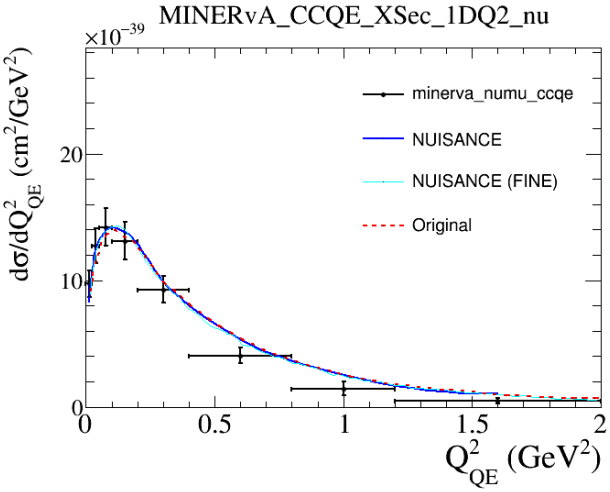
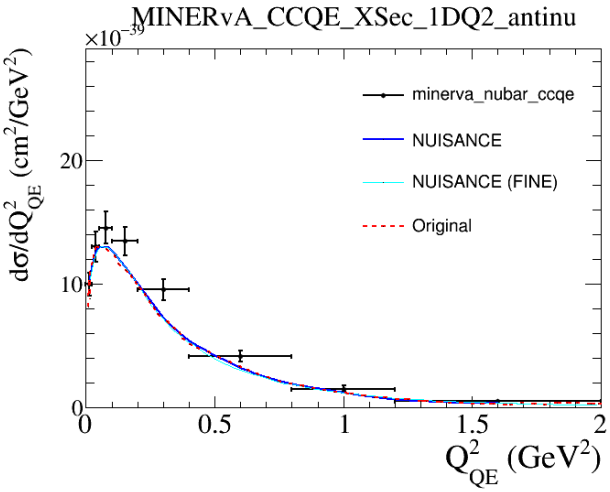


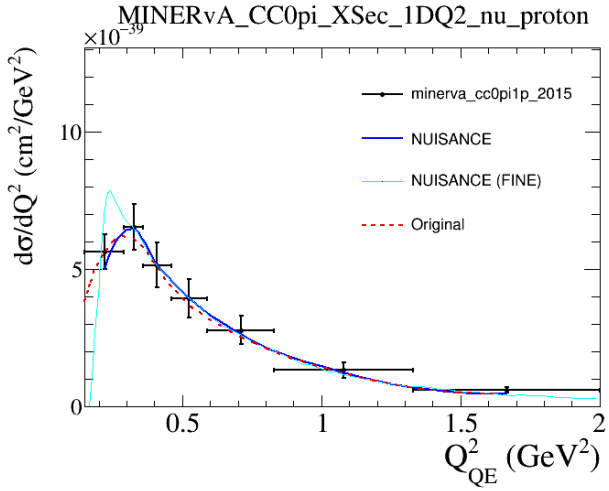
MINERvA_CCQE_XSec_1DQ2_nu_settings

- **name** : MINERvA_CCQE_XSec_1DQ2_nu
- **input** : GENIE:@GENIE_DIR/gntp.R-2_6_3.OfficialDefault.Default.MINERvA_fhc_numu.CH.2500000.1.prepared
- **type** : DEFAULT
- **description** :
  |--> MINERvA_CCQE_XSec_1DQ2_nu sample.
  |--> Target: CH
  |--> Flux: MINERvA Forward Horn Current Numu
  |--> Signal: True CCQE/2p2h defined at the vertex level
- **xtitle** : Q^2_{QE} (GeV^2)
- **ytitle** : $d\sigma/dQ^2_{QE}$ (cm^2/GeV^2)
- **default_types** : FIX,FREE,SHAPE/DIAG,FULL/NORM/MASK
- **allowed_types** : FIX/FULL
- **enu_min** : 1.5
- **enu_max** : 10
- **title** : MINERvA_CCQE_XSec_1DQ2_nu
- **data** : /data/stowell/NIWG/NUISANCEMC/minerva_tuning/sample_validations/minerva-validation-061117/builds/n
- **covar** : /data/stowell/NIWG/NUISANCEMC/minerva_tuning/sample_validations/minerva-validation-061117/builds/
- **originalname** : MINERvA_CCQE_XSec_1DQ2_nu
- χ^2 : 19.3218
- **NDOF** : 8
- χ^2/**NDOF** : 2.41522



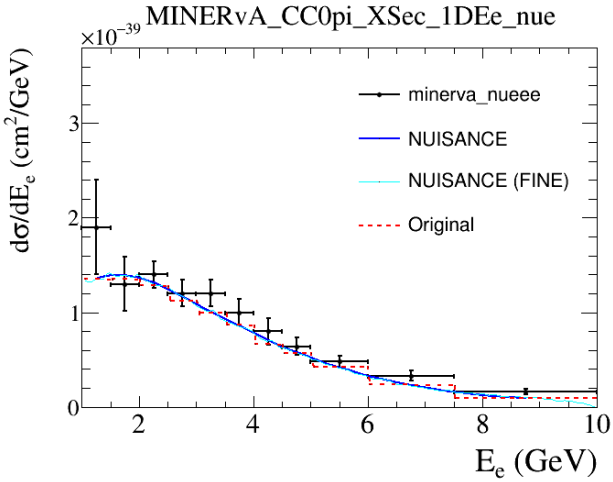
MINERvA_CCQE_XSec_1DQ2_antinu_settings

- **name** : MINERvA_CCQE_XSec_1DQ2_antinu
- **input** : GENIE:@GENIE_DIR/gntp.R-2_6_3.OfficialDefault.Default.MINERvA_rhc_numubar.CH.2500000.2.prepa
- **type** : DEFAULT
- **description** :
  |--> MINERvA_CCQE_XSec_1DQ2_antinu sample.
  |--> Target: CH
  |--> Flux: MINERvA Forward Horn Current Numubar
  |--> Signal: True CCQE/2p2h defined at the vertex level
- **xtitle** : Q^2_{QE} (GeV^2)
- **ytitle** : $d\sigma/dQ^2_{QE}$ (cm^2/GeV^2)
- **default_types** : FIX,FREE,SHAPE/DIAG,FULL/NORM/MASK
- **allowed_types** : FIX/FULL
- **enu_min** : 1.5
- **enu_max** : 10
- **title** : MINERvA_CCQE_XSec_1DQ2_antinu
- **data** : /data/stowell/NIWG/NUISANCEMC/minerva_tuning/sample_validations/minerva-validation-061117/builds/n
- **covar** : /data/stowell/NIWG/NUISANCEMC/minerva_tuning/sample_validations/minerva-validation-061117/builds/
- **originalname** : MINERvA_CCQE_XSec_1DQ2_antinu
- χ^2 : 19.9113
- **NDOF** : 8
- χ^2/**NDOF** : 2.48891



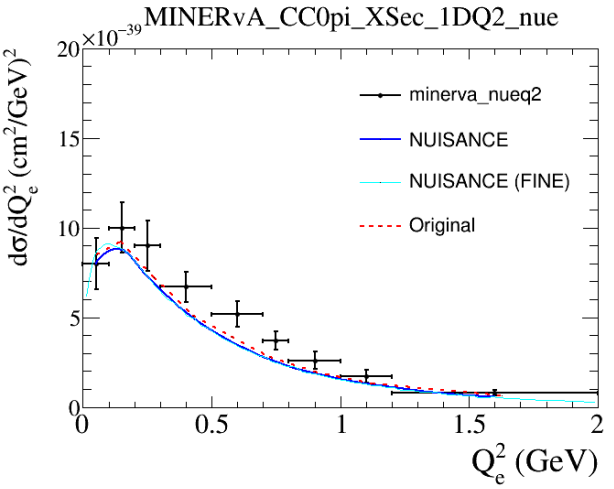
MINERvA_CC0pi_XSec_1DQ2_nu_proton_settings

