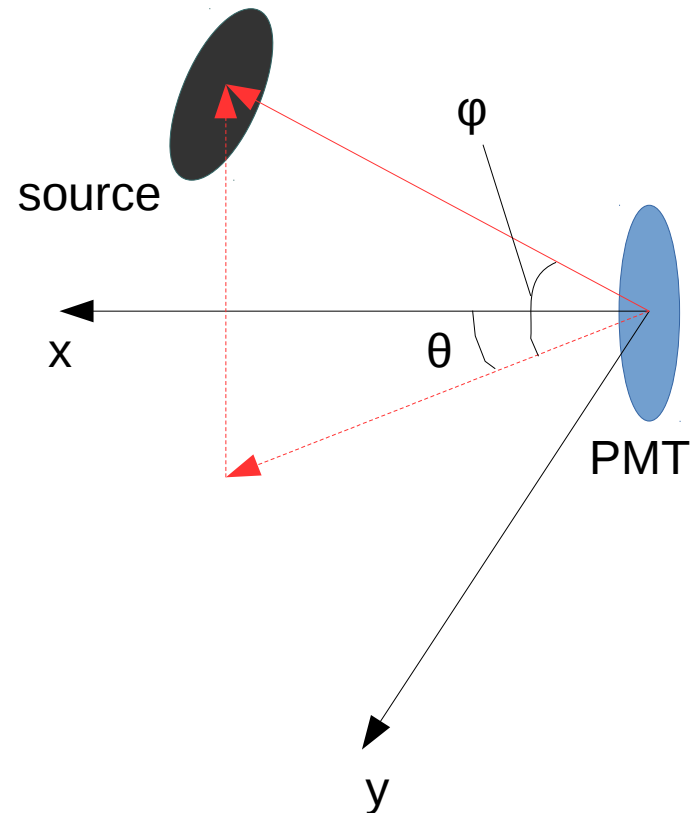


# Progress Update

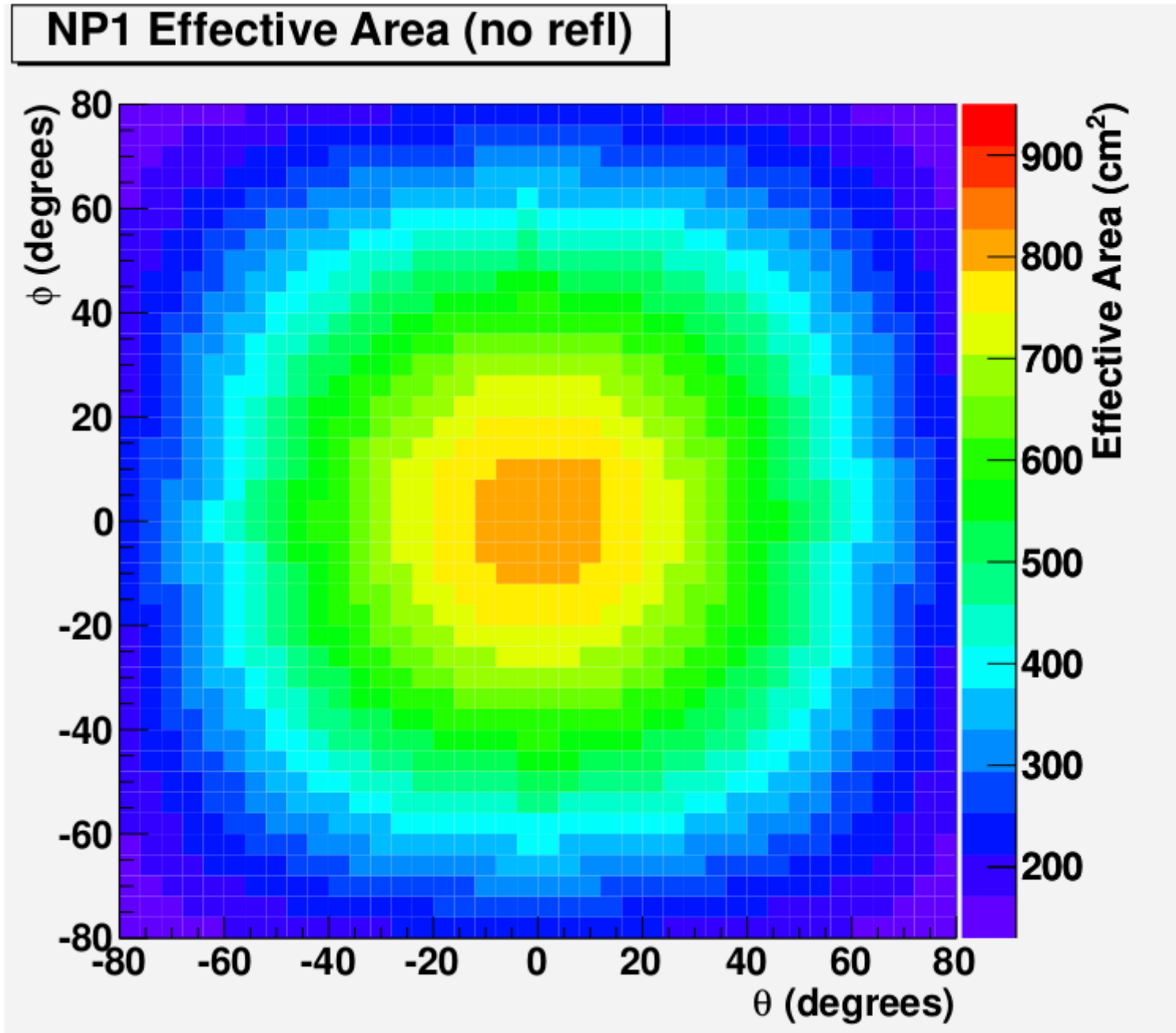
Trevor Towstego  
UofT Neutrino/DM Meeting  
June 7, 2017

