

FGD2 ν_{μ} CC 0π True topology 70000 NC: 3.72% CC Other ⊽: 0.0965%-CC 1π ⊽: 0.183% 60000 CC $0\pi \ \overline{v}$: 0.0738% CC Other v: 10.5% 50000 CC 1π v: 12.2% CC $0\pi v: 73.3\%$ 40000 30000 20000 10000 Selection purity 8.0 0.6 0.4 0.2 00 0.5 1.5 2 2.5 p_{reco} (GeV/c)

FGD2 ν_{μ} CC 0π events True particle 70000 Other: 0.218% π^{-} : 4.11% π^+ : 1.67% 60000 e+: 0.126% e: 0.406% 50000 μ^+ : 0.471% μ^{-} : 93% 40000 30000 20000 10000 Muon efficiency 8.0 0.6 0.4 0.2 00 0.5 1.5 2 2.5 p_{reco} (GeV/c)

FGD2 ν_{μ} CC 1π True topology NC: 7:4% 10000 CC Other v̄: 0.768% CC 1π ⊽: 1.99% CC $0\pi \, \overline{\nu}$: 0.118% 8000 CC Other v: 25.5% CC 1π v: 56.7% CC 0π v: 7.47% 6000 4000 2000 Selection purity 8.0 0.6 0.4 0.2 0.5 1.5 2 2.5 p_{reco} (GeV/c)

FGD2 ν_{μ} CC 1π events True particle Other: 0.276% 10000 $\pi^{\bar{}}$: 11.6% π^+ : 3.58% e+: 0.0491% 8000 e: 0.402% μ+: 1.06% μ⁻: 83% 6000 4000 2000 Muon efficiency 8.0 0.6 0.4 0.2 00 0.5 1.5 2 2.5 p_{reco} (GeV/c)

FGD2 v_{μ} CC other events True topology 4500 NC: 10.6% CC Other v̄: 1.02% 4000 CC 1π ⊽: 0.288% CC 0π ⊽: 0.111% 3500 CC Other v: 64.9% CC 1π v: 11.6% 3000 CC $0\pi v$: 11.5% 2500 2000 1500 1000 500 Selection purity 8.0 0.6 0.4 0.2

1.5

2

00

0.5

p_{reco} (GeV/c)

2.5

FGD2 ν_{μ} CC other events True particle 4500 Other: 1:09% $\pi^{\bar{}}$: 20.1% 4000 π⁺: 1.37% e+: 0.534% 3500 e⁻: 3.14% μ+: 0.357% 3000 μ^{-} : 73.4% 2500 2000 1500 1000 500 Muon efficiency 8.0 0.6 0.4 0.2 0, 0.5 1.5 2 2.5 p_{reco} (GeV/c)

FGD1 anti- ν_{μ} CC 0π True topology 14000 NC: 4.83% CC Other ⊽: 5.18% 12000 CC 1π \overline{v} : 9.68% CC $0\pi \, \overline{v}$: 75.2% CC Other v: 2.25% 10000 CC 1π v: 1.56% CC $0\pi v$: 1.33% 8000 6000 4000 2000 Selection purity 8.0 0.6 0.4 0.2 0.5 2.5 1.5 2 p_{reco} (GeV/c)

FGD1 anti- ν_{μ} CC 0π events True particle 14000 Other: 3.06% π : 0.842% 12000 π⁺: 5.27% e+: 0.158% e: 0.136% 10000 μ+: 89.4% μ^{-} : 1.15% 8000 6000 4000 2000 Muon efficiency 8.0 0.6 0.4 0.2 0ò 0.5 1.5 2 2.5 p_{reco} (GeV/c)

FGD1 anti- ν_{μ} CC 1 π True topology NC: 8.01% 600 CC Other v̄: 10.8% CC 1π ⊽: 53.5% CC 0π \overline{v} : 1.75% 500 CC Other v: 10.9% CC 1π v: 11.3% 400 CC 0π v: 3.72% 300 200 100 Selection purity 8.0 0.6 0.4 0.2 0.5 2.5 1.5 2 p_{reco} (GeV/c)