- **name** : MINERvA_CC0pi_XSec_1DQ2_nu_proton
- **input** : GENIE:@GENIE_DIR/gntp.R-2_6_3.OfficialDefault.Default.MINERvA_fhc_numu.CH.2500000.1.prepared
- **type** : DEFAULT
- **description** :
  |--> MINERvA_CC0pi_XSec_1DQ2_nu_proton sample.
  |--> Target: CH
  |--> Flux: MINERvA Forward Horn Current nue + nuebar
  |--> Signal: Any event with 1 electron, any nucleons, and no other FS particles
- **xtitle** : Q^2_{QE} (GeV^2)
- **ytitle** : $d\sigma/dQ^2$ (cm^2/GeV^2)
- **default_types** : FIX,FREE,SHAPE/DIAG,FULL/NORM/MASK
- **allowed_types** : FIX/FULL
- **enu_min** : 0
- **enu_max** : 100
- **title** : MINERvA_CC0pi_XSec_1DQ2_nu_proton
- **data** : /data/stowell/NIWG/NUISANCEMC/minerva_tuning/sample_validations/minerva-validation-061117/builds/n
- **covar** : /data/stowell/NIWG/NUISANCEMC/minerva_tuning/sample_validations/minerva-validation-061117/builds/
- **originalname** : MINERvA_CC0pi_XSec_1DQ2_nu_proton
- χ^2 : 7.63844
- **NDOF** : 7
- χ^2/**NDOF** : 1.09121



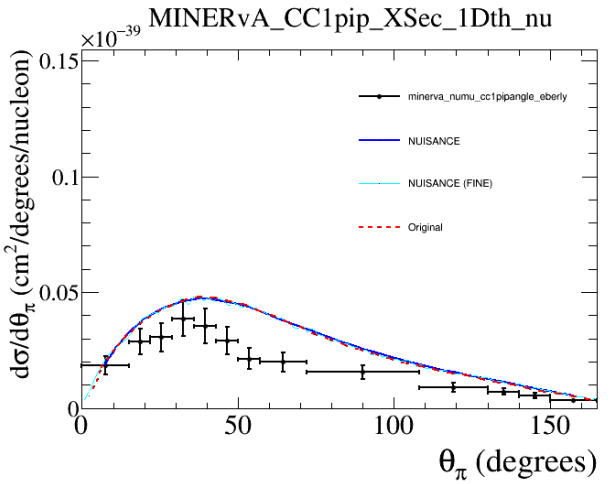
MINERvA_CC0pi_XSec_1DEe_nue_settings

- **name** : MINERvA_CC0pi_XSec_1DEe_nue
- **input** : GENIE:@GENIE_DIR/gntp.R-2_6_3.OfficialDefault.Default.MINERvA_fhc_nue.CH.2500000.3.prepared.r
- **type** : DEFAULT
- **description** :
  |--> MINERvA CC0pi nue Ee sample.
  |--> Target: CH
  |--> Flux: MINERvA Forward Horn Current nue + nuebar
  |--> Signal: Any event with 1 electron, any nucleons, and no other FS particles
- **xtitle** : E_e (GeV)
- **ytitle** : $d\sigma/dE_e$ (cm^2/GeV)
- **default_types** : FIX,FREE,SHAPE/DIAG,FULL/NORM/MASK
- **allowed_types** : FIX/FULL
- **enu_min** : 0
- **enu_max** : 10
- **title** : MINERvA ν_e CC0π
- **data** : /data/stowell/NIWG/NUISANCEMC/minerva_tuning/sample_validations/minerva-validation-061117/builds/n
- **covar** : /data/stowell/NIWG/NUISANCEMC/minerva_tuning/sample_validations/minerva-validation-061117/builds/
- **originalname** : MINERvA_CC0pi_XSec_1DEe_nue
- χ^2 : 0.95264
- **NDOF** : 11
- χ^2/**NDOF** : 0.0866036



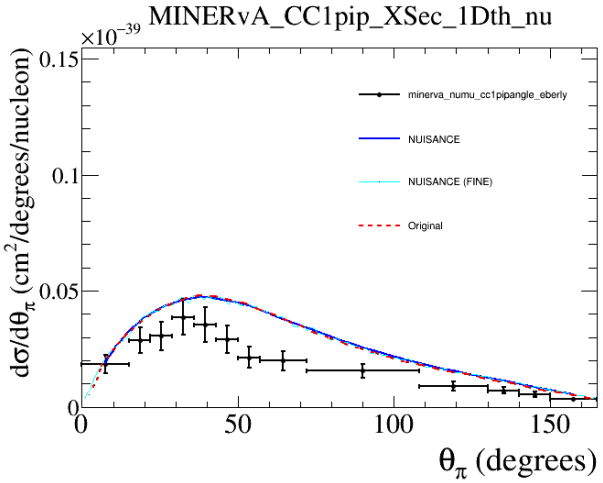
MINERvA_CC0pi_XSec_1DQ2_nue_settings

- **name** : MINERvA_CC0pi_XSec_1DQ2_nue
- **input** : GENIE:@GENIE_DIR/gntp.R-2_6_3.OfficialDefault.Default.MINERvA_fhc_nue.CH.2500000.3.prepared.r
- **type** : DEFAULT
- **description** :
  |--> MINERvA_CC0pi_XSec_1DQ2_nue sample.
  |--> Target: CH
  |--> Flux: MINERvA Forward Horn Current nue + nuebar
  |--> Signal: Any event with 1 electron, any nucleons, and no other FS particles
- **xtitle** : Q^2_e (GeV)
- **ytitle** : $d\sigma/dQ^2_e$ (cm^2/GeV)^2
- **default_types** : FIX,FREE,SHAPE/DIAG,FULL/NORM/MASK
- **allowed_types** : FIX/FULL
- **enu_min** : 0
- **enu_max** : 10
- **title** : MINERvA_CC0pi_XSec_1DQ2_nue
- **data** : /data/stowell/NIWG/NUISANCEMC/minerva_tuning/sample_validations/minerva-validation-061117/builds/n
- **covar** : /data/stowell/NIWG/NUISANCEMC/minerva_tuning/sample_validations/minerva-validation-061117/builds/
- **originalname** : MINERvA_CC0pi_XSec_1DQ2_nue
- χ^2 : 0.99699
- **NDOF** : 9
- χ^2/**NDOF** : 0.110777



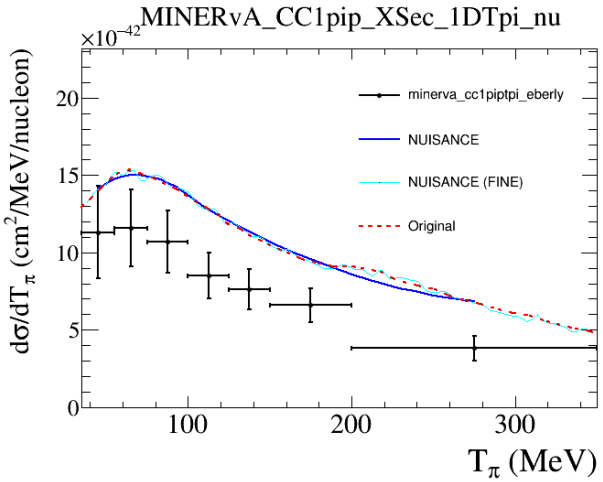
MINERvA_CC1pip_XSec_1Dth_nu_settings

- **name** : MINERvA_CC1pip_XSec_1Dth_nu
- **input** : GENIE:@GENIE_DIR/gntp.R-2_6_3.OfficialDefault.Default.MINERvA_fhc_numu.CH.2500000.1.prepared
- **type** : DEFAULT
- **description** :
  |--> MINERvA_CC1pip_XSec_1Dth_nu sample.
  |--> Target: CH
  |--> Flux: MINERvA Forward Horn Current nue + nuebar
  |--> Signal: Any event with 1 electron, any nucleons, and no other FS particles
- **xtitle** : θ_π (degrees)
- **ytitle** : $d\sigma/d\theta_\pi$ (cm^2/degrees/nucleon)
- **default_types** : FIX,FREE,SHAPE/DIAG,FULL/NORM/MASK
- **allowed_types** : FIX/FULL
- **enu_min** : 1.5
- **enu_max** : 10
- **title** : MINERvA_CC1pip_XSec_1Dth_nu
- **data** : /data/stowell/NIWG/NUISANCEMC/minerva_tuning/sample_validations/minerva-validation-061117/builds/n
- **covar** : /data/stowell/NIWG/NUISANCEMC/minerva_tuning/sample_validations/minerva-validation-061117/builds/
- **originalname** : MINERvA_CC1pip_XSec_1Dth_nu
- χ^2 : 104.614
- **NDOF** : 13
- χ^2/**NDOF** : 8.04719



