Progress Update

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Cedar Software Status

- Installed Geant4 9.4.p04

  - script used for installation is available as:

    $HOME/project/group_writable/T2K/build_geant4.sh

  - build output can be found in:

    $HOME/project/group_writable/T2K/build-geant4.log

- Not exactly sure why it works now but didn't before...

- Haven't tried installing Geant4 10 yet but will look into that soon

- Will also try to install WCSim in near future

ν_e CC1π^+ Status

- Haven't heard back from Mike regarding the efficiency plots
  - Maybe best to ask him next week at the collaboration meeting
- Added more "exploratory" histograms, plotting things vs electron momentum
  - On following slides (work in progress)
- Still to do (for T2K-SK pre-meeting):
  - Divide cutflow table into more categories
   - Separate NC events by pion content to better understand backgrounds

Cut Exploration

- explore_FHC_NH_0.pdf shows exploratory histograms for 2Reπ and 2Reπ1de samples

- The 2Reπ sample only has the 2-ring, eπ-like, and 0de cuts applied

  – No FCFV cut

- The 2Reπ1de sample only has the 2-ring, eπ-like, and 1de cuts applied

  – No FCFV or d2se cuts

- "Signal" is all oscillated $\nu_e/\bar{\nu}_e$ CC events

- "Bkgd" is everything else

Backup

Reminder: Mike's Efficiency Plots

2-Ring Selection Results

0 Decay-e   1 Decay-e

Precut Ratios

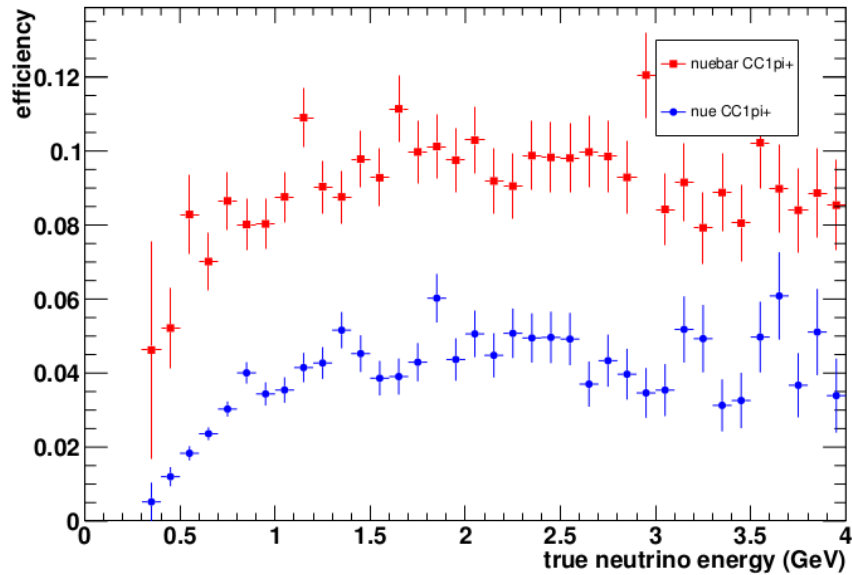nue QE   nuebar QE
nue NQE   nuebar NQE
NC   numu CC
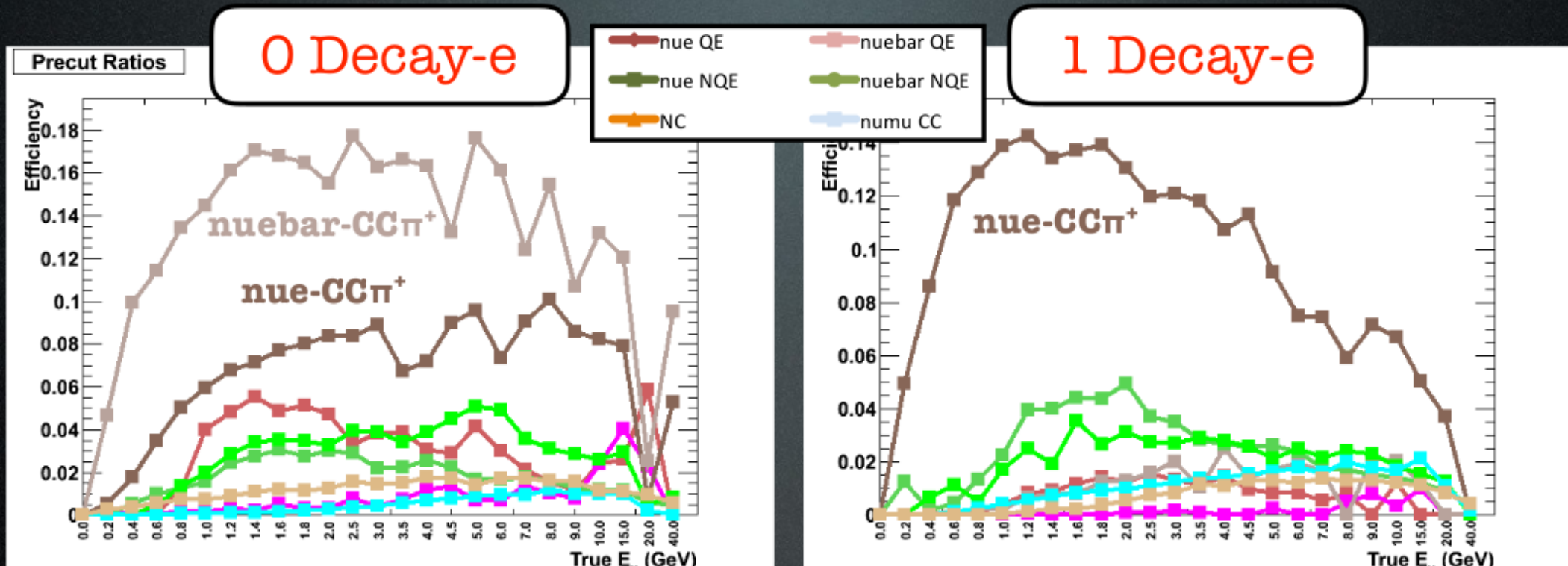
- "Efficiency" defined relative to all CCπ$^+$ events (including below-Cherenkov π$^+$, absorption or charge exchange in the nucleus or water, etc.)
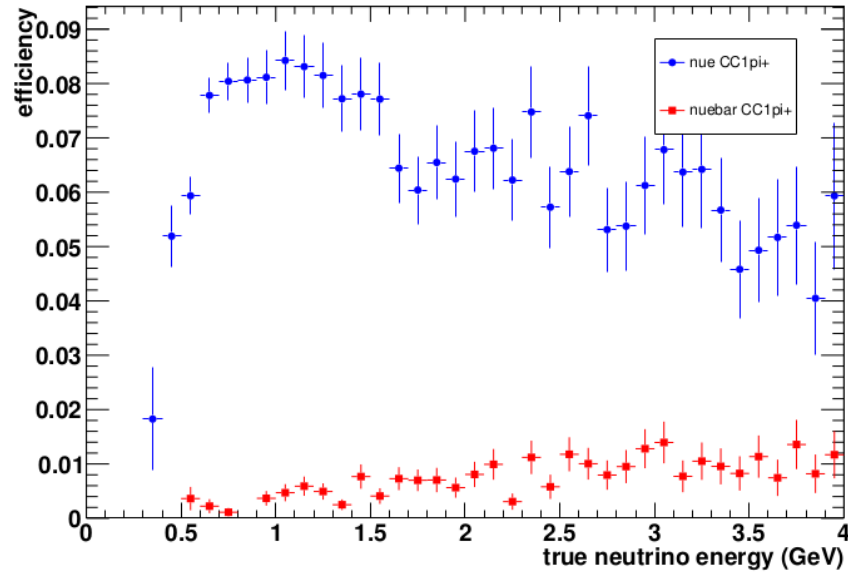
Not exactly sure what "efficiency" means for non-CC1π$^+$ events

My Efficiency Plots (in progress)

Efficiency does seem to be lower than Mike's – different FCFV cuts?

2Reπ	
FCFV	evclass==1 && evis>30 && wall>200
2 rings	fqmrnring[0]==2
eπ-like	(fqmrpid[0][0]==11 && fqmrpid[0][1]==211) || (fqmrpid[0][0]==211 && fqmrpid[0][1]==11)
0 decay e	fqnse==1

2Reπ1de	
FCFV	evclass==1 && evis>30 && wall>200
2 rings	fqmrnring[0]==2
eπ-like	(fqmrpid[0][0]==11 && fqmrpid[0][1]==211) || (fqmrpid[0][0]==211 && fqmrpid[0][1]==11)
1 decay e	fqnse==2
distance between sub-events	sqrt((fq1rpos[0][1][*]-fq1rpos[1][1][*])^2)<170