Extrapolating from AL's MIND Analysis to SuperBIND @ VLENF: My observations

- What can we infer from Andrew's analysis?
  - Look at lowest E bins that he studied
- Remember for MIND:
  - 4 cm plates
  - 1 cm scintillator between plates
  - 1 T dipole field
- Remember for SuperBIND:
  - 1 cm plates
  - 2 T toroidal field
  - 2 cm (X-Y) scintillator between plates

μ Charge mis-ID in CC

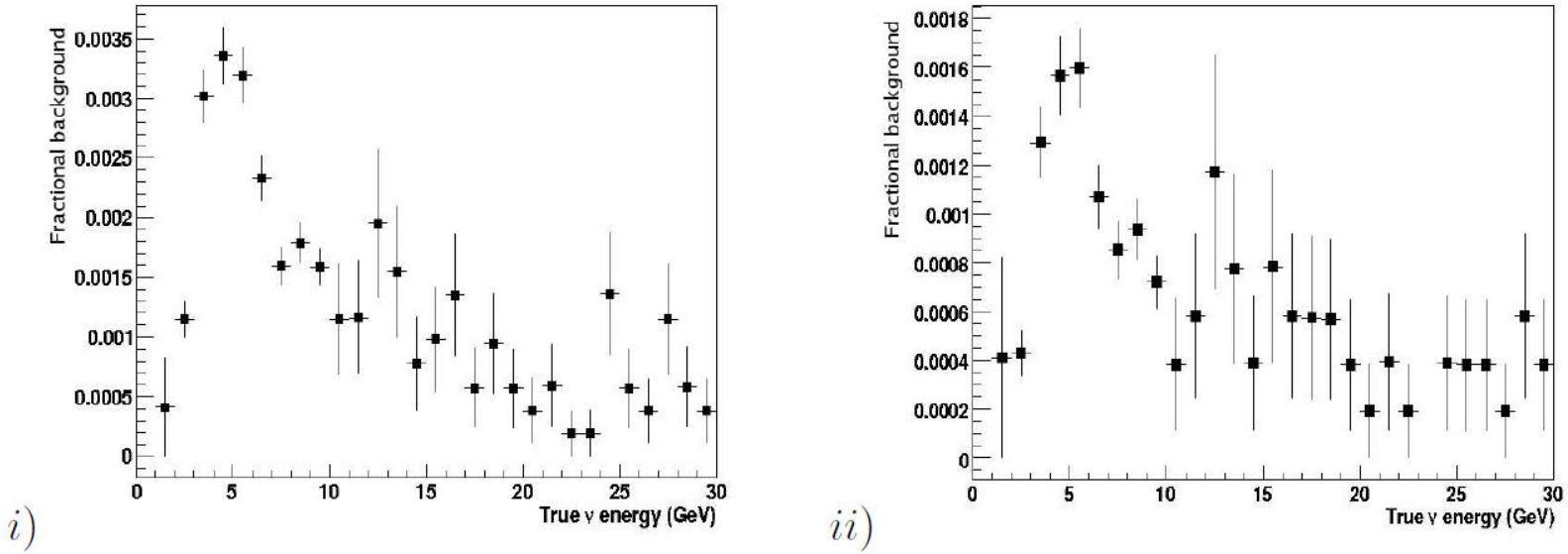


Figure 5.7: *Charge mis-assignment and hadron to muon mis-identification background i) with track quality cuts only and ii) including ν_μ CC selection cuts.*

μ decay background

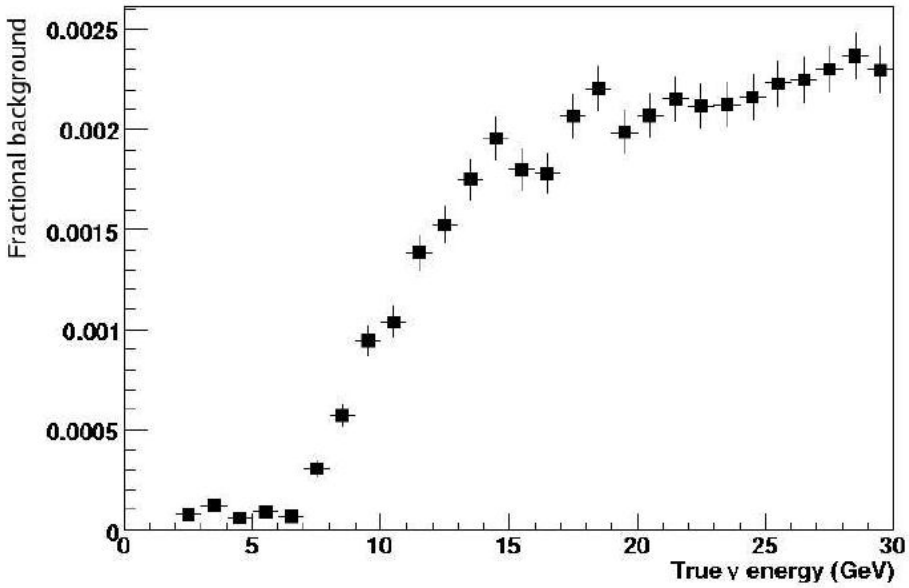


Figure 5.8: *Wrong sign muon decay background with track quality and ν_μ CC selection cuts.*