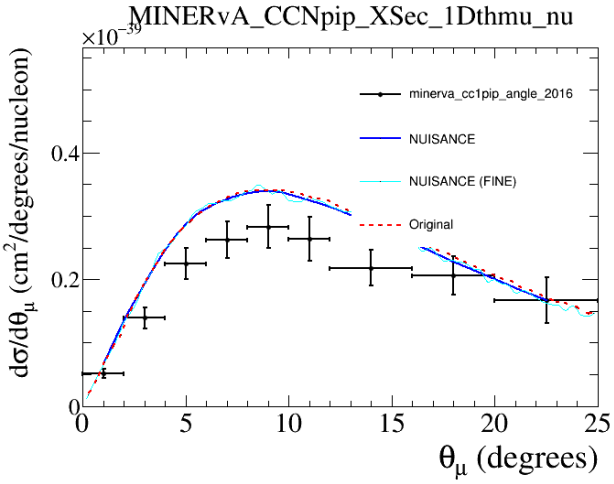
MINERvA_CC1pip_XSec_1Dth_nu_settings

- **name** : MINERvA_CC1pip_XSec_1Dth_nu
- **input** : GENIE:@GENIE_DIR/gntp.R-2_6_3.OfficialDefault.Default.MINERvA_fhc_numu.CH.2500000.1.prepared
- **type** : DEFAULT
- **description** :
  |--> MINERvA_CC1pip_XSec_1Dth_nu sample.
  |--> Target: CH
  |--> Flux: MINERvA Forward Horn Current nue + nuebar
  |--> Signal: Any event with 1 electron, any nucleons, and no other FS particles
- **xtitle** : θ_π (degrees)
- **ytitle** : $d\sigma/d\theta_\pi$ (cm^2/degrees/nucleon)
- **default_types** : FIX,FREE,SHAPE/DIAG,FULL/NORM/MASK
- **allowed_types** : FIX/FULL
- **enu_min** : 1.5
- **enu_max** : 10
- **title** : MINERvA_CC1pip_XSec_1Dth_nu
- **data** : /data/stowell/NIWG/NUISANCEMC/minerva_tuning/sample_validations/minerva-validation-061117/builds/n
- **covar** : /data/stowell/NIWG/NUISANCEMC/minerva_tuning/sample_validations/minerva-validation-061117/builds/
- **originalname** : MINERvA_CC1pip_XSec_1Dth_nu
- χ^2 : 104.614
- **NDOF** : 13
- χ^2/**NDOF** : 8.04719



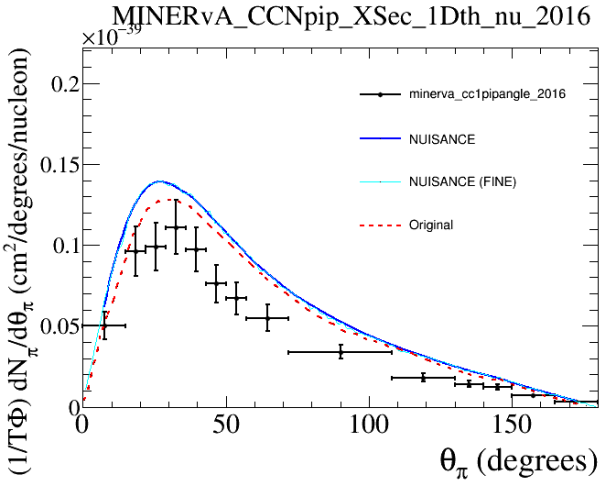
MINERvA_CC1pip_XSec_1DTpi_nu_settings

- **name** : MINERvA_CC1pip_XSec_1DTpi_nu
- **input** : GENIE:@GENIE_DIR/gntp.R-2_6_3.OfficialDefault.Default.MINERvA_fhc_numu.CH.2500000.1.prepared
- **type** : DEFAULT
- **description** :
  |--> MINERvA_CC1pip_XSec_1DTpi_nu sample.
  |--> Target: CH
  |--> Flux: MINERvA Forward Horn Current nue + nuebar
  |--> Signal: Any event with 1 electron, any nucleons, and no other FS particles
- **xtitle** : T_π (MeV)
- **ytitle** : $d\sigma/dT_\pi$ (cm^2/MeV/nucleon)
- **default_types** : FIX,FREE,SHAPE/DIAG,FULL/NORM/MASK
- **allowed_types** : FIX/FULL
- **enu_min** : 1.5
- **enu_max** : 10
- **title** : MINERvA_CC1pip_XSec_1DTpi_nu
- **data** : /data/stowell/NIWG/NUISANCEMC/minerva_tuning/sample_validations/minerva-validation-061117/builds/n
- **covar** : /data/stowell/NIWG/NUISANCEMC/minerva_tuning/sample_validations/minerva-validation-061117/builds/
- **originalname** : MINERvA_CC1pip_XSec_1DTpi_nu
- χ^2 : 22.0665
- **NDOF** : 7
- χ^2/**NDOF** : 3.15236



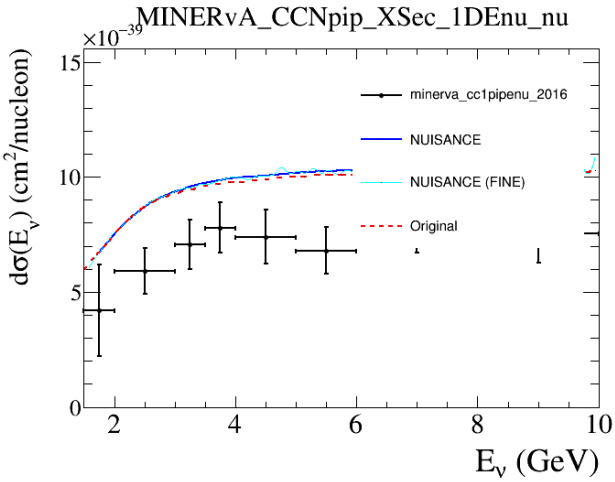
MINERvA_CCNpip_XSec_1Dthmu_nu_settings

- **name** : MINERvA_CCNpip_XSec_1Dthmu_nu
- **input** : GENIE:@GENIE_DIR/gntp.R-2_6_3.OfficialDefault.Default.MINERvA_fhc_numu.CH.2500000.1.prepared
- **type** : DEFAULT
- **description** :
  |--> MINERvA_CCNpip_XSec_1Dthmu_nu sample.
  |--> Target: CH
  |--> Flux: MINERvA Forward Horn Current nue + nuebar
  |--> Signal: Any event with 1 electron, any nucleons, and no other FS particles
- **xtitle** : θ_μ (degrees)
- **ytitle** : $d\sigma/d\theta_\mu$ (cm^2/degrees/nucleon)
- **default_types** : FIX,FREE,SHAPE/DIAG,FULL/NORM/MASK
- **allowed_types** : FIX/FULL
- **enu_min** : 1.5
- **enu_max** : 10
- **title** : MINERvA_CCNpip_XSec_1Dthmu_nu
- **data** : /data/stowell/NIWG/NUISANCEMC/minerva_tuning/sample_validations/minerva-validation-061117/builds/n
- **covar** : /data/stowell/NIWG/NUISANCEMC/minerva_tuning/sample_validations/minerva-validation-061117/builds/
- **originalname** : MINERvA_CCNpip_XSec_1Dthmu_nu
- χ^2 : 20.2469
- **NDOF** : 9
- χ^2/**NDOF** : 2.24966



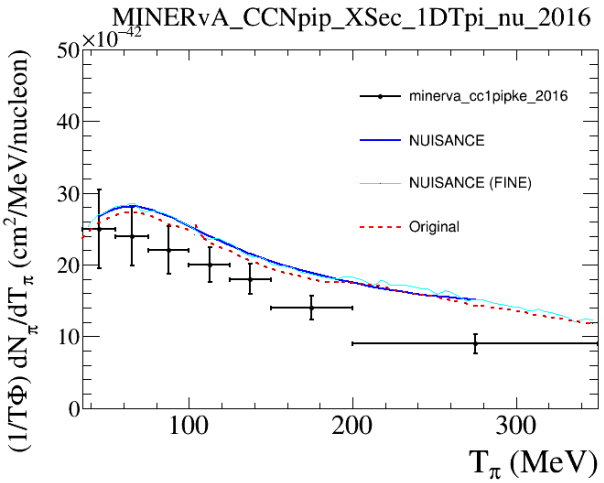
MINERvA_CCNpip_XSec_1Dth_nu_2016_settings