# mPMT $\theta$ - $\varphi$ simulations

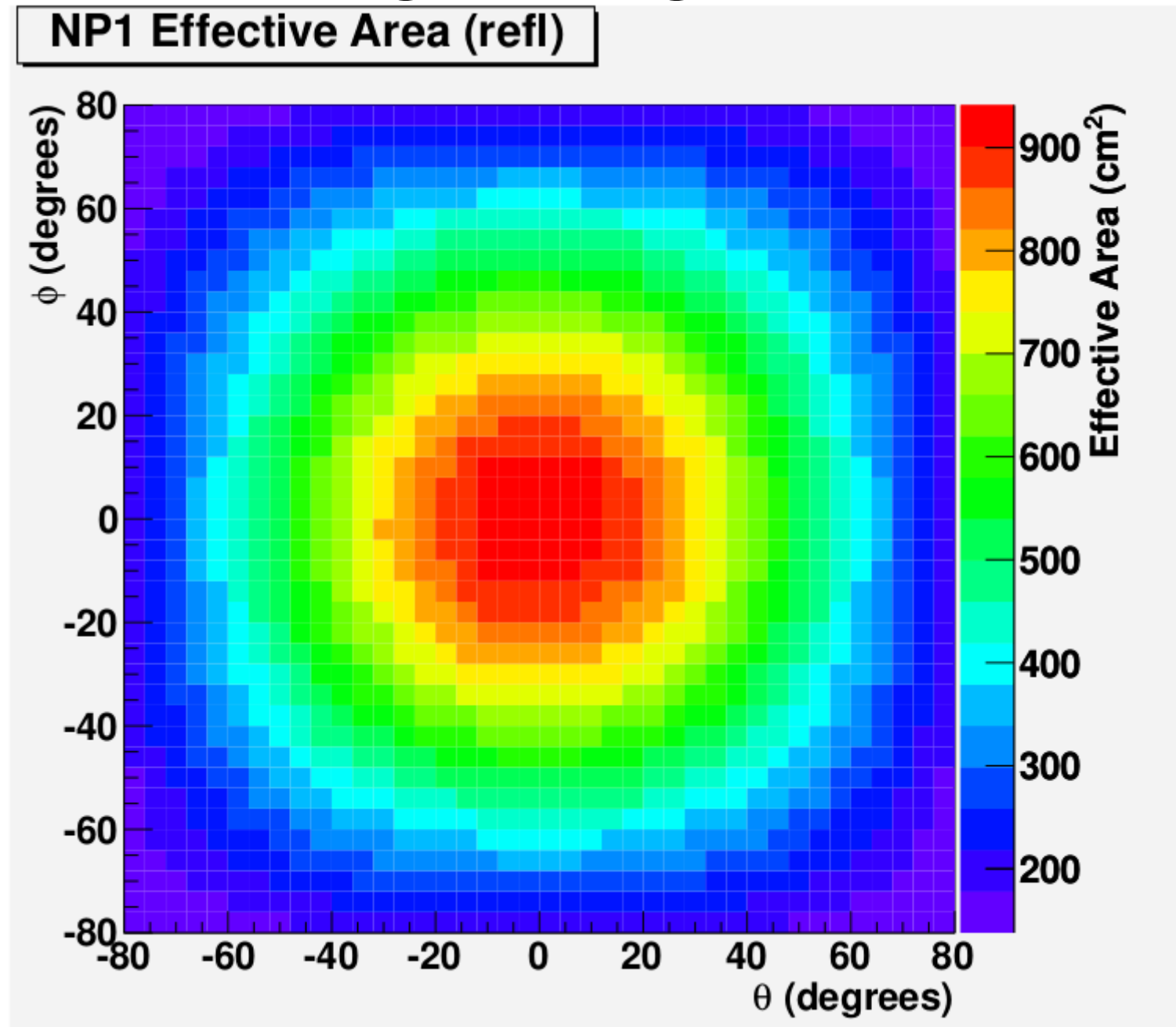
- Did some more  $\theta$ - $\varphi$
- 100,000 events
- $-80^\circ \leq \theta \leq 80^\circ$
- $-80^\circ \leq \varphi \leq 80^\circ$



