GloBES Calculation with WBLE Beam

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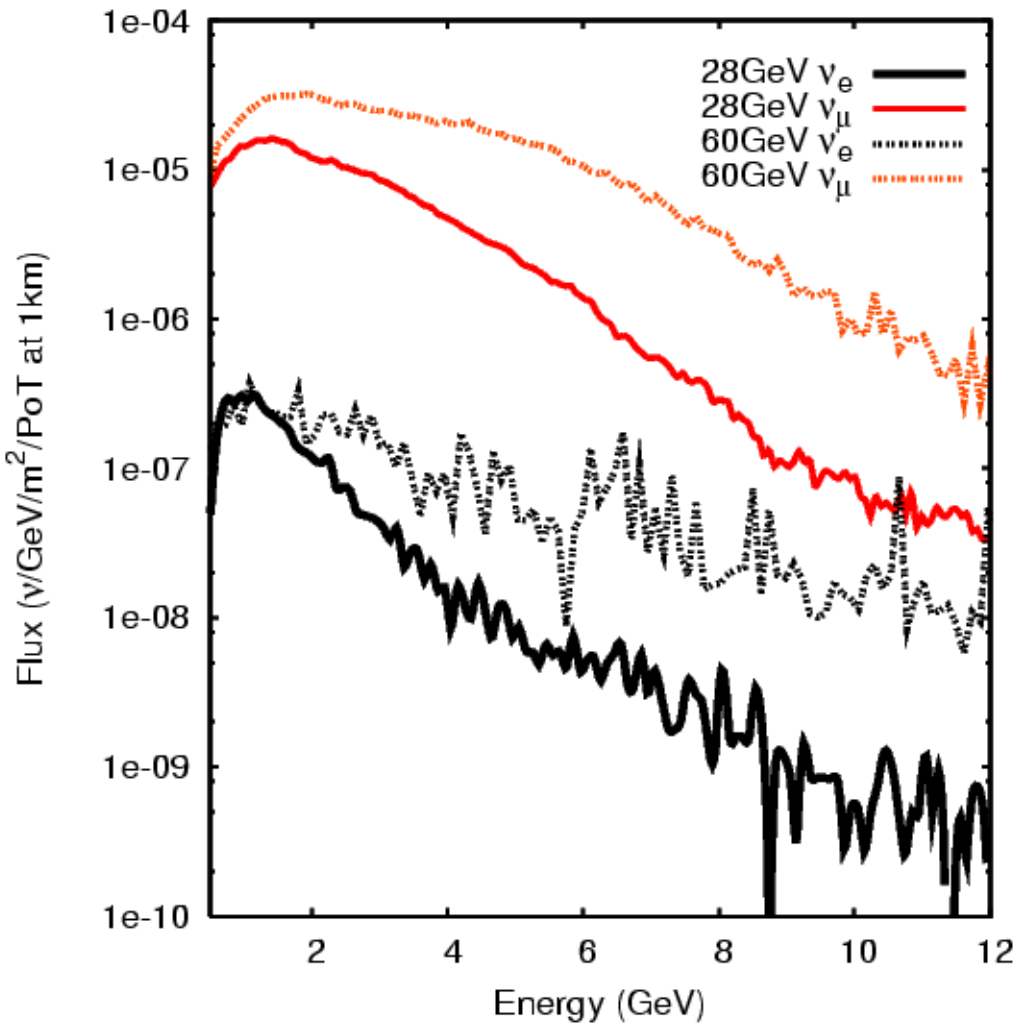
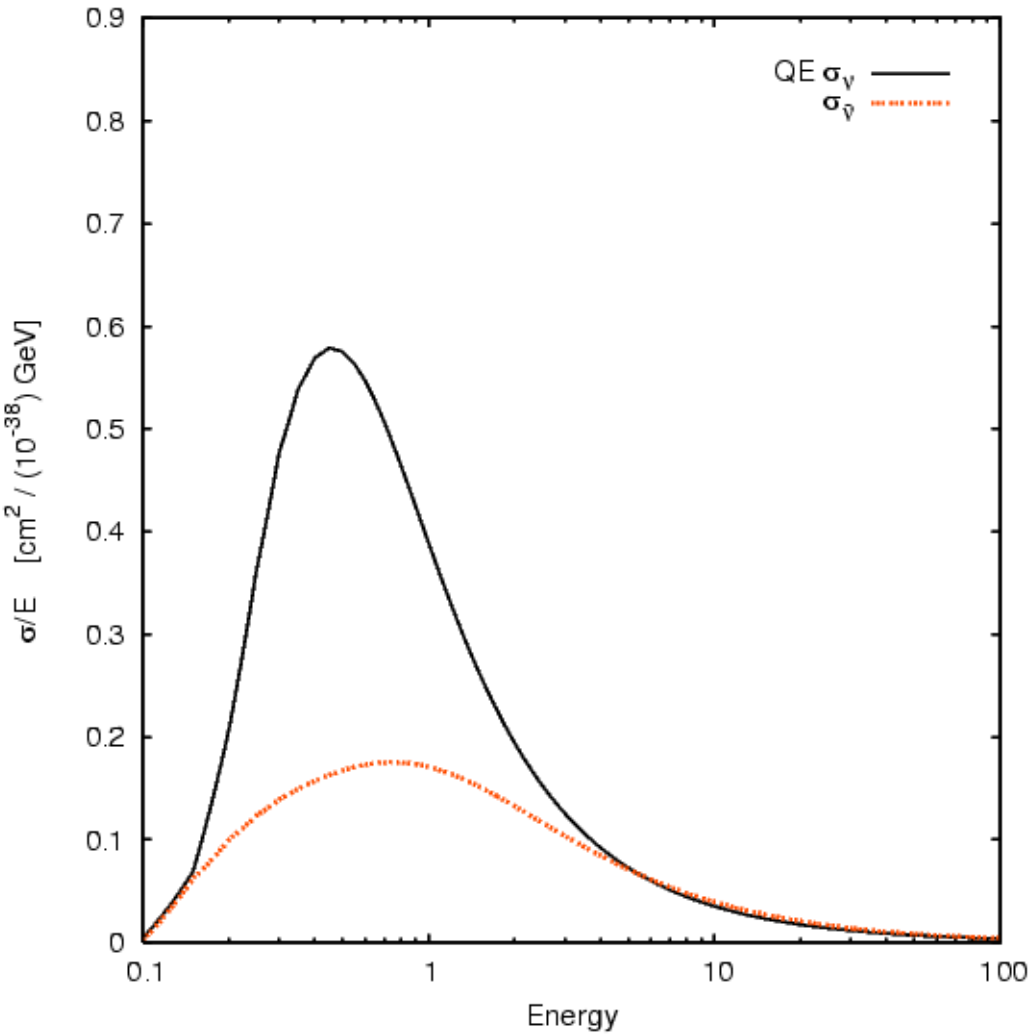
Inputs for GLoBES

Fluxes for 28 AGS and 60GeV (WBLE) proton beam

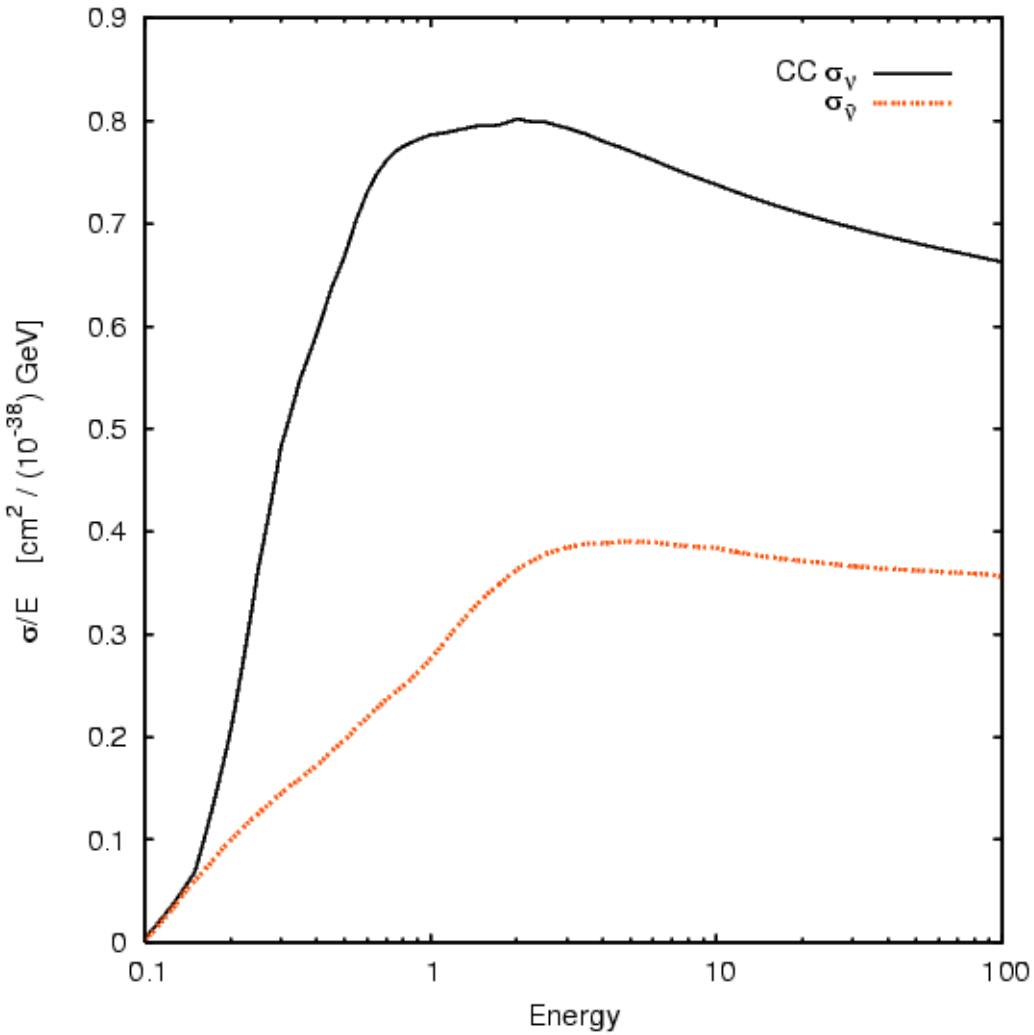


Input for GLoBES

Cross section for signal

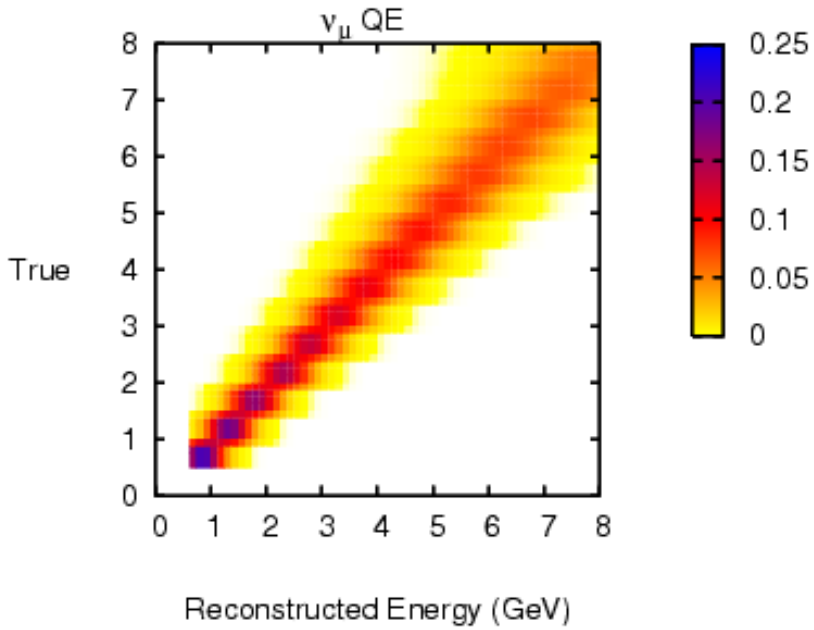


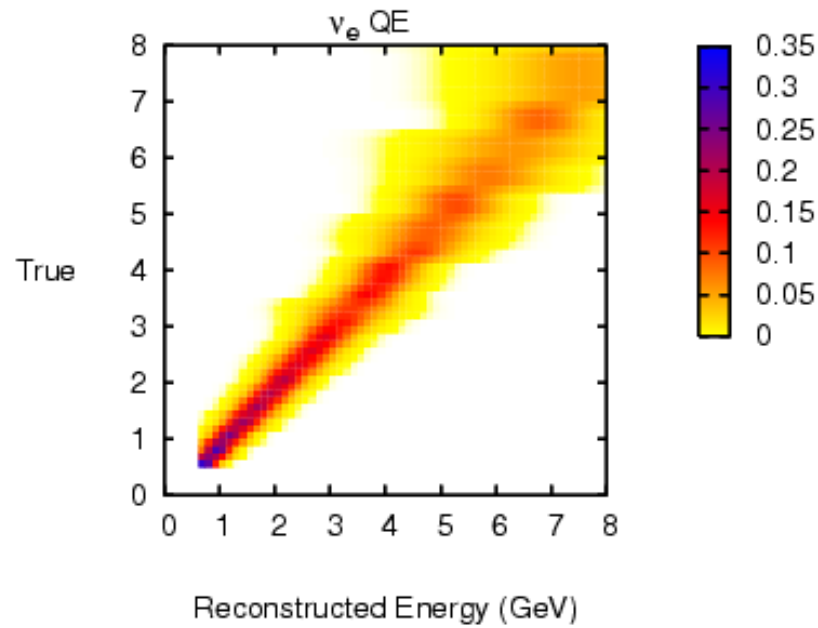
ν_e background (ν_es in beam)



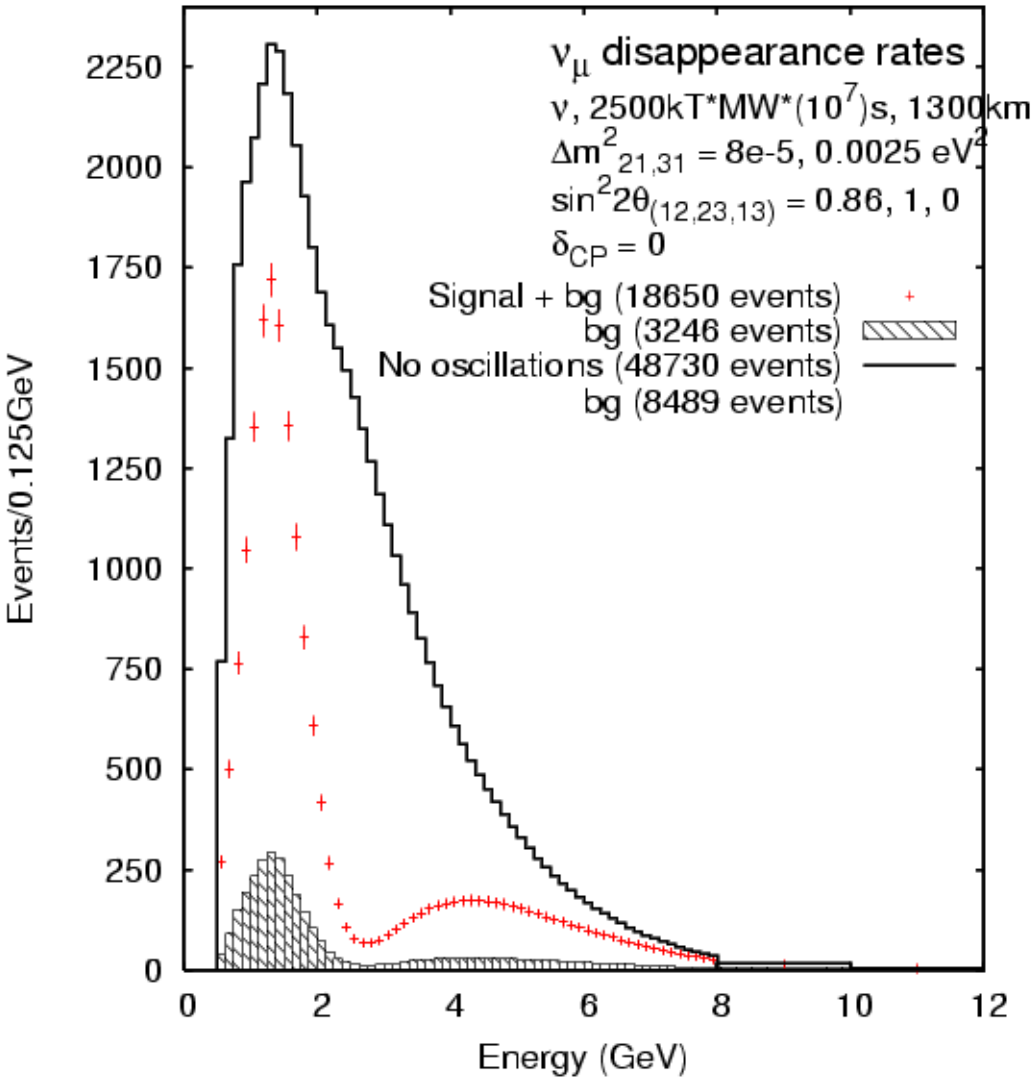
Inputs for GLoBES

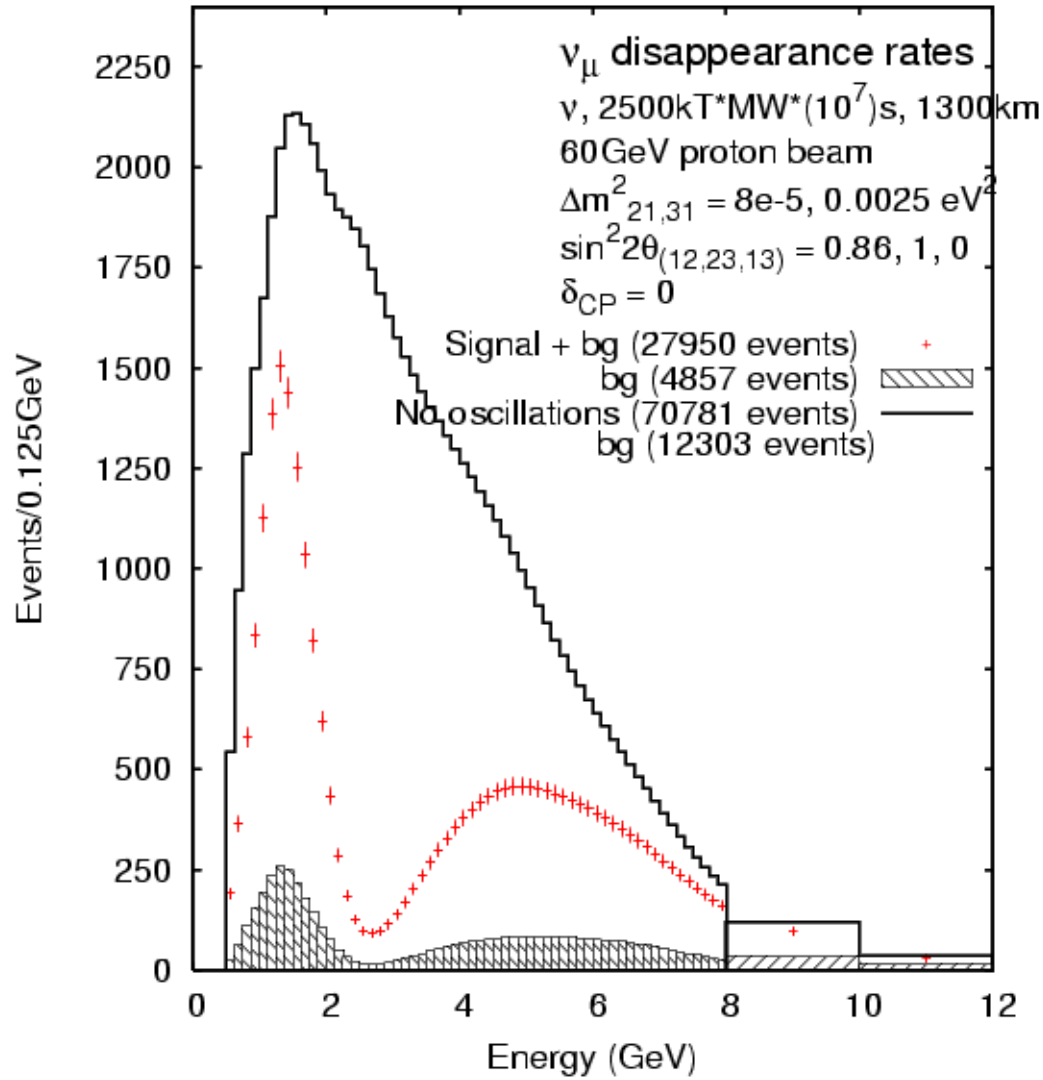
Energy smearing for disappearance (left) and appearance (right) signals





Disappearance Spectra



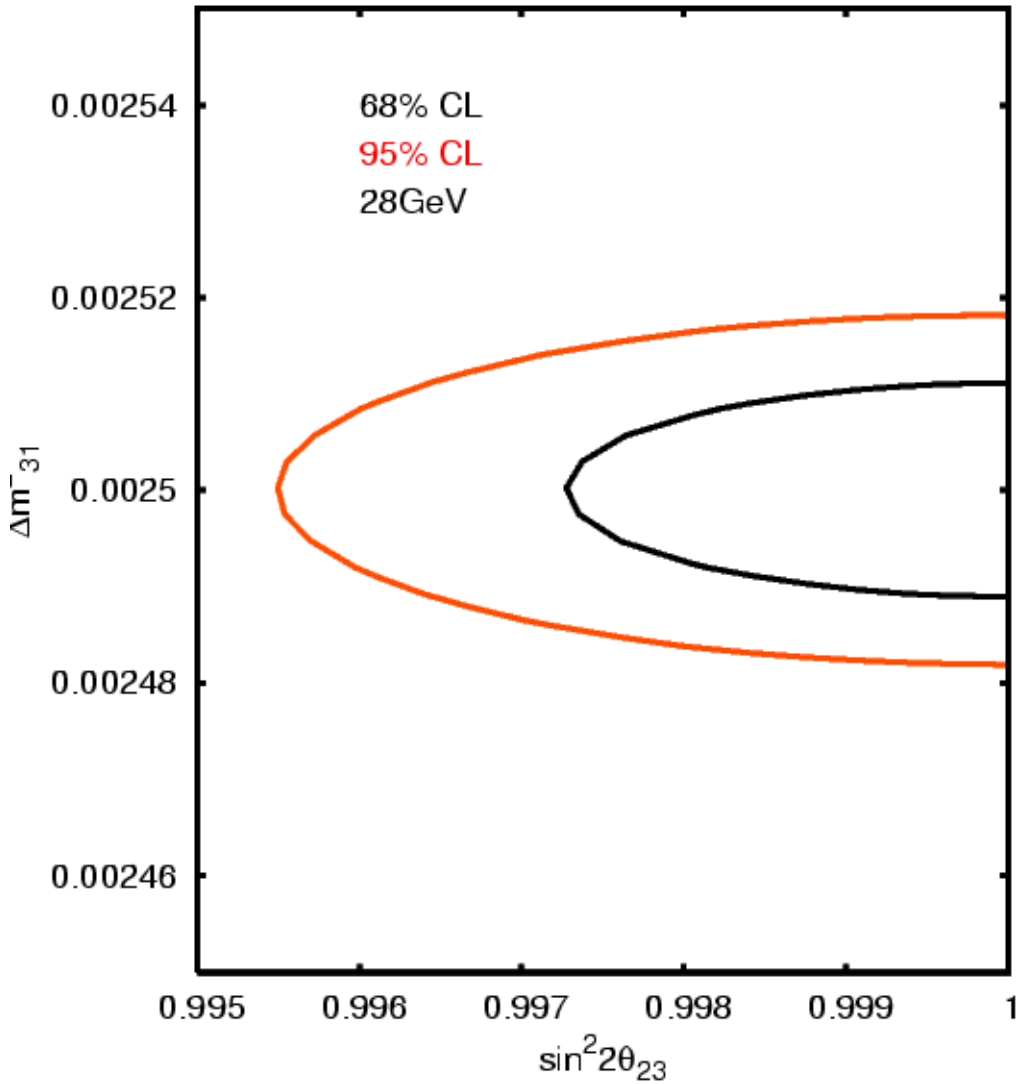


Atmospheric Parameters

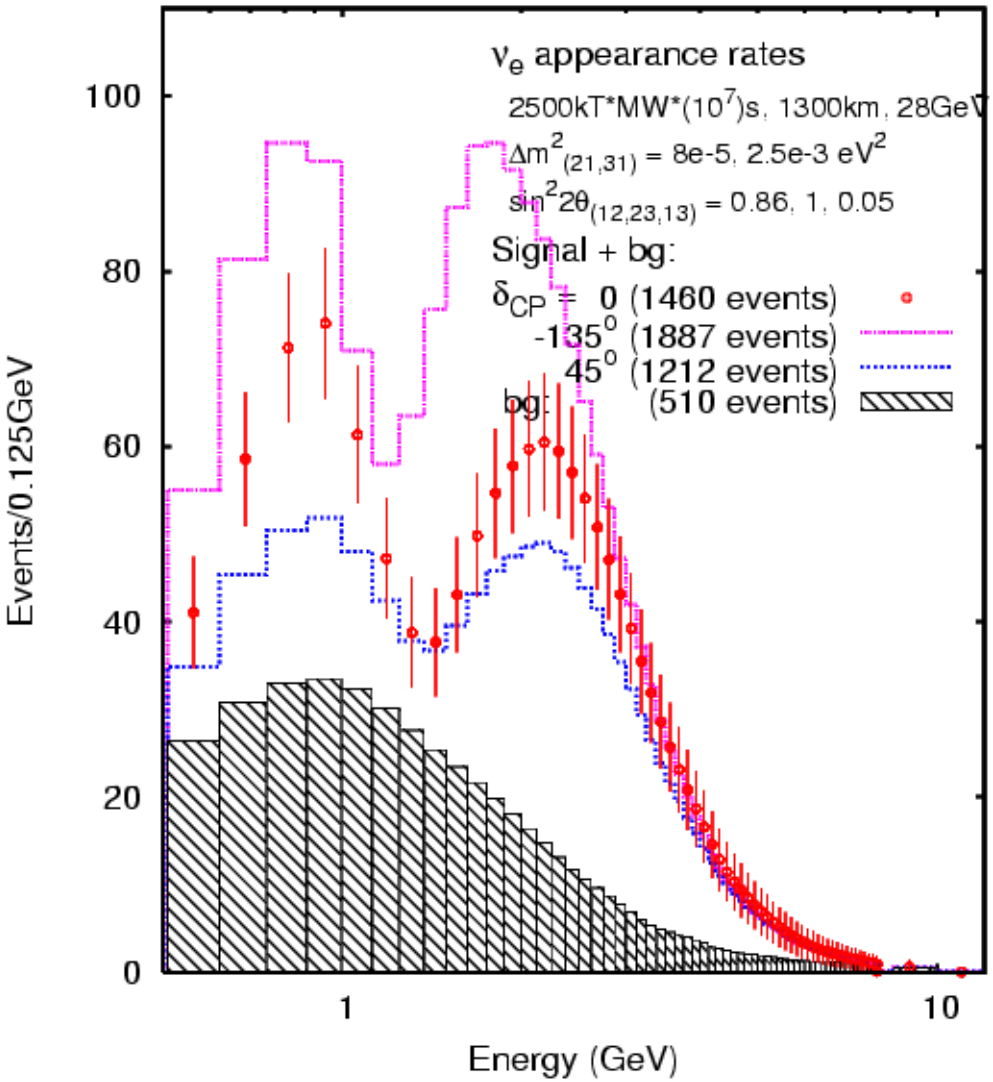
For 28GeV beam, ν and anti-ν running combined

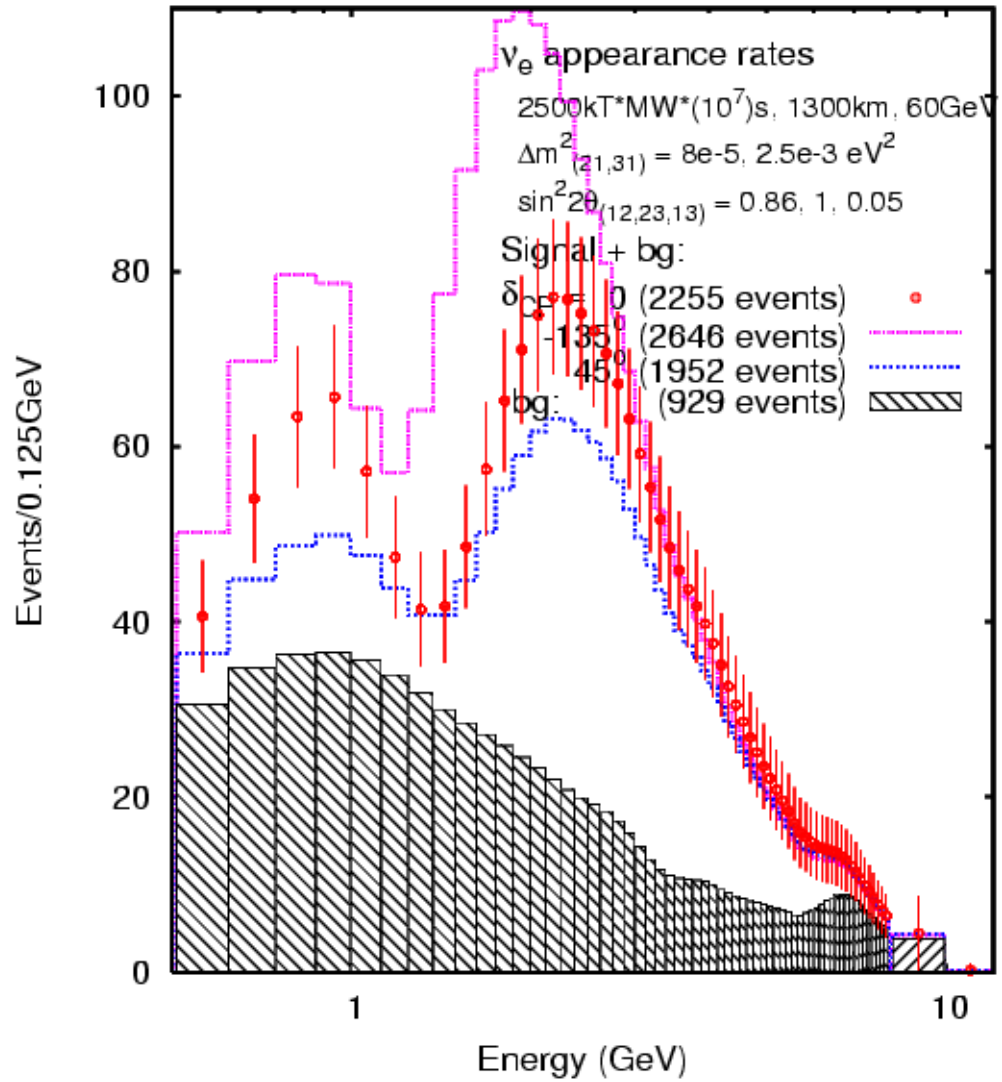
$\Delta m^2 = 2.5e\text{-}3$

$\sin^2 2\theta_{23} = 1$



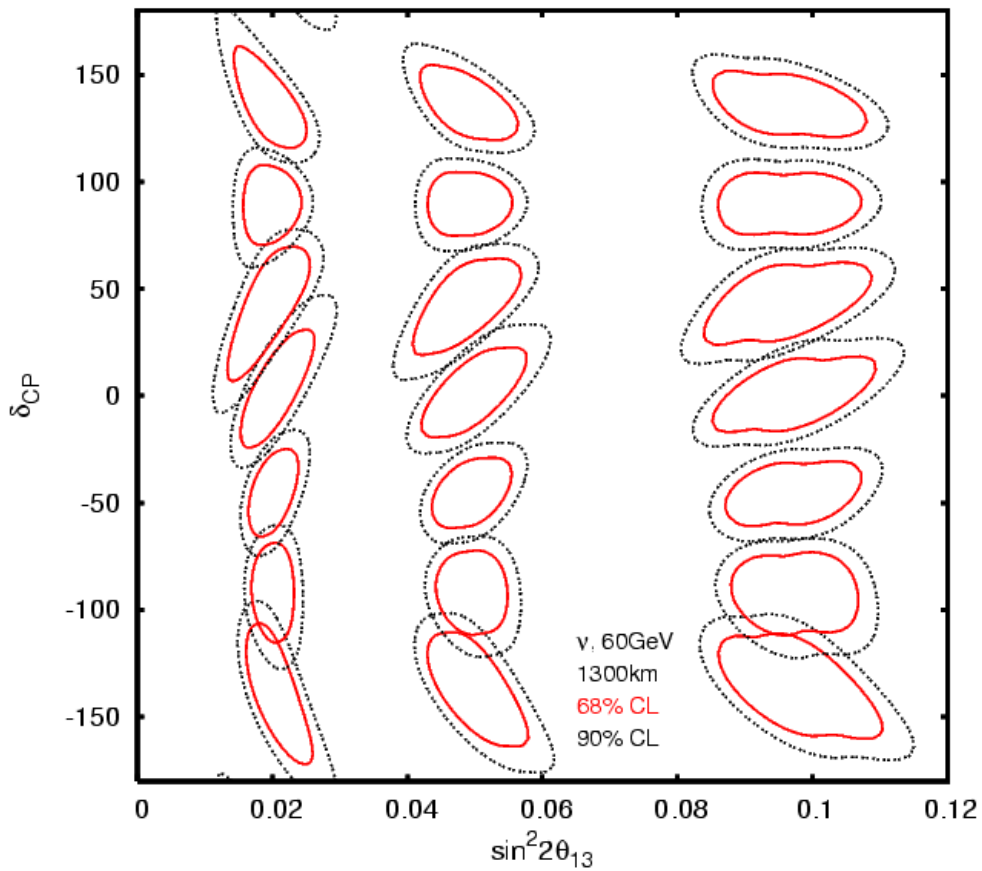
Appearance spectra



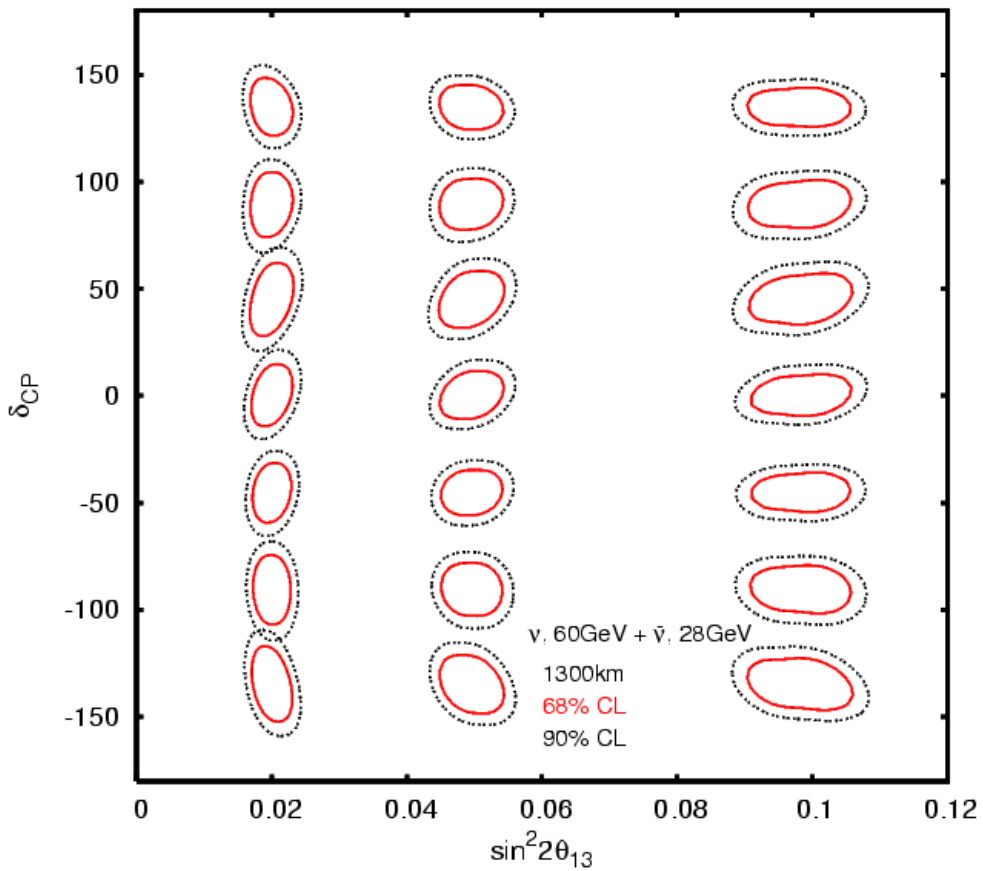


Measurement of θ_{13}, δ

60GeV – ν running only

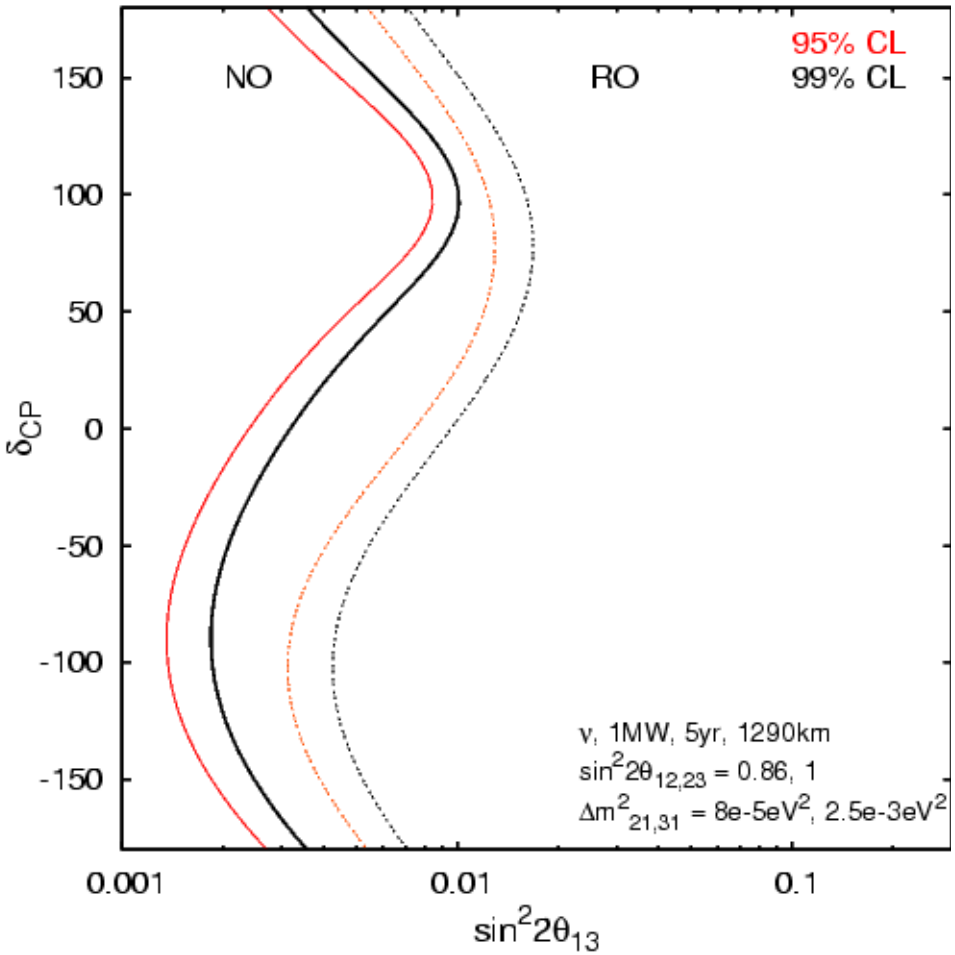


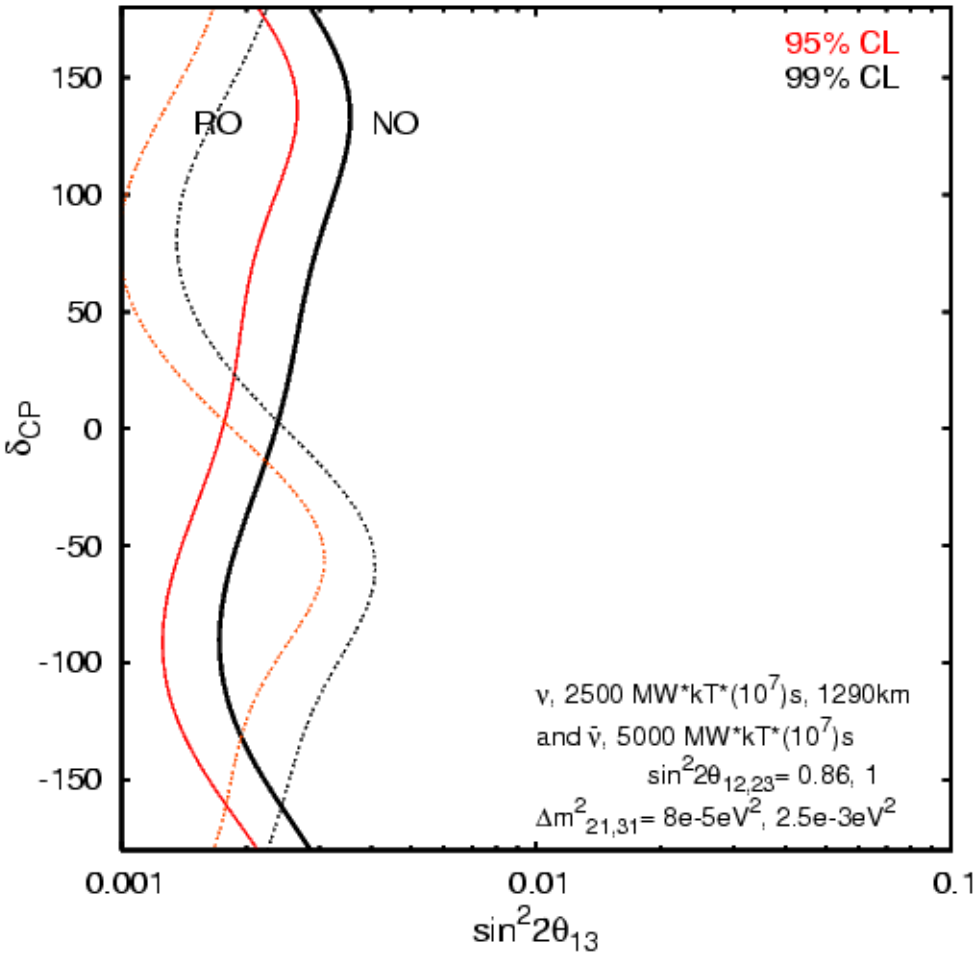
60 GeV ν + 28 GeV anti-ν



θ_{13} exclusion

28GeV (AGS)



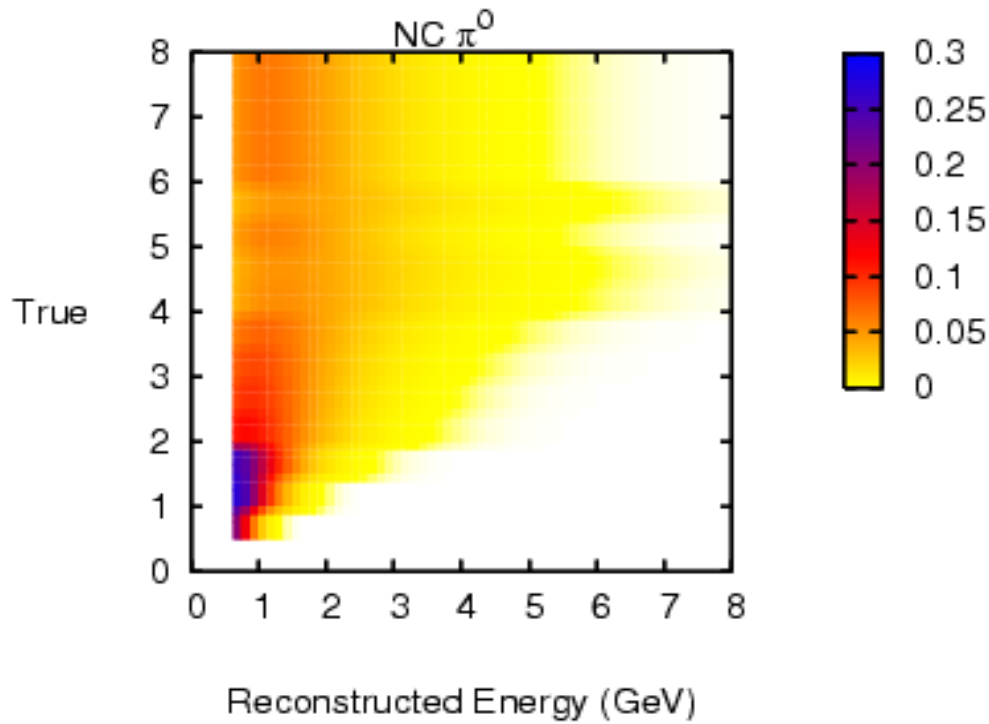


Conclusion

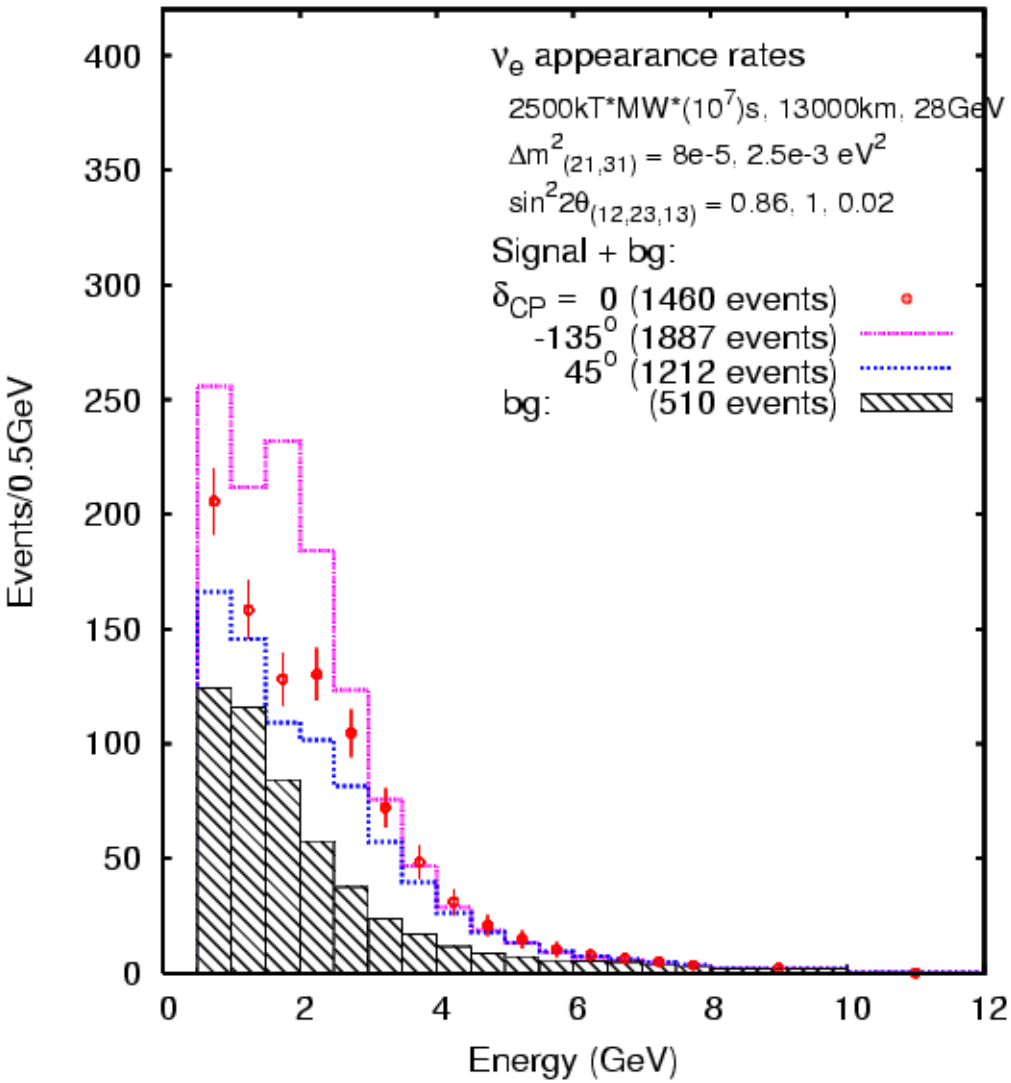
- 60GeV looks ok
  - 40-50% more signal
  - backgrounds slightly worse
  - but measurement still reasonable
- Need to add background from high energy (>12GeV) neutrinos
- Will also do calculations for θ_{13} exclusion

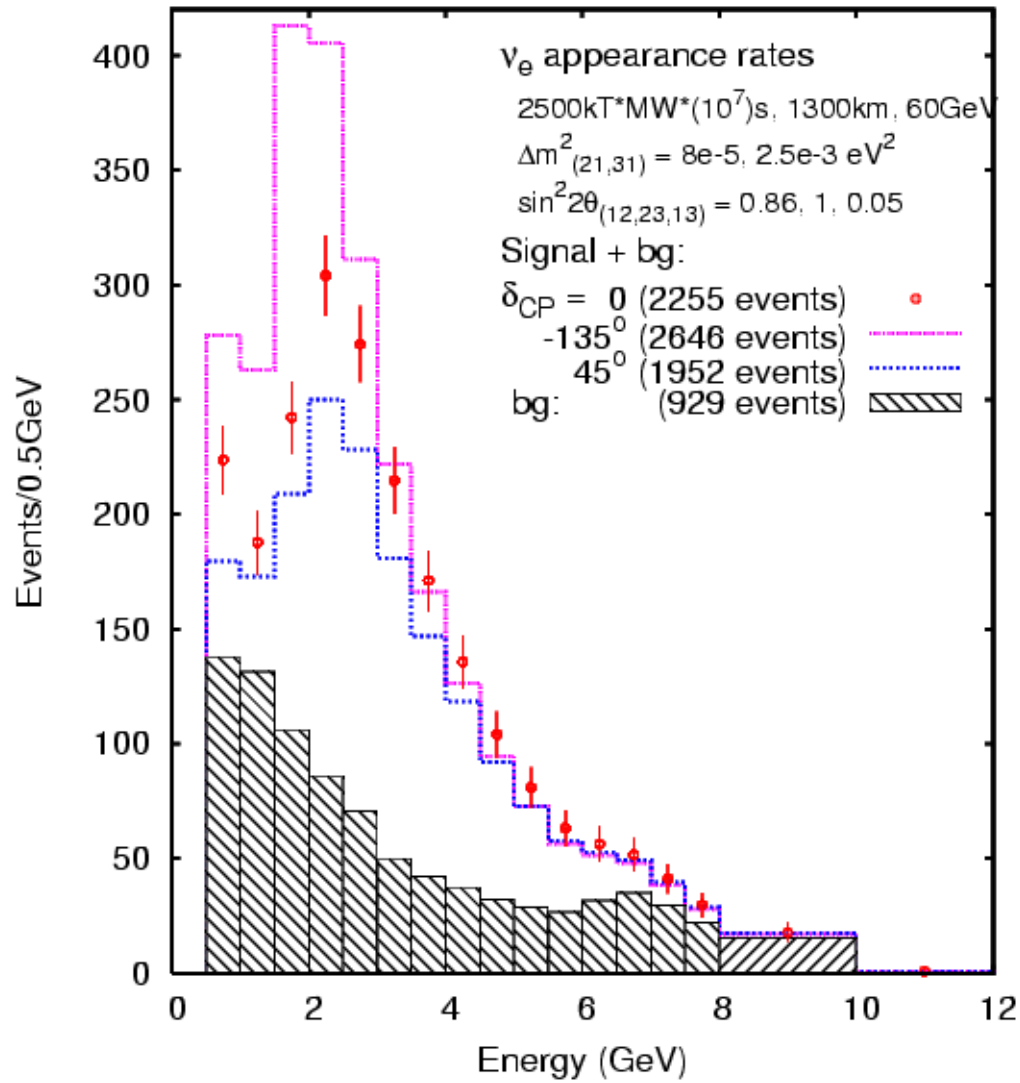
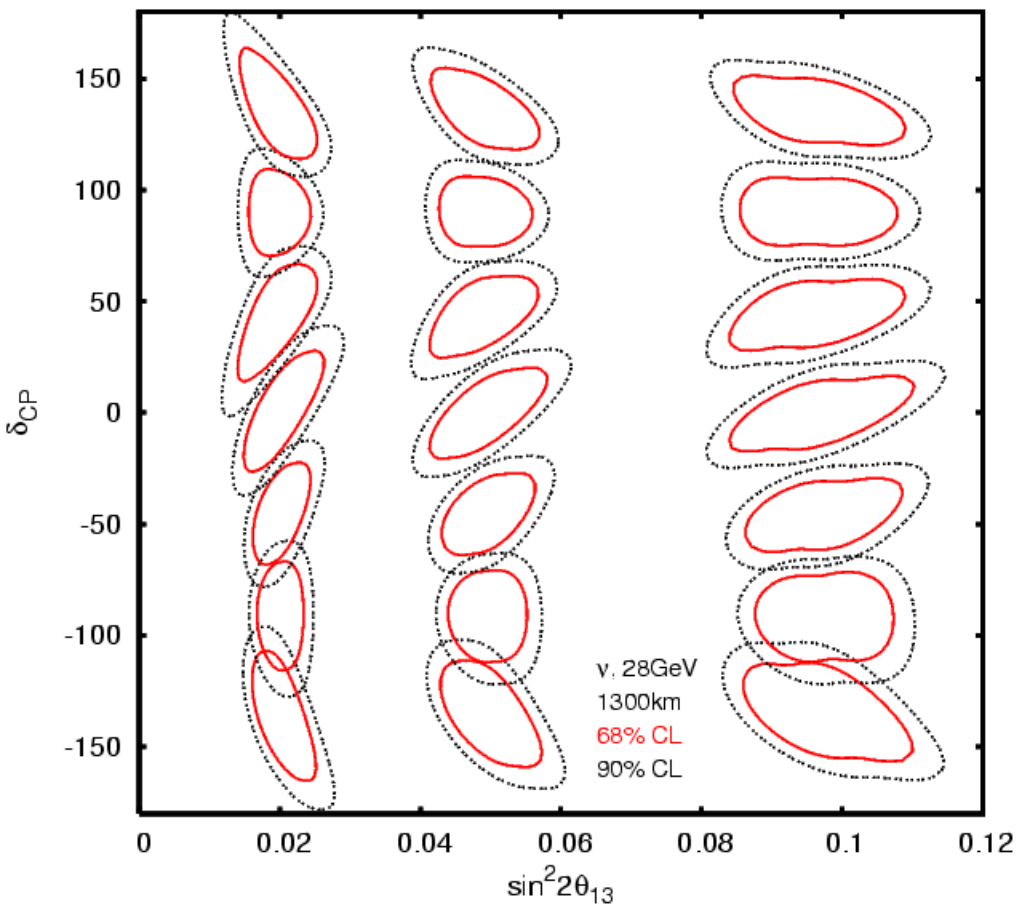
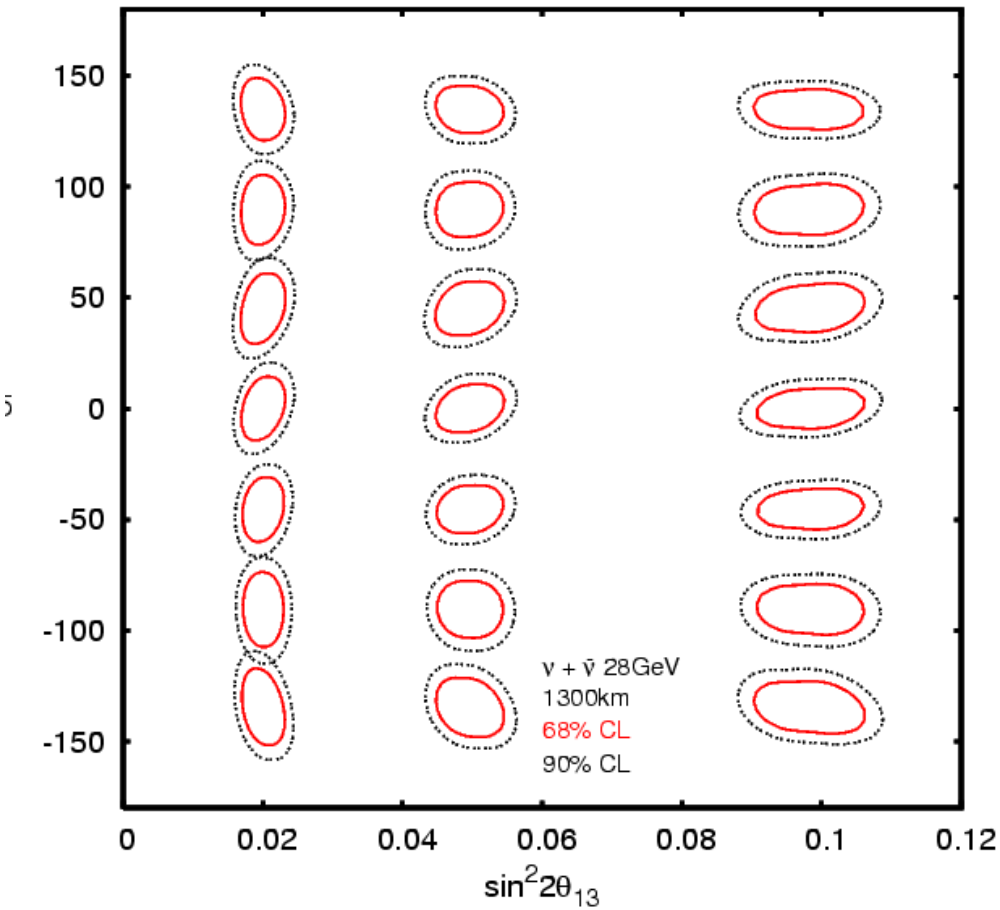
Energy Smearing - background

NC π^0 background



More ν_e appearance spectra





More contours