- **name** : MINERvA_CCNpip_XSec_1Dth_nu_2016
- **input** : GENIE:@GENIE_DIR/gntp.R-2_6_3.OfficialDefault.Default.MINERvA_fhc_numu.CH.2500000.1.prepared
- **type** : DEFAULT
- **description** :
  - |--> MINERvA_CCNpip_XSec_1Dth_nu sample.
  - |--> Target: CH
  - |--> Flux: MINERvA Forward Horn Current nue + nuebar
  - |--> Signal: Any event with 1 electron, any nucleons, and no other FS particles
- **xtitle** : θ_π (degrees)
- **ytitle** : (1/TΦ) $dN_\pi/d\theta_\pi$ (cm^2/degrees/nucleon)
- **default_types** : FIX,FREE,SHAPE/DIAG,FULL/NORM/MASK
- **allowed_types** : FIX/FULL
- **enu_min** : 1.5
- **enu_max** : 10
- **title** : MINERvA_CCNpip_XSec_1Dth_nu
- **originalname** : MINERvA_CCNpip_XSec_1Dth_nu_2016
- χ^2 : 52.9607
- **NDOF** : 14
- χ^2/**NDOF** : 3.7829



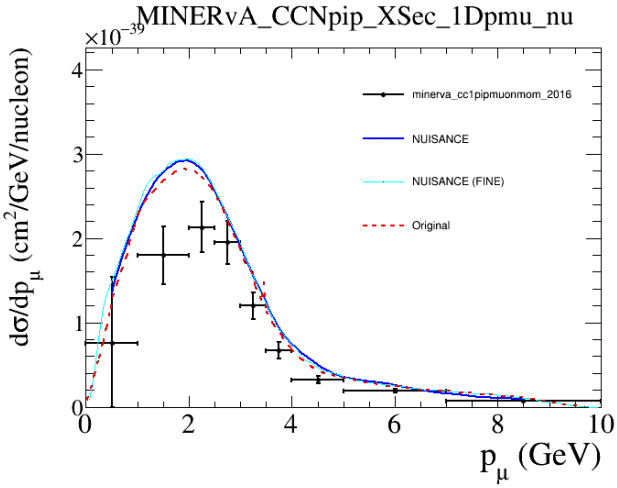
MINERvA_CCNpip_XSec_1DEnu_nu_settings

- **name** : MINERvA_CCNpip_XSec_1DEnu_nu
- **input** : GENIE:@GENIE_DIR/gntp.R-2_6_3.OfficialDefault.Default.MINERvA_fhc_numu.CH.2500000.1.prepared
- **type** : DEFAULT
- **description** :
  - |--> MINERvA_CCNpip_XSec_1DEnu_nu sample.
  - |--> Target: CH
  - |--> Flux: MINERvA Forward Horn Current nue + nuebar
  - |--> Signal: Any event with 1 electron, any nucleons, and no other FS particles
- **xtitle** : E_ν (GeV)
- **ytitle** : $d\sigma(E_\nu)$ (cm^2/nucleon)
- **default_types** : FIX,FREE,SHAPE/DIAG,FULL/NORM/MASK
- **allowed_types** : FIX/FULL
- **enu_min** : 1.5
- **enu_max** : 10
- **title** : MINERvA_CCNpip_XSec_1DEnu_nu
- **data** : /data/stowell/NIWG/NUISANCEMC/minerva_tuning/sample_validations/minerva-validation-061117/builds/n
- **covar** : /data/stowell/NIWG/NUISANCEMC/minerva_tuning/sample_validations/minerva-validation-061117/builds/
- **originalname** : MINERvA_CCNpip_XSec_1DEnu_nu
- χ^2 : 19.1013
- **NDOF** : 8
- χ^2/**NDOF** : 2.38766



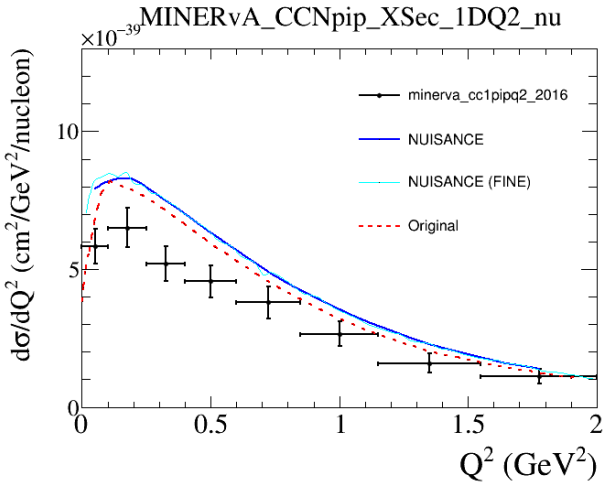
MINERvA_CCNpip_XSec_1DTpi_nu_2016_settings

- **name** : MINERvA_CCNpip_XSec_1DTpi_nu_2016
- **input** : GENIE:@GENIE_DIR/gntp.R-2_6_3.OfficialDefault.Default.MINERvA_fhc_numu.CH.2500000.1.prepared
- **type** : DEFAULT
- **description** :
  - |--> MINERvA_CCNpip_XSec_1DTpi_nu sample.
  - |--> Target: CH
  - |--> Flux: MINERvA Forward Horn Current nue + nuebar
  - |--> Signal: Any event with 1 electron, any nucleons, and no other FS particles
- **xtitle** : T_π (MeV)
- **ytitle** : (1/TΦ) dN_π/dT_π (cm^2/MeV/nucleon)
- **default_types** : FIX,FREE,SHAPE/DIAG,FULL/NORM/MASK
- **allowed_types** : FIX/FULL
- **enu_min** : 1.5
- **enu_max** : 10
- **title** : MINERvA_CCNpip_XSec_1DTpi_nu
- **originalname** : MINERvA_CCNpip_XSec_1DTpi_nu_2016
- χ^2 : 29.5758
- **NDOF** : 7
- χ^2/**NDOF** : 4.22511



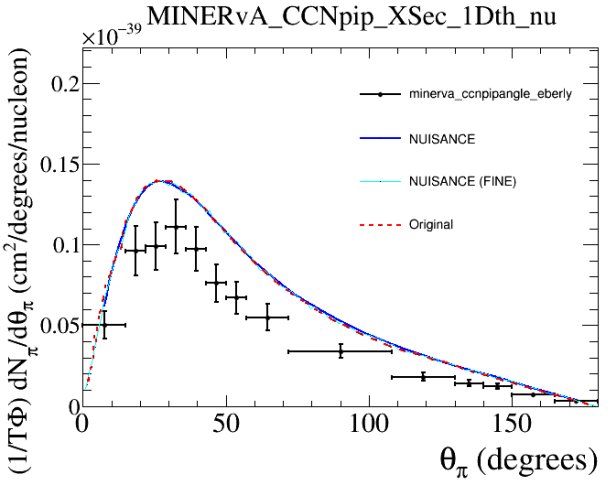
MINERvA_CCNpip_XSec_1Dpmu_nu_settings

- **name** : MINERvA_CCNpip_XSec_1Dpmu_nu
- **input** : GENIE:@GENIE_DIR/gntp.R-2_6_3.OfficialDefault.Default.MINERvA_fhc_numu.CH.2500000.1.prepared
- **type** : DEFAULT
- **description** :
  |--> MINERvA_CCNpip_XSec_1Dpmu_nu sample.
  |--> Target: CH
  |--> Flux: MINERvA Forward Horn Current nue + nuebar
  |--> Signal: Any event with 1 electron, any nucleons, and no other FS particles
- **xtitle** : p_μ (GeV)
- **ytitle** : $d\sigma/dp_\mu$ (cm^2/GeV/nucleon)
- **default_types** : FIX,FREE,SHAPE/DIAG,FULL/NORM/MASK
- **allowed_types** : FIX/FULL
- **enu_min** : 1.5
- **enu_max** : 10
- **title** : MINERvA_CCNpip_XSec_1Dpmu_nu
- **data** : /data/stowell/NIWG/NUISANCEMC/minerva_tuning/sample_validations/minerva-validation-061117/builds/n
- **covar** : /data/stowell/NIWG/NUISANCEMC/minerva_tuning/sample_validations/minerva-validation-061117/builds/
- **originalname** : MINERvA_CCNpip_XSec_1Dpmu_nu
- χ^2 : 45.0958
- **NDOF** : 9
- χ^2/**NDOF** : 5.01064