FGD1 anti- ν_{μ} CC 1 π Nevents True particle Other: 13.5% 600 π : 0.793% π^+ : 20.4% e+: 0.108% 500 e: 0.0672% μ+: 65% 400 μ: 0.202% 300 200 100 Muon efficiency 8.0 0.6 0.4 0.2 0ò 0.5 1.5 2 2.5 p_{reco} (GeV/c)

FGD1 anti- ν_{μ} CC other events True topology 800 NC: 15.5% CC Other v̄: 24.6% 700 CC 1π ⊽: 12.5% CC $0\pi \, \overline{v}$: 10.2% 600 CC Other v: 24.3% CC 1π v: 6.55% 500 CC 0π v: 6.32% 400 300 200 100 Selection purity 8.0 0.6 0.4 0.2 1.5 2.5 0.5 2 p_{reco} (GeV/c)

FGD1 anti- ν_{μ} CC other events True particle 800 Other: 20.7% π : 0.963% 700 π+: 22.9% e+: 1.42% 600 e: 0.98% μ+: 44.1% 500 μ: 9.03% 400 300 200 100 Muon efficiency 8.0 0.6 0.4 0.2 0.5 1.5 2 2.5 p_{reco} (GeV/c)

FGD2 anti- ν_{μ} CC 0π events True topology 14000 NC: 5.01% CC Other v̄: 5.27% 12000 CC 1π ⊽: 9.31% CC 0π ⊽: 74% CC Other v: 2.44% 10000 CC 1π v: 1.86% CC 0π v: 2.06% 8000 6000 4000 2000 Selection purity 8.0 0.6 0.4 0.2 0.5 2.5 1.5 2 p_{reco} (GeV/c)

FGD2 anti- ν_{μ} CC 0π Nevents True particle 14000 Other: 3.25% $\pi^{\bar{}}$: 1.15% 12000 π^+ : 5.32% e+: 0.172% e: 0.13% 10000 μ+: 87.8% μ^{-} : 2.16% 8000 6000 4000 2000 Muon efficiency 8.0 0.6 0.4 0.2 0.5 1.5 2 2.5 p_{reco} (GeV/c)

FGD2 anti- ν_{μ} CC 1 π True topology NC: 8.67% CC Other ⊽: 10.6% 500 CC 1π ⊽: 49.6% CC 0π ⊽: 1.94% CC Other v: 11.9% 400 CC 1π v: 12.3% CC 0π v: 4.98% 300 200 100 Selection purity 8.0 0.6 0.4 0.2 0.5 2.5 1.5 2 p_{reco} (GeV/c)

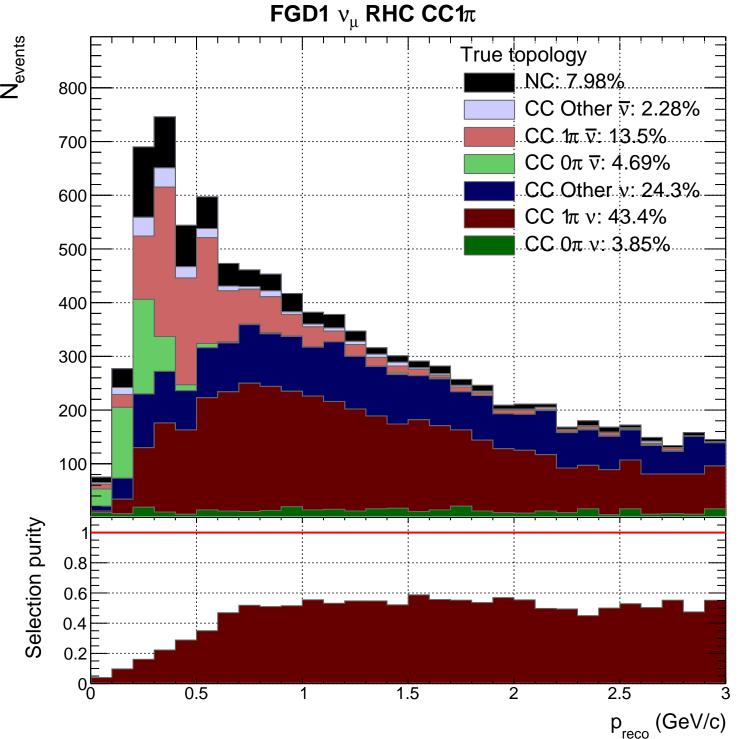
FGD2 anti- ν_{μ} CC 1 π True particle Other: 16.4% π : 1.11% 500 π^+ : 21.1% e+: 0.104% e: 0.0296% 400 μ+: 61% μ^{-} : 0.222% 300 200 100 Muon efficiency 8.0 0.6 0.4 0.2 00 0.5 1.5 2 2.5 p_{reco} (GeV/c)