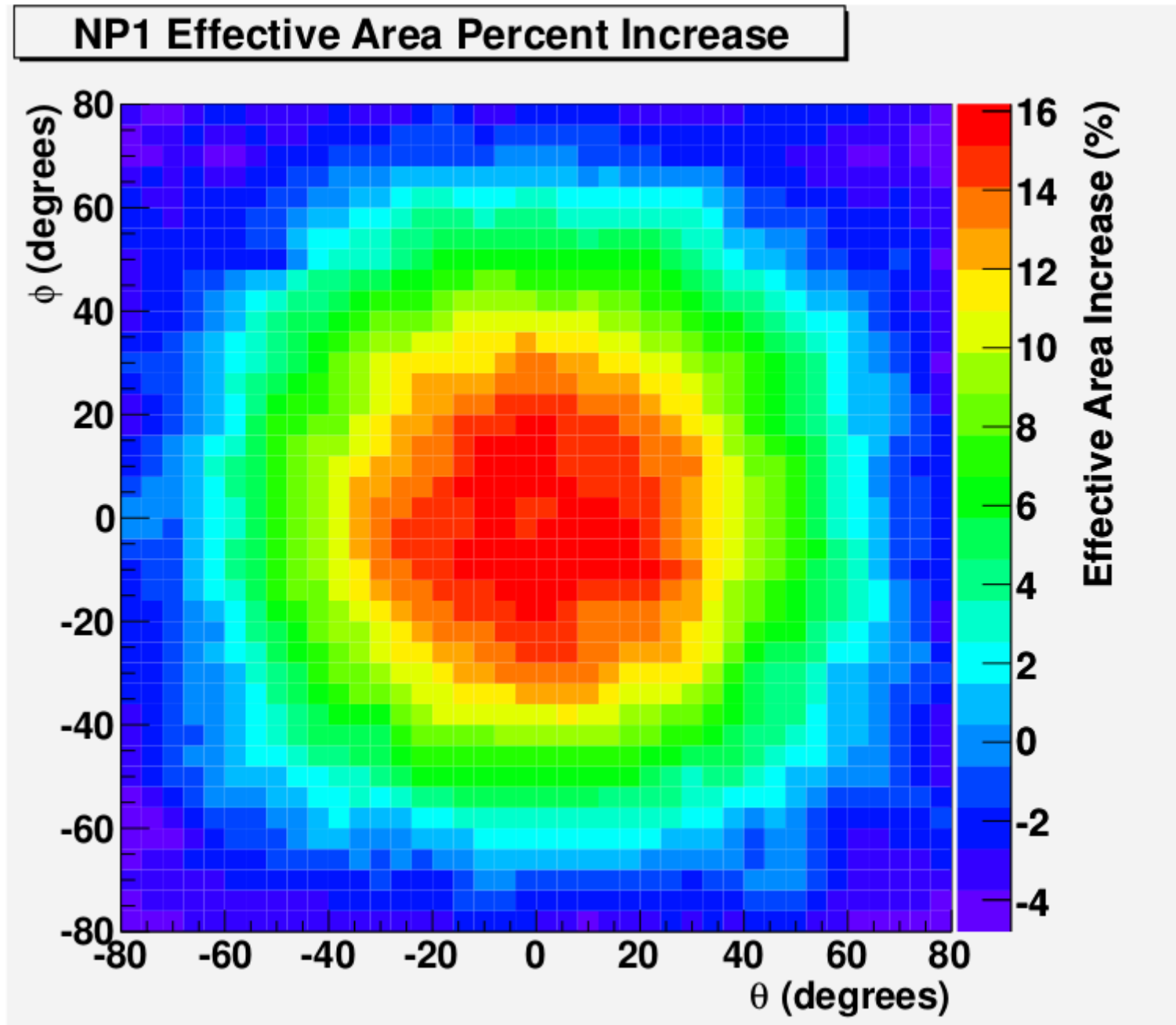
# 3-ring configuration



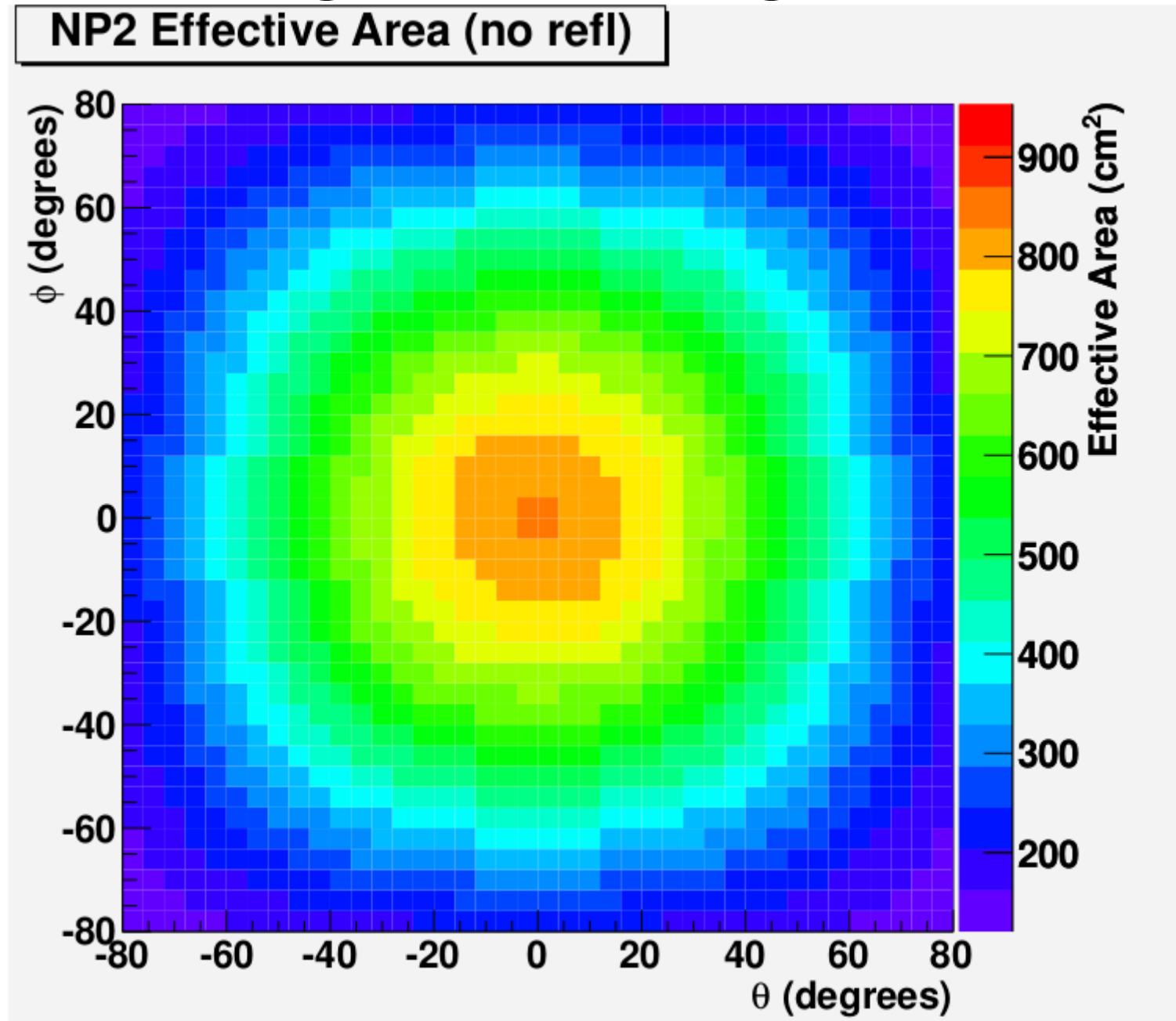