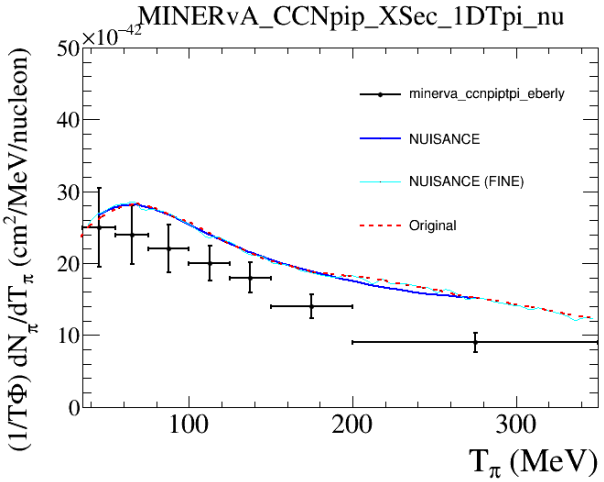
MINERvA_CCNpip_XSec_1DQ2_nu_settings

- **name** : MINERvA_CCNpip_XSec_1DQ2_nu
- **input** : GENIE:@GENIE_DIR/gntp.R-2_6_3.OfficialDefault.Default.MINERvA_fhc_numu.CH.2500000.1.prepared
- **type** : DEFAULT
- **description** :
  |--> MINERvA_CCNpip_XSec_1DQ2_nu sample.
  |--> Target: CH
  |--> Flux: MINERvA Forward Horn Current nue + nuebar
  |--> Signal: Any event with 1 electron, any nucleons, and no other FS particles
- **xtitle** : Q^2 (GeV^2)
- **ytitle** : $d\sigma/dQ^2$ (cm^2/GeV^2/nucleon)
- **default_types** : FIX,FREE,SHAPE/DIAG,FULL/NORM/MASK
- **allowed_types** : FIX/FULL
- **enu_min** : 1.5
- **enu_max** : 10
- **title** : MINERvA_CCNpip_XSec_1DQ2_nu
- **data** : /data/stowell/NIWG/NUISANCEMC/minerva_tuning/sample_validations/minerva-validation-061117/builds/n
- **covar** : /data/stowell/NIWG/NUISANCEMC/minerva_tuning/sample_validations/minerva-validation-061117/builds/
- **originalname** : MINERvA_CCNpip_XSec_1DQ2_nu
- χ^2 : 19.4362
- **NDOF** : 8
- χ^2/**NDOF** : 2.42953



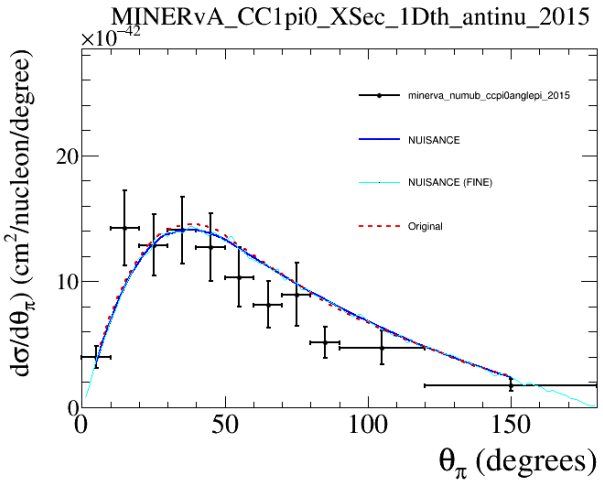
MINERvA_CCNpip_XSec_1Dth_nu_settings

- **name** : MINERvA_CCNpip_XSec_1Dth_nu
- **input** : GENIE:@GENIE_DIR/gntp.R-2_6_3.OfficialDefault.Default.MINERvA_fhc_numu.CH.2500000.1.prepared
- **type** : DEFAULT
- **description** :
  |--> MINERvA_CCNpip_XSec_1Dth_nu sample.
  |--> Target: CH
  |--> Flux: MINERvA Forward Horn Current nue + nuebar
  |--> Signal: Any event with 1 electron, any nucleons, and no other FS particles
- **xtitle** : θ_π (degrees)
- **ytitle** : $(1/T\Phi)\ dN_\pi/d\theta_\pi$ (cm^2/degrees/nucleon)
- **default_types** : FIX,FREE,SHAPE/DIAG,FULL/NORM/MASK
- **allowed_types** : FIX/FULL
- **enu_min** : 1.5
- **enu_max** : 10
- **title** : MINERvA_CCNpip_XSec_1Dth_nu
- **originalname** : MINERvA_CCNpip_XSec_1Dth_nu
- χ^2 : 52.9607
- **NDOF** : 14
- χ^2/**NDOF** : 3.7829



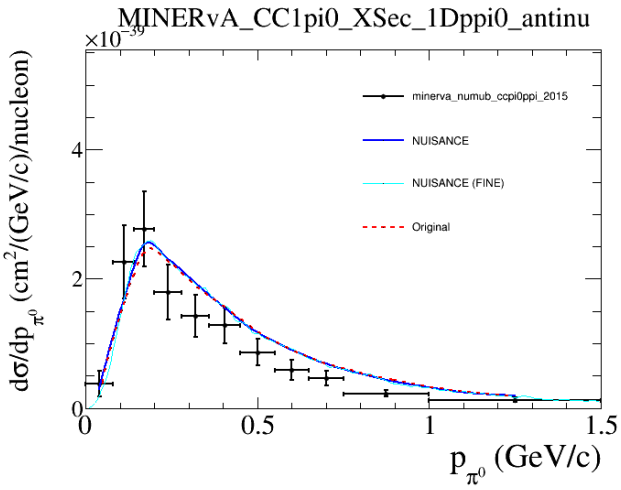
MINERvA_CCNpip_XSec_1DTpi_nu_settings

- **name** : MINERvA_CCNpip_XSec_1DTpi_nu
- **input** : GENIE:@GENIE_DIR/gntp.R-2_6_3.OfficialDefault.Default.MINERvA_fhc_numu.CH.2500000.1.prepared
- **type** : DEFAULT
- **description** :
  - |--> MINERvA_CCNpip_XSec_1DTpi_nu sample.
  - |--> Target: CH
  - |--> Flux: MINERvA Forward Horn Current nue + nuebar
  - |--> Signal: Any event with 1 electron, any nucleons, and no other FS particles
- **xtitle** : T_π (MeV)
- **ytitle** : (1/TΦ) dN_π/dT_π (cm^2/MeV/nucleon)
- **default_types** : FIX,FREE,SHAPE/DIAG,FULL/NORM/MASK
- **allowed_types** : FIX/FULL
- **enu_min** : 1.5
- **enu_max** : 10
- **title** : MINERvA_CCNpip_XSec_1DTpi_nu
- **originalname** : MINERvA_CCNpip_XSec_1DTpi_nu
- χ^2 : 29.5758
- **NDOF** : 7
- χ^2/**NDOF** : 4.22511



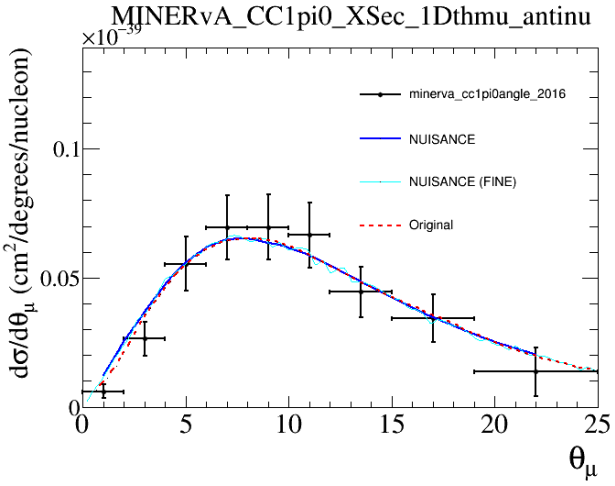
MINERvA_CC1pi0_XSec_1Dth_antinu_2015_settings