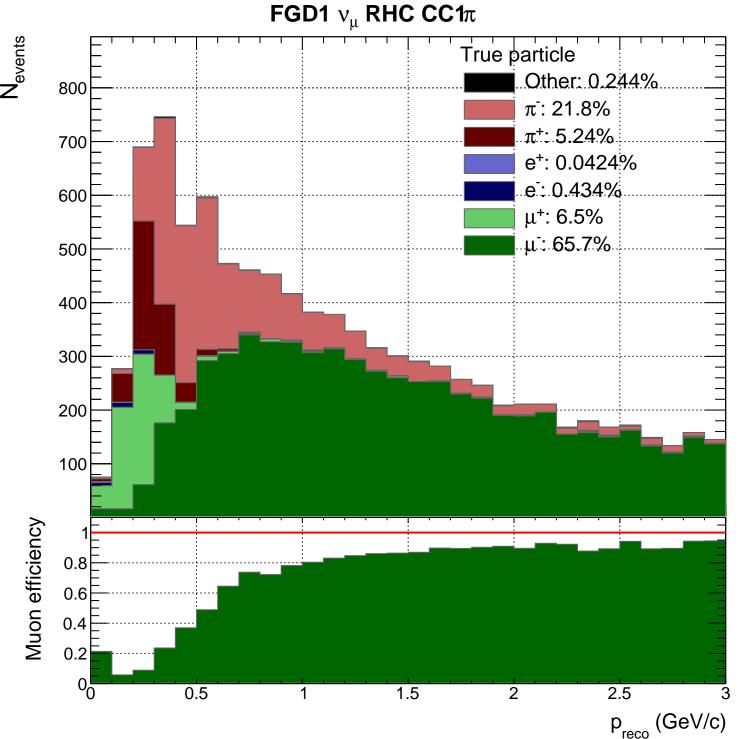
FGD2 anti- ν_{μ} CC other events True topology NC: 17.3% 700 CC Other v̄: 23.6% CC 1π ⊽: 11.8% 600 CC $0\pi \, \overline{v}$: 9.96% CC Other v: 24.4% 500 CC 1π v: 6.98% CC 0π v: 6.06% 400 300 200 100 Selection purity 8.0 0.6 0.4 0.2 00 0.5 1.5 2 2.5 p_{reco} (GeV/c)

FGD2 anti- ν_{μ} CC other **V**events True particle Other: 23.9% 700 $\pi^{\bar{}}$: 1.05% π+: 22.9% 600 e+: 1.35% e: 0.733% 500 μ+: 41.6% μ⁻: 8.43% 400 300 200 100 Muon efficiency 8.0 0.6 0.4 0.2 0.5 1.5 2 2.5 p_{reco} (GeV/c)