Total ν_μ-bar background to ν_μ appearance

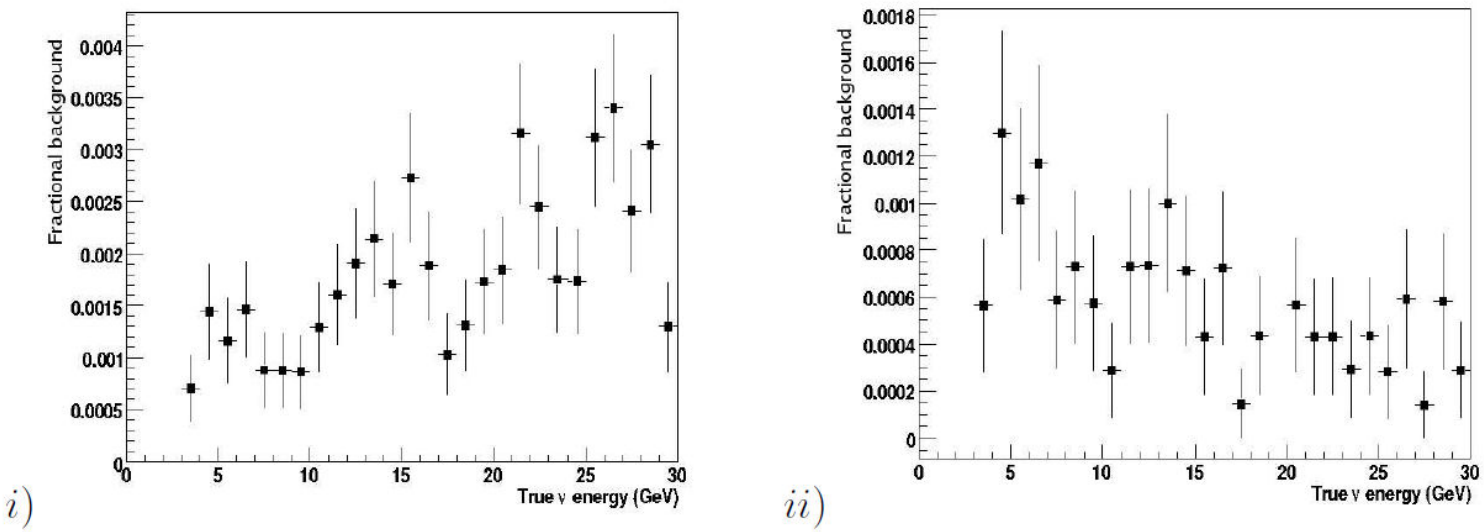


Figure 5.9: *Expected background from $\overline{\nu}_\mu$ CC interactions when events are randomly generated in the entire detector: i) after track quality, ν_μ CC selection and fiducial cuts, and ii) including kinematic cuts.*