- **name** : MINERvA_CC1pi0_XSec_1Dth_antinu_2015
- **input** : GENIE:@GENIE_DIR/gntp.R-2_6_3.OfficialDefault.Default.MINERvA_rhc_numubar.CH.2500000.2.prepa
- **type** : DEFAULT
- **description** :
  - |--> MINERvA_CC1pi0_XSec_1Dth_antinu sample.
  - |--> Target: CH
  - |--> Flux: MINERvA Forward Horn Current numubar
  - |--> Signal: Any event with 1 muon, 1 pion, no other tracks
- **xtitle** : θ_π (degrees)
- **ytitle** : $d\sigma/d\theta_\pi$ (cm^2/nucleon/degree)
- **default_types** : FIX,FREE,SHAPE/DIAG,FULL/NORM/MASK
- **allowed_types** : FIX/FULL
- **enu_min** : 1.5
- **enu_max** : 10
- **title** : MINERvA_CC1pi0_XSec_1Dth_antinu
- **originalname** : MINERvA_CC1pi0_XSec_1Dth_antinu_2015
- χ^2 : 17.2829
- **NDOF** : 11
- χ^2/**NDOF** : 1.57117



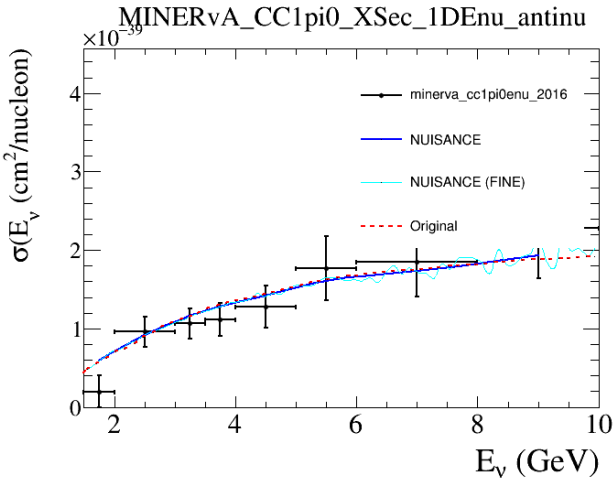
MINERvA_CC1pi0_XSec_1Dppi0_antinu_settings

- **name** : MINERvA_CC1pi0_XSec_1Dppi0_antinu
- **input** : GENIE:@GENIE_DIR/gntp.R-2_6_3.OfficialDefault.Default.MINERvA_rhc_numubar.CH.2500000.2.prepa
- **type** : DEFAULT
- **description** :
  - |--> MINERvA_CC1pi0_XSec_1Dppi0_antinu sample.
  - |--> Target: CH
  - |--> Flux: MINERvA Forward Horn Current numubar
  - |--> Signal: Any event with 1 muon, 1 pion, no other tracks
- **xtitle** : p_{π^0} (GeV/c)
- **ytitle** : $d\sigma/dp_{\pi^0}$ (cm^2/(GeV/c)/nucleon)
- **default_types** : FIX,FREE,SHAPE/DIAG/NORM/MASK
- **allowed_types** : FIX/DIAG
- **enu_min** : 1.5
- **enu_max** : 10
- **title** : MINERvA_CC1pi0_XSec_1Dppi0_antinu
- **originalname** : MINERvA_CC1pi0_XSec_1Dppi0_antinu
- χ^2 : 41.0959
- **NDOF** : 11
- χ^2/**NDOF** : 3.73599



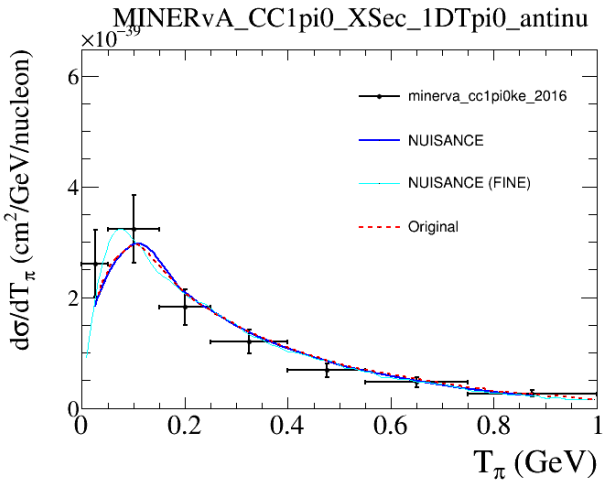
MINERvA_CC1pi0_XSec_1Dthmu_antinu_settings

- **name** : MINERvA_CC1pi0_XSec_1Dthmu_antinu
- **input** : GENIE:@GENIE_DIR/gntp.R-2_6_3.OfficialDefault.Default.MINERvA_rhc_numubar.CH.2500000.2.prepa
- **type** : DEFAULT
- **description** :
  |--> MINERvA_CC1pi0_XSec_1Dthmu_antinu sample.
  |--> Target: CH
  |--> Flux: MINERvA Forward Horn Current numubar
  |--> Signal: Any event with 1 muon, 1 pion, no other tracks
- **xtitle** : θ_μ
- **ytitle** : $d\sigma/d\theta_\mu$ (cm^2/degrees/nucleon)
- **default_types** : FIX,FREE,SHAPE/DIAG/NORM/MASK
- **allowed_types** : FIX/DIAG
- **enu_min** : 1.5
- **enu_max** : 10
- **title** : MINERvA_CC1pi0_XSec_1Dthmu_antinu
- **originalname** : MINERvA_CC1pi0_XSec_1Dthmu_antinu
- χ^2 : 10.5358
- **NDOF** : 9
- χ^2/**NDOF** : 1.17064



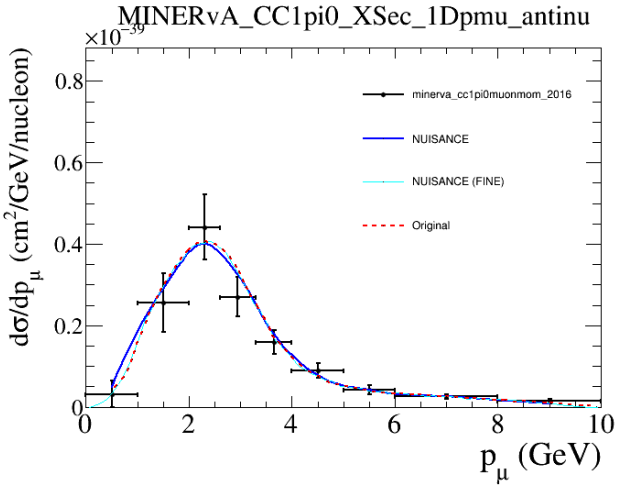
MINERvA_CC1pi0_XSec_1DEnu_antinu_settings

- **name** : MINERvA_CC1pi0_XSec_1DEnu_antinu
- **input** : GENIE:@GENIE_DIR/gntp.R-2_6_3.OfficialDefault.Default.MINERvA_rhc_numubar.CH.2500000.2.prepa
- **type** : DEFAULT
- **description** :
  |--> MINERvA_CC1pi0_XSec_1DEnu_antinu sample.
  |--> Target: CH
  |--> Flux: MINERvA Forward Horn Current numubar
  |--> Signal: Any event with 1 muon, 1 pion, no other tracks
- **xtitle** : E_ν (GeV)
- **ytitle** : $\sigma(E_\nu)$ (cm^2/nucleon)
- **default_types** : FIX,FREE,SHAPE/DIAG/NORM/MASK
- **allowed_types** : FIX/DIAG
- **enu_min** : 1.5
- **enu_max** : 10
- **title** : MINERvA_CC1pi0_XSec_1DEnu_antinu
- **originalname** : MINERvA_CC1pi0_XSec_1DEnu_antinu
- χ^2 : 6.15226
- **NDOF** : 8
- χ^2/**NDOF** : 0.769033



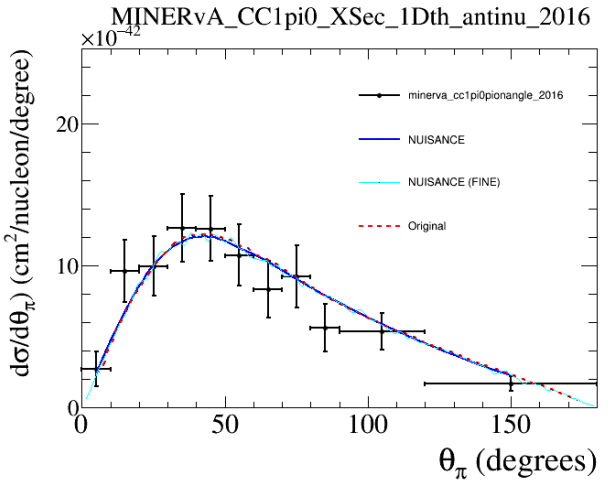
MINERvA_CC1pi0_XSec_1DTpi0_antinu_settings