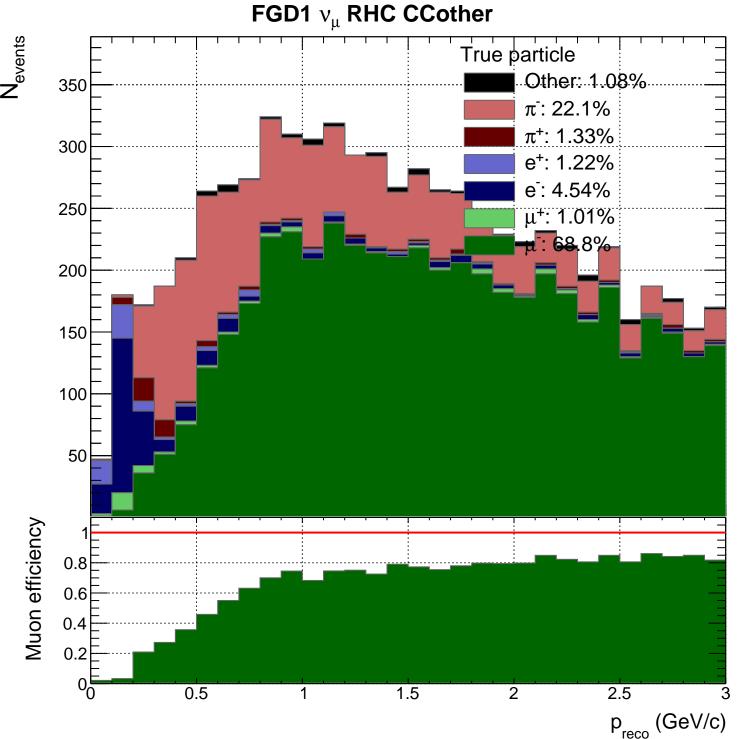
FGD1 ν_{μ} RHC CC0 π events True topology 2200 NC: 8.78% 2000 CC Other ⊽: 1.36% CC $1\pi \, \overline{v}$: 3.63% 1800 CC $0\pi \ \overline{v}$: 2.36% CC Other v: 15.9% 1600 CC 1π v: 12.4% 1400 CC 0π v: 55.6% 1200 1000 800 600 400 200 Selection purity 8.0 0.6 0.4 0.2 00 0.5 1.5 2 2.5 p_{reco} (GeV/c)

FGD1 ν_{μ} RHC CC0 $\!\pi$ events True particle 2200 Other: 0.486% 2000 π : 12.7% π^+ : 2.45% 1800 e+: 0.575% e⁻: 1.44% 1600 μ+: 2.7% 1400 μ⁻: 79.7% 1200 1000 800 600 400 200 Muon efficiency 8.0 0.6 0.4 0.2 0, 0.5 1.5 2 2.5 p_{reco} (GeV/c)

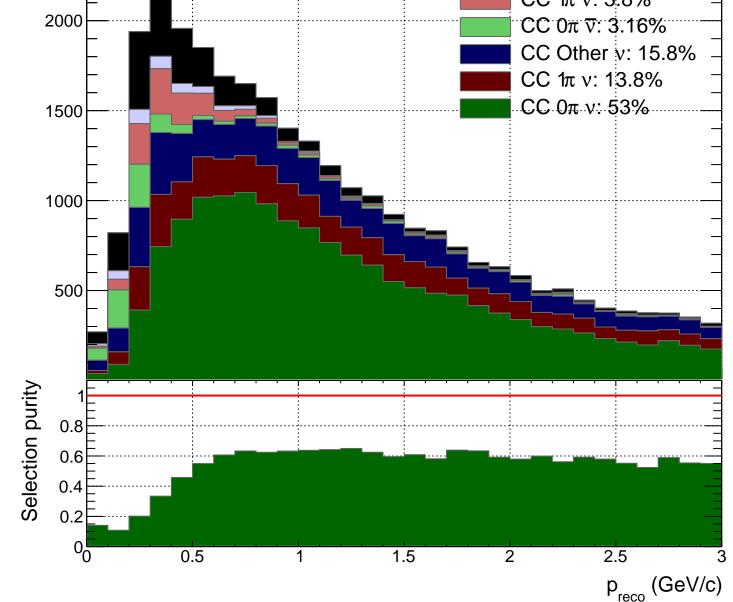




FGD1 ν_{μ} RHC CCother events True topology NC: 13.1% 350 CC Other \overline{v} : 3.26% CC 1π ⊽: 2.95% 300 CC 0π ⊽: 0.461% CC Other v: 61% 250 CC 1π v: 8.82% **≟**π ν**≟≟** 0.5% 200 150 100 50 Selection purity 8.0 0.6 0.4 0.2 0, 0.5 1.5 2 2.5 p_{reco} (GeV/c)