# 3-ring configuration



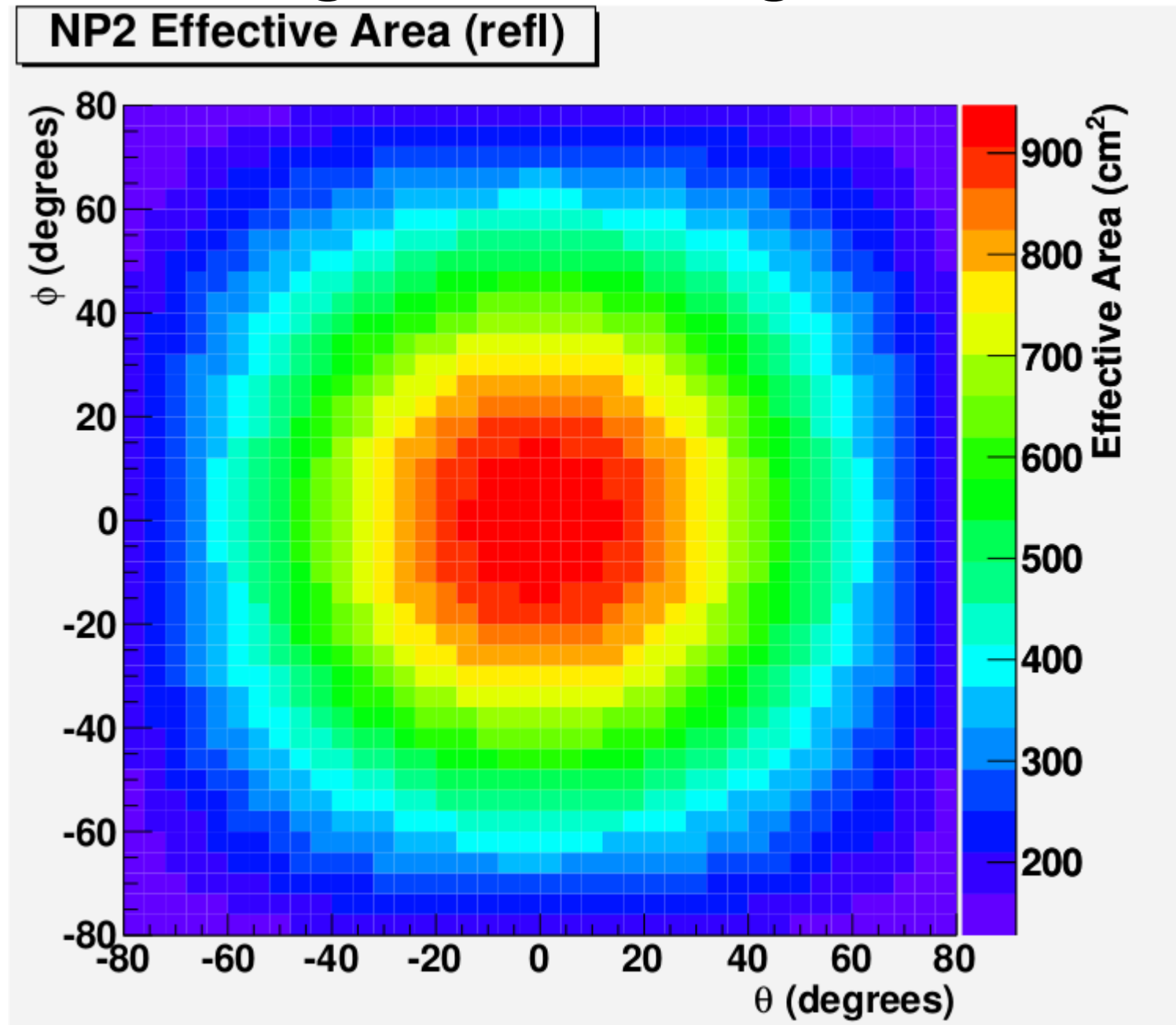
# 3-ring configuration



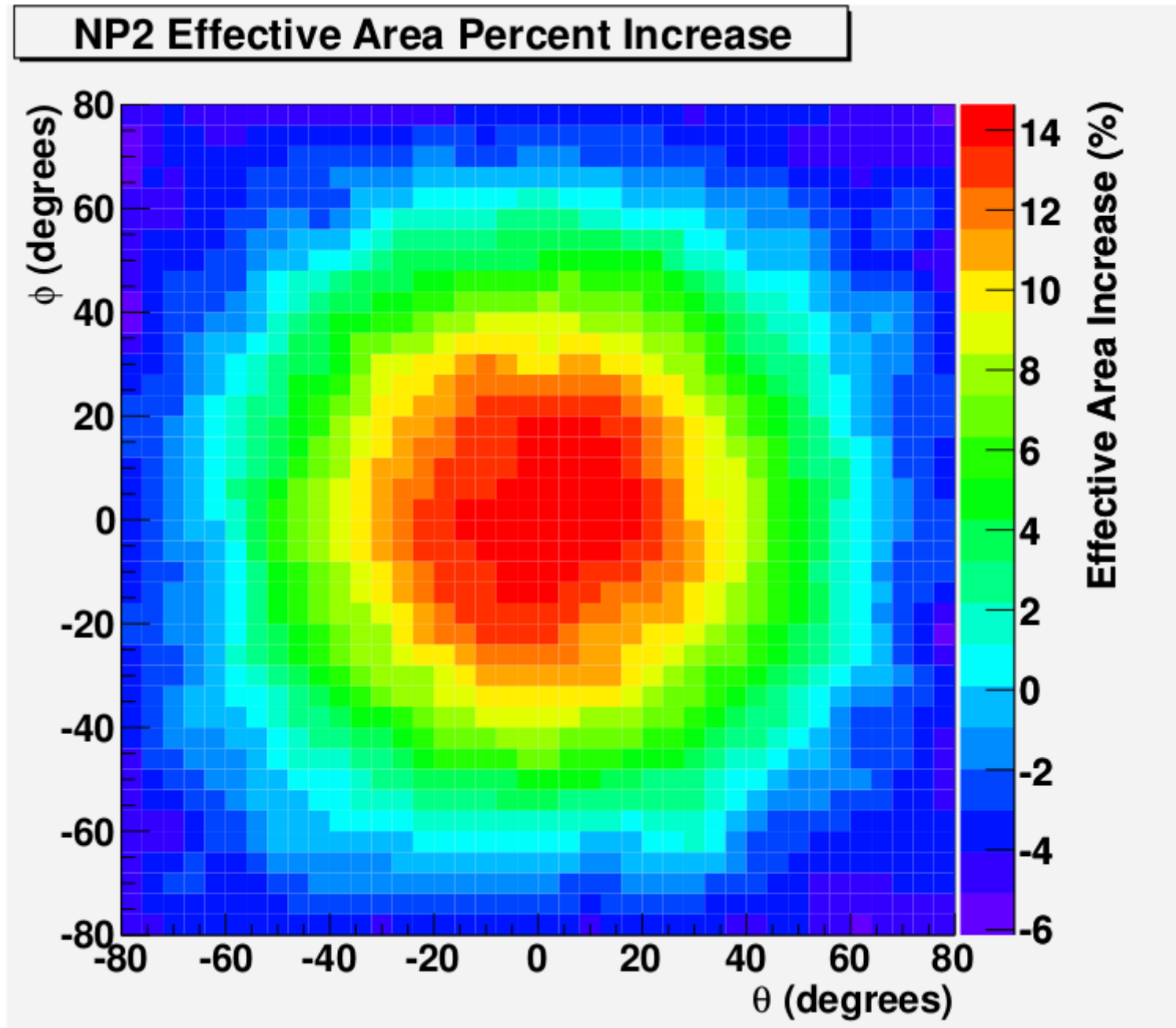
# hexagonal configuration



# hexagonal configuration

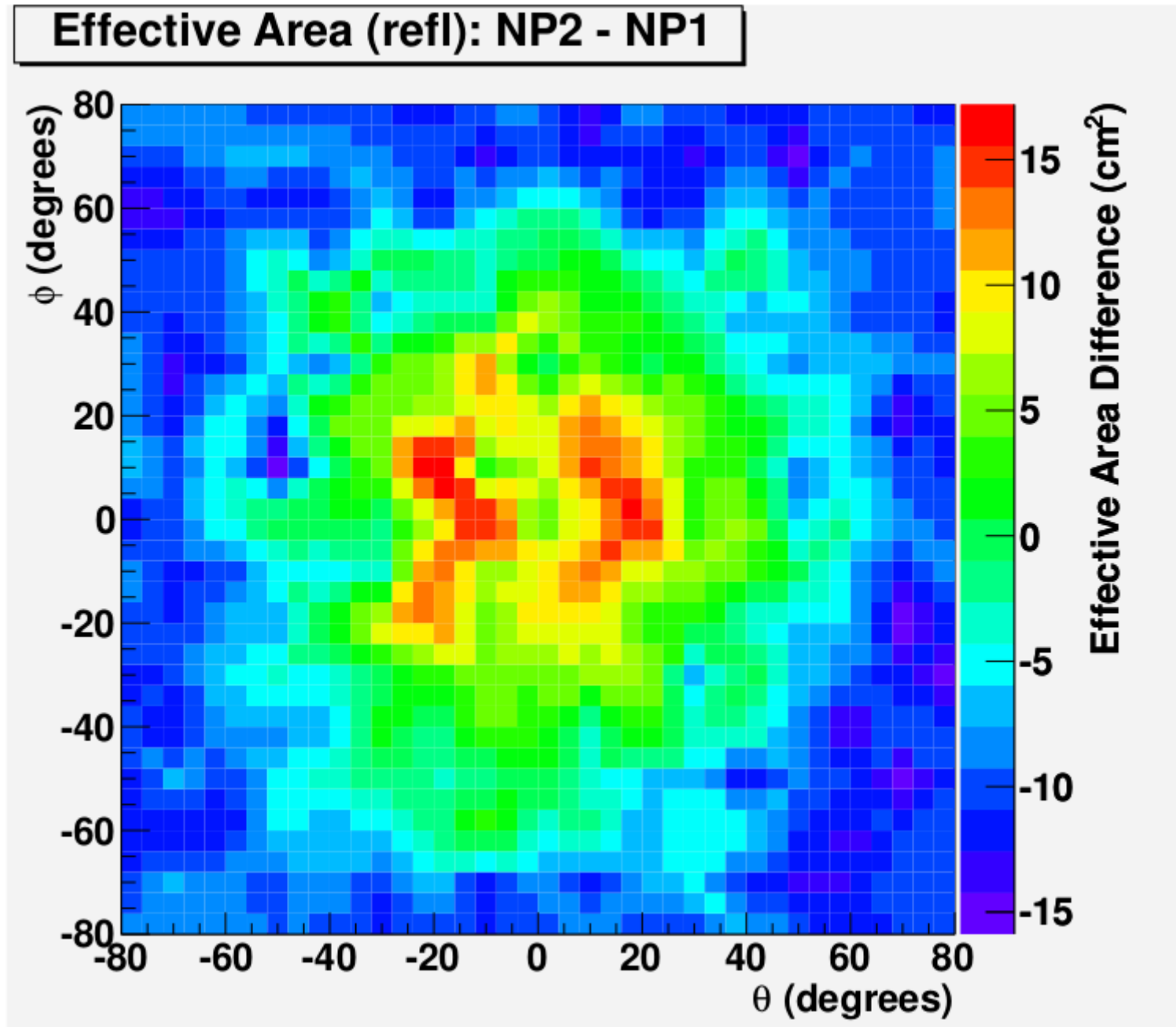


# hexagonal configuration





# hexagonal - 3-ring

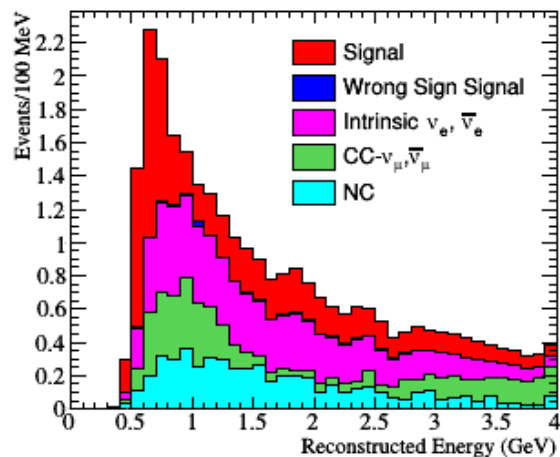


# $\nu_e$ CC $1\pi^+$ Studies

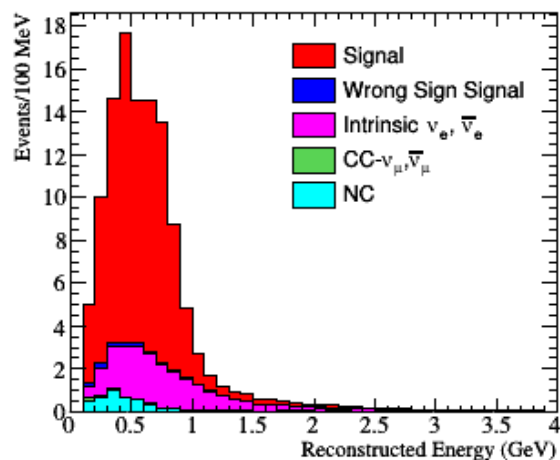
$$\nu_e + p/n \rightarrow e^- + \pi^+ + p/n$$

- NC in 2R selection for T2K somewhat better, but still looks off

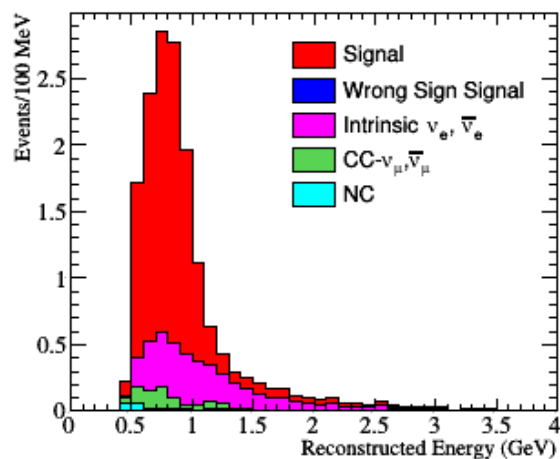
2Re $\pi$ , FHC, L=1100km, OAA=2.5°



1Re0de, FHC, L=1100km, OAA=2.5°



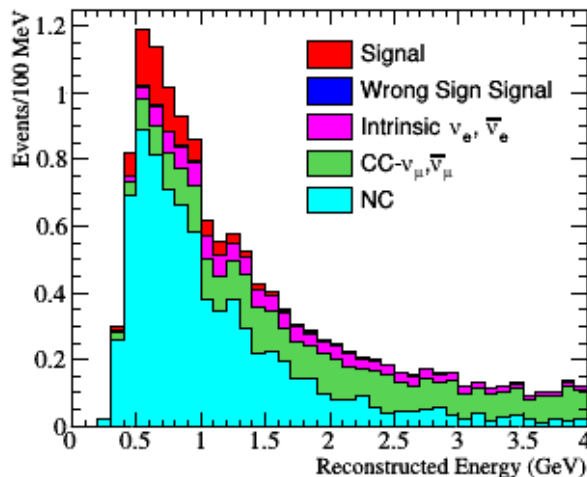
1Re1de, FHC, L=1100km, OAA=2.5°



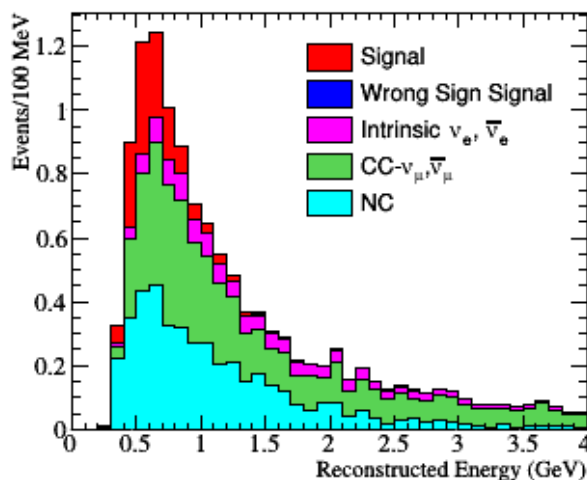
T2HKK

T2K before

2Reπ0de, FHC, 1.000E21 POT



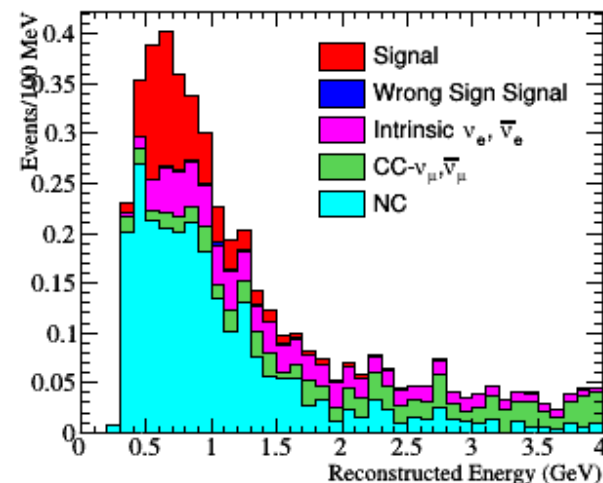
2Reπ1de, FHC, 1.000E21 POT



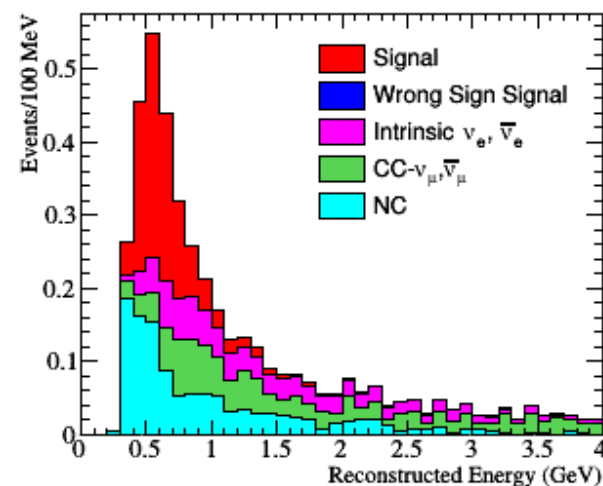
T2K now

(as shown in T2K-SK premeeting)

2Reπ0de, FHC, 1.000E21 POT



2Reπ1de, FHC, 1.000E21 POT



# Some thoughts

- I tried changing the baseline for the oscillations to 1100 km – same NC issue observed
- NC is generally not oscillated when using MC
  - why?
- I oscillated ALL events when doing T2HKK selection – could this be reason for discrepancy?

# Qualifying Exam

- Next Tuesday at 2 pm
- Currently studying...