- **name** : MINERvA_CC1pi0_XSec_1DTpi0_antinu
- **input** : GENIE:@GENIE_DIR/gntp.R-2_6_3.OfficialDefault.Default.MINERvA_rhc_numubar.CH.2500000.2.prepa
- **type** : DEFAULT
- **description** :
  |--> MINERvA_CC1pi0_XSec_1DTpi0_antinu sample.
  |--> Target: CH
  |--> Flux: MINERvA Forward Horn Current numubar
  |--> Signal: Any event with 1 muon, 1 pion, no other tracks
- **xtitle** : T_π (GeV)
- **ytitle** : $d\sigma/dT_\pi$ (cm^2/GeV/nucleon)
- **default_types** : FIX,FREE,SHAPE/DIAG,FULL/NORM/MASK
- **allowed_types** : FIX/FULL
- **enu_min** : 1.5
- **enu_max** : 10
- **title** : MINERvA_CC1pi0_XSec_1DTpi0_antinu
- **originalname** : MINERvA_CC1pi0_XSec_1DTpi0_antinu
- χ^2 : 10.5678
- **NDOF** : 7
- χ^2/**NDOF** : 1.50969



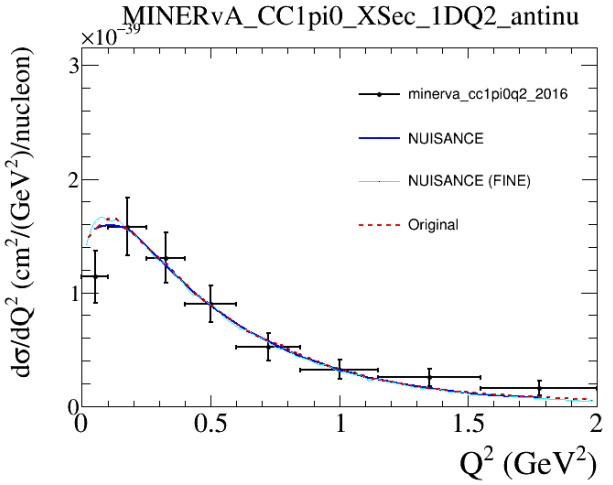
MINERvA_CC1pi0_XSec_1Dpmu_antinu_settings

- **name** : MINERvA_CC1pi0_XSec_1Dpmu_antinu
- **input** : GENIE:@GENIE_DIR/gntp.R-2_6_3.OfficialDefault.Default.MINERvA_rhc_numubar.CH.2500000.2.prepa
- **type** : DEFAULT
- **description** :
  - |--> MINERvA_CC1pi0_XSec_1Dpmu_antinu sample.
  - |--> Target: CH
  - |--> Flux: MINERvA Forward Horn Current numubarr
  - |--> Signal: Any event with 1 muon, 1 pion, no other tracks
- **xtitle** : p_μ (GeV)
- **ytitle** : $d\sigma/dp_\mu$ (cm^2/GeV/nucleon)
- **default_types** : FIX,FREE,SHAPE/DIAG/NORM/MASK
- **allowed_types** : FIX/DIAG
- **enu_min** : 1.5
- **enu_max** : 10
- **title** : MINERvA_CC1pi0_XSec_1Dpmu_antinu
- **originalname** : MINERvA_CC1pi0_XSec_1Dpmu_antinu
- χ^2 : 7.07499
- **NDOF** : 9
- χ^2/**NDOF** : 0.78611



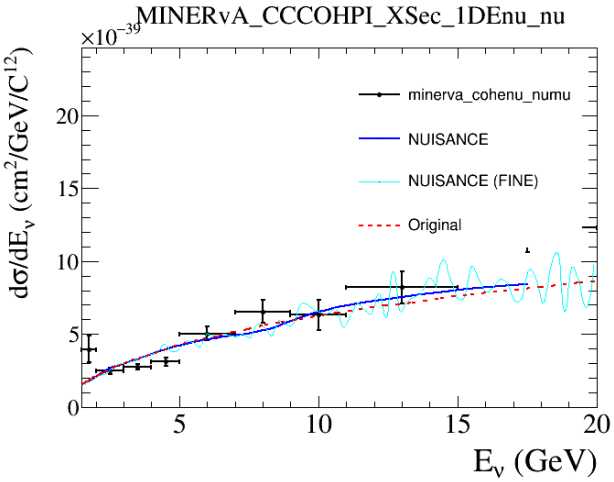
MINERvA_CC1pi0_XSec_1Dth_antinu_2016_settings

- **name** : MINERvA_CC1pi0_XSec_1Dth_antinu_2016
- **input** : GENIE:@GENIE_DIR/gntp.R-2_6_3.OfficialDefault.Default.MINERvA_rhc_numubar.CH.2500000.2.prepa
- **type** : DEFAULT
- **description** :
  - |--> MINERvA_CC1pi0_XSec_1Dth_antinu sample.
  - |--> Target: CH
  - |--> Flux: MINERvA Forward Horn Current numubar
  - |--> Signal: Any event with 1 muon, 1 pion, no other tracks
- **xtitle** : θ_π (degrees)
- **ytitle** : $d\sigma/d\theta_\pi$ (cm^2/nucleon/degree)
- **default_types** : FIX,FREE,SHAPE/DIAG,FULL/NORM/MASK
- **allowed_types** : FIX/FULL
- **enu_min** : 1.5
- **enu_max** : 10
- **title** : MINERvA_CC1pi0_XSec_1Dth_antinu
- **originalname** : MINERvA_CC1pi0_XSec_1Dth_antinu_2016
- χ^2 : 7.75216
- **NDOF** : 11
- χ^2/**NDOF** : 0.704742



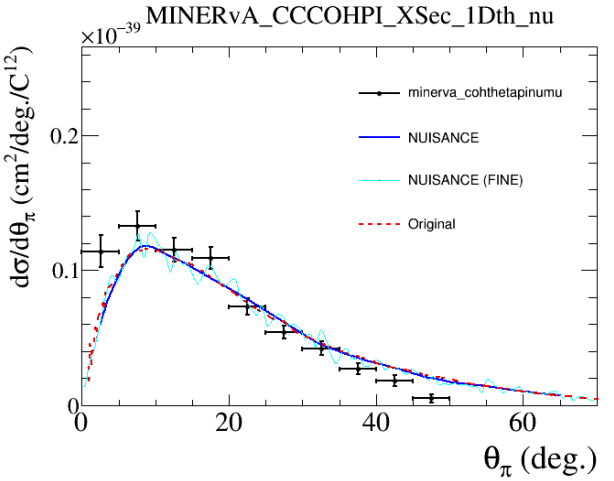
MINERvA_CC1pi0_XSec_1DQ2_antinu_settings

- **name** : MINERvA_CC1pi0_XSec_1DQ2_antinu
- **input** : GENIE:@GENIE_DIR/gntp.R-2_6_3.OfficialDefault.Default.MINERvA_rhc_numubar.CH.2500000.2.prepa
- **type** : DEFAULT
- **description** :
  - |--> MINERvA_CC1pi0_XSec_1DQ2_antinu sample.
  - |--> Target: CH
  - |--> Flux: MINERvA Forward Horn Current numubar
  - |--> Signal: Any event with 1 muon, 1 pion, no other tracks
- **xtitle** : Q^2 (GeV^2)
- **ytitle** : $d\sigma/dQ^2$ (cm^2/(GeV^2)/nucleon)
- **default_types** : FIX,FREE,SHAPE/DIAG/NORM/MASK
- **allowed_types** : FIX/DIAG
- **enu_min** : 1.5
- **enu_max** : 10
- **title** : MINERvA_CC1pi0_XSec_1DQ2_antinu
- **originalname** : MINERvA_CC1pi0_XSec_1DQ2_antinu
- χ^2 : 10.4201
- **NDOF** : 8
- χ^2/**NDOF** : 1.30251