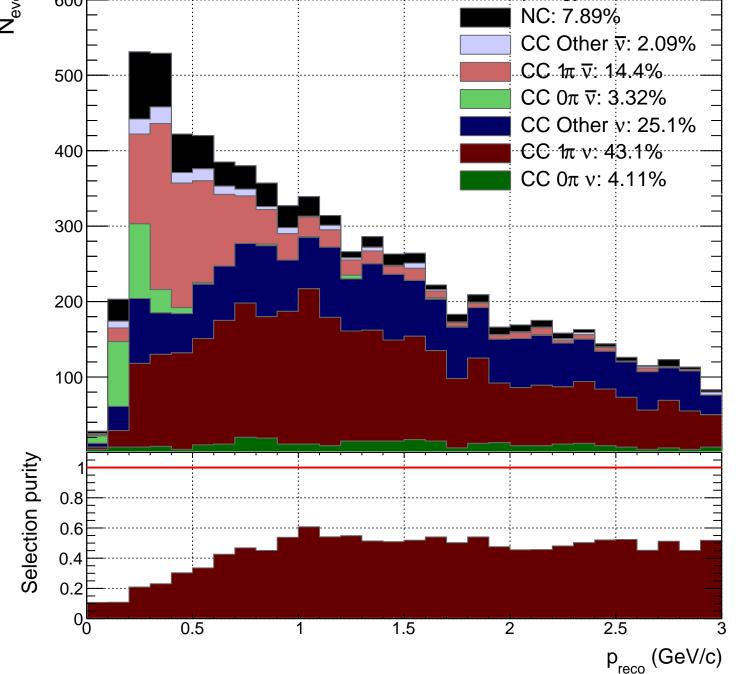


FGD2 ν_{μ} RHC CC0 π events True topology 2500 NC: 8.95% CC Other v̄: 1.49% CC 1π v: 3.8% 2000 CC 0π ⊽: 3.16% CC Other v: 15.8% CC 1π v: 13.8% CC 0π v: 53% 1500 1000 500 8.0 0.6



FGD2 $\,\nu_{\mu}$ RHC CC0 π Nevents True particle 2500 Other: 0.464% $\pi^{\bar{}}$: 12.3% π^+ : 3.94% 2000 e+: 0.467% e⁻: 1.17% μ+: 3.84% μ: 77.8% 1500 1000 500 Muon efficiency 8.0 0.6 0.4 0.2 0, 0.5 1.5 2 2.5 p_{reco} (GeV/c)

FGD2 ν_{μ} RHC CC1 π events True topology 600 NC: 7.89% CC Other v̄: 2.09% CC 1π ⊽: 14.4% 500 CC $0\pi \ \overline{v}$: 3.32% CC Other v: 25.1% 400 CC 1π v: 43.1% CC 0π v: 4.11% 300 200 100



FGD2 ν_{μ} RHC CC1 π events True particle 600 Other: 0.228% $\pi^{\bar{}}$: 22.4% $\pi^+: 5.57\%$ 500 e+: 0.0536% e: 0.362% μ+: 4.54% 400 μ : 66.8% 300 200 100 Muon efficiency 8.0 0.6 0.4 0.2 00 0.5 1.5 2 2.5 p_{reco} (GeV/c)

FGD2 ν_{μ} RHC CCother events True topology 350 NC: 12.7% CC Other v̄: 3.16% CC 1π ⊽: 2.99% 300 CC $0\pi \ \overline{v}$: 0.515% CC Other v: 60.8% 250 <u>C</u> 1π v: 9.46% $0\pi \ v$: 10.3% 200 150 100 50 Selection purity 8.0 0.6 0.4 0.2 00 0.5 1.5 2 2.5 p_{reco} (GeV/c)

FGD2 ν_{μ} RHC CCother events True particle 350 Other: 1.4% π̄: 21.4% π^+ : 1.38% 300 e+: 0.751% <u>e</u>: 4.77% 250 <mark>μ+:</mark> 1.34% : 69% 200 150 100 50 Muon efficiency 8.0 0.6 0.4 0.2 0.5 1.5 2 2.5 p_{reco} (GeV/c)