NC background

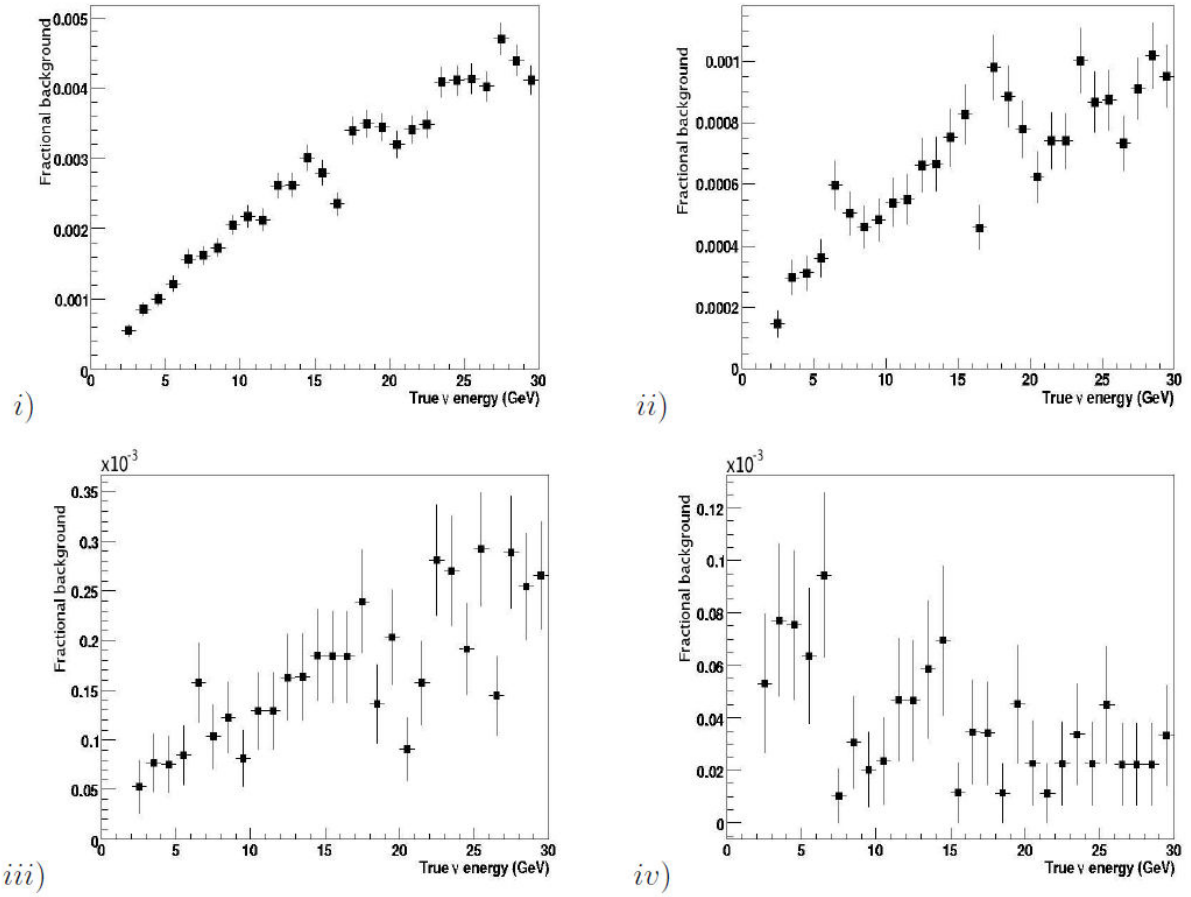
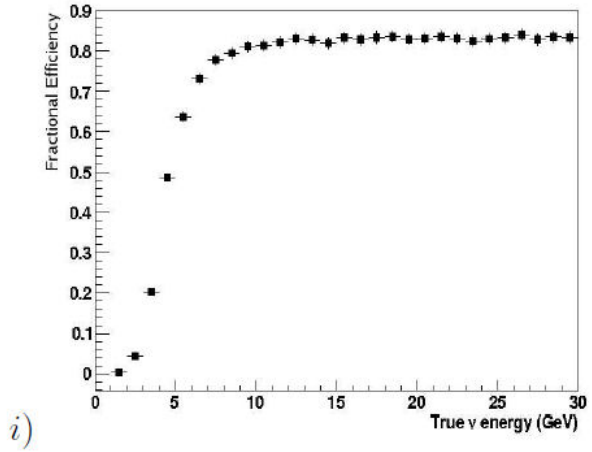
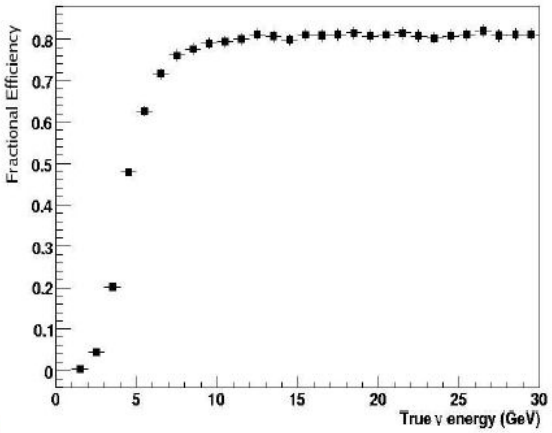


Figure 5.10: *Expected background from $\overline{\nu}_\mu$ NC interactions, i) with track quality cuts (Eq. 5.5) only, ii) including ν_μ CC selection cuts, iii) substituting track quality cuts of Eq. 5.5 by those of Eq. 5.6 and iv) including kinematic cuts.*

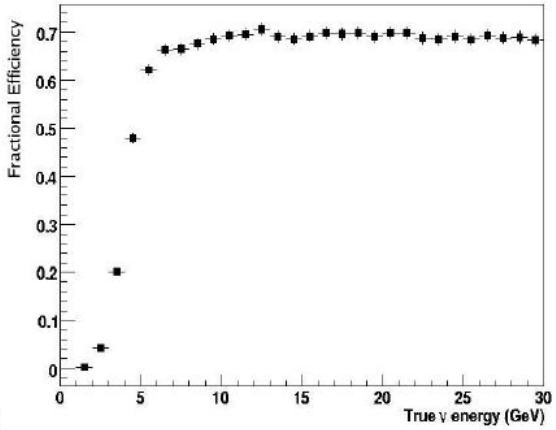
Signal detection efficiency



i)



ii)



iii)

Figure 5.12: *Expected signal identification efficiency: i) after track quality and ν_μ CC selection cuts, ii) including fiducial cuts, and iii) including kinematic cuts.*