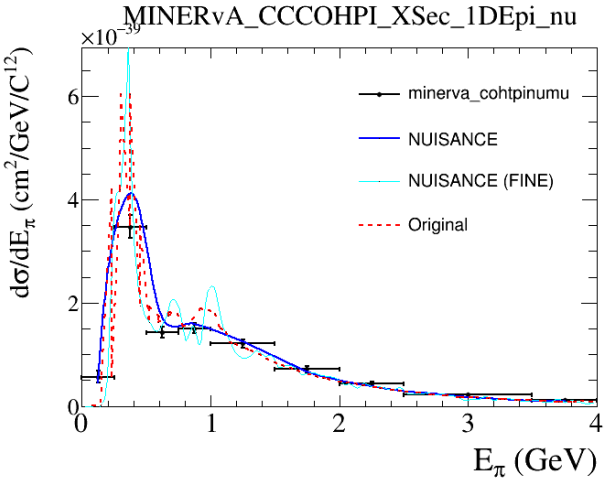
MINERvA_CCCOHPI_XSec_1DEnu_nu_settings

- **name** : MINERvA_CCCOHPI_XSec_1DEnu_nu
- **input** : GENIE:@GENIE_DIR/gntp.R-2_6_3.OfficialDefault.Default.MINERvA_fhc_numu.CH.2500000.1.prepared
- **type** : DEFAULT
- **description** :
  |--> MINERvA_CCCOHPI_XSec_1DEnu_nu sample.
  |--> Target: CH
  |--> Flux: MINERvA Forward Horn Current numu
  |--> Signal: Any event with 1 mu-, 1pi+, and no other FS particles
- **xtitle** : E_ν (GeV)
- **ytitle** : $d\sigma/dE_\nu$ ($cm^2/GeV/C^{12}$)
- **default_types** : FIX,FREE,SHAPE/DIAG,FULL/NORM/MASK
- **allowed_types** : FIX/FULL
- **enu_min** : 1.5
- **enu_max** : 20
- **title** : MINERvA_CCCOHPI_XSec_1DEnu_nu
- **data** : /data/stowell/NIWG/NUISANCEMC/minerva_tuning/sample_validations/minerva-validation-061117/builds/n
- **covar** : /data/stowell/NIWG/NUISANCEMC/minerva_tuning/sample_validations/minerva-validation-061117/builds/
- **originalname** : MINERvA_CCCOHPI_XSec_1DEnu_nu
- χ^2 : 7.74326e-304
- **NDOF** : 9
- χ^2/**NDOF** : 8.60363e-305



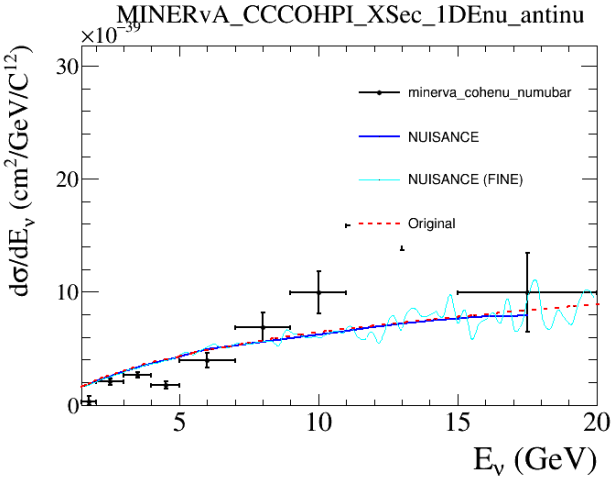
MINERvA_CCCOHPI_XSec_1Dth_nu_settings

- **name** : MINERvA_CCCOHPI_XSec_1Dth_nu
- **input** : GENIE:@GENIE_DIR/gntp.R-2_6_3.OfficialDefault.Default.MINERvA_fhc_numu.CH.2500000.1.prepared
- **type** : DEFAULT
- **description** :
  |--> MINERvA_CCCOHPI_XSec_1Dth_nu sample.
  |--> Target: CH
  |--> Flux: MINERvA Forward Horn Current numu
  |--> Signal: Any event with 1 mu-, 1pi+, and no other FS particles
- **xtitle** : θ_π (deg.)
- **ytitle** : $d\sigma/d\theta_\pi$ ($cm^2/deg./C^{12}$)
- **default_types** : FIX,FREE,SHAPE/DIAG,FULL/NORM/MASK
- **allowed_types** : FIX/FULL
- **enu_min** : 1.5
- **enu_max** : 20
- **title** : MINERvA_CCCOHPI_XSec_1Dth_nu
- **data** : /data/stowell/NIWG/NUISANCEMC/minerva_tuning/sample_validations/minerva-validation-061117/builds/n
- **covar** : /data/stowell/NIWG/NUISANCEMC/minerva_tuning/sample_validations/minerva-validation-061117/builds/
- **originalname** : MINERvA_CCCOHPI_XSec_1Dth_nu
- χ^2 : 0
- **NDOF** : 12
- χ^2/**NDOF** : 0



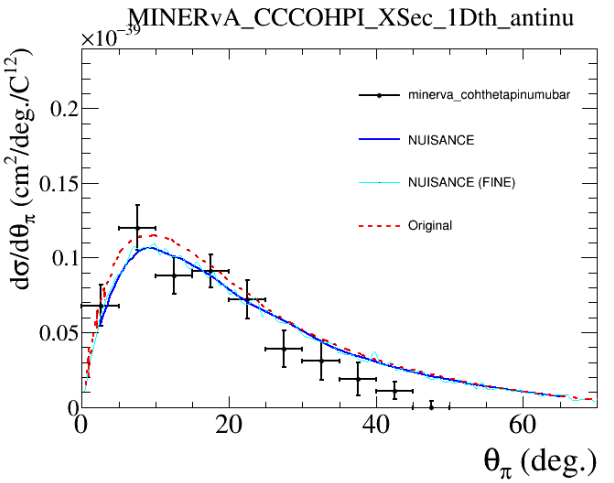
MINERvA_CCCOHPI_XSec_1DEpi_nu_settings

- **name** : MINERvA_CCCOHPI_XSec_1DEpi_nu
- **input** : GENIE:@GENIE_DIR/gntp.R-2_6_3.OfficialDefault.Default.MINERvA_fhc_numu.CH.2500000.1.prepared
- **type** : DEFAULT
- **description** :
  |--> MINERvA_CCCOHPI_XSec_1DEpi_nu sample.
  |--> Target: CH
  |--> Flux: MINERvA Forward Horn Current numu
  |--> Signal: Any event with 1 mu-, 1pi+, and no other FS particles
- **xtitle** : E_π (GeV)
- **ytitle** : $d\sigma/dE_\pi$ ($cm^2/GeV/C^{12}$)
- **default_types** : FIX,FREE,SHAPE/DIAG,FULL/NORM/MASK
- **allowed_types** : FIX/FULL
- **enu_min** : 1.5
- **enu_max** : 20
- **title** : MINERvA_CCCOHPI_XSec_1DEpi_nu
- **data** : /data/stowell/NIWG/NUISANCEMC/minerva_tuning/sample_validations/minerva-validation-061117/builds/n
- **covar** : /data/stowell/NIWG/NUISANCEMC/minerva_tuning/sample_validations/minerva-validation-061117/builds/
- **originalname** : MINERvA_CCCOHPI_XSec_1DEpi_nu
- χ^2 : 0
- **NDOF** : 9
- χ^2/**NDOF** : 0



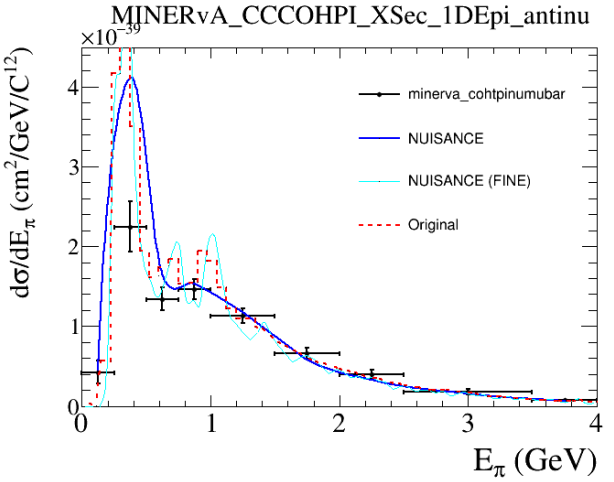
MINERvA_CCCOHPI_XSec_1DEnu_antinu_settings

- **name** : MINERvA_CCCOHPI_XSec_1DEnu_antinu
- **input** : GENIE:@GENIE_DