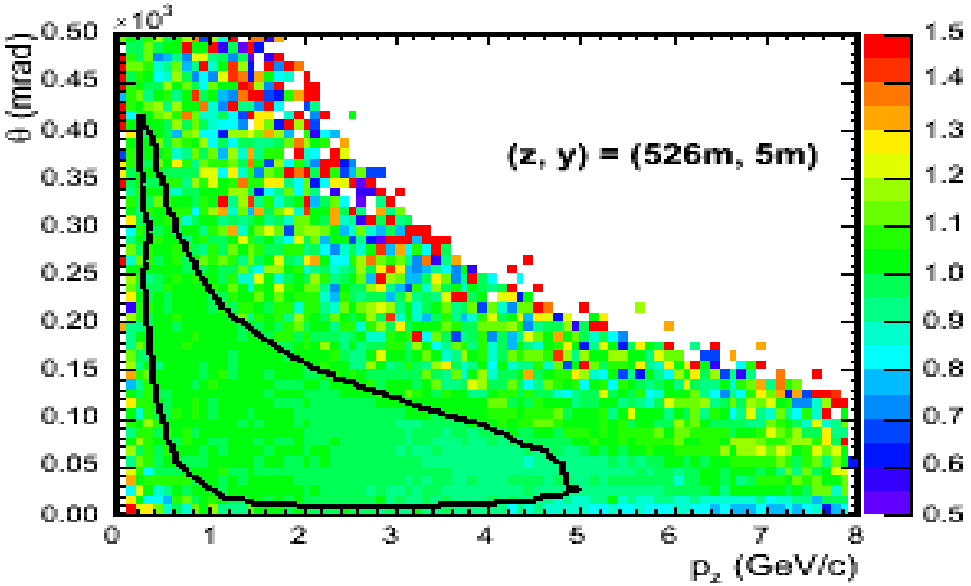
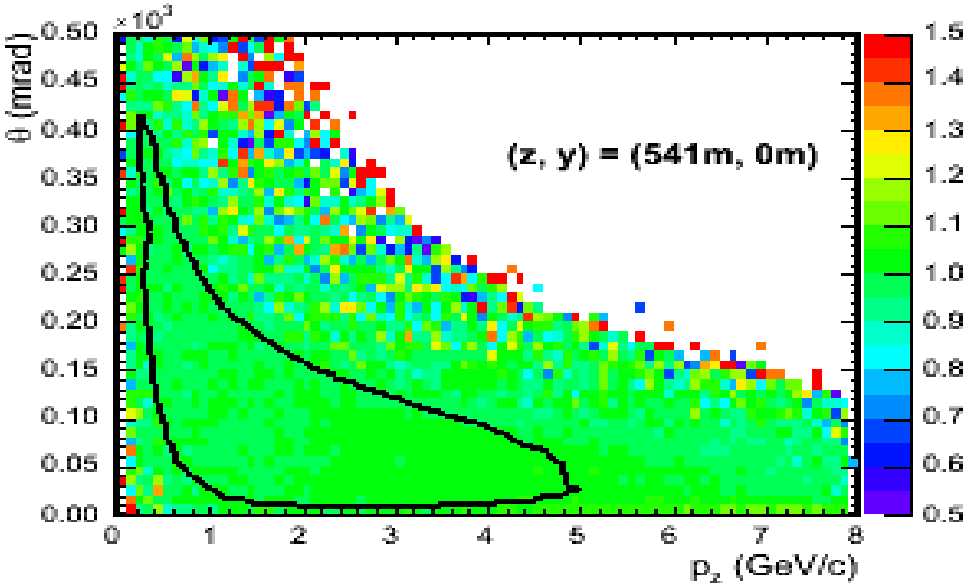
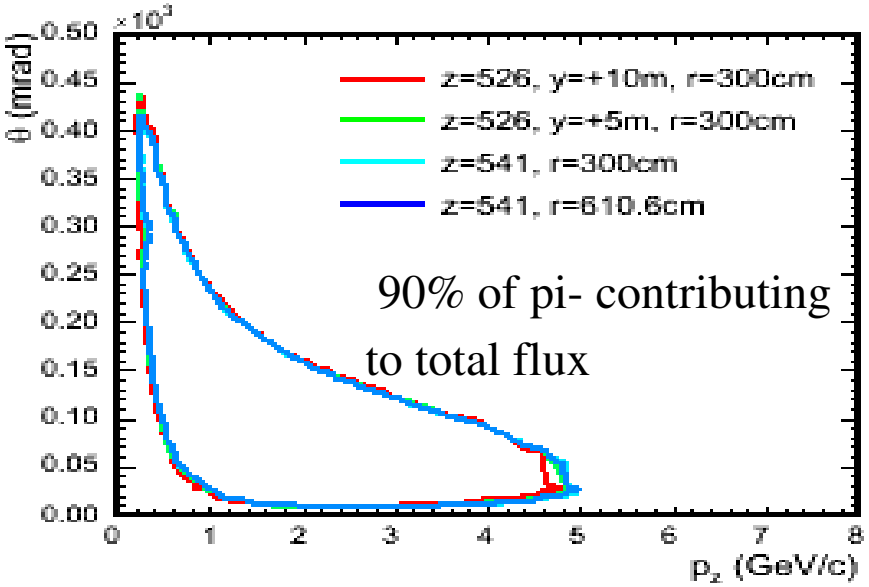
- Pi- contributing to numubar flux at different locations









Ratio of pi- theta-pz to MB

90% of pi- that contribute to MB flux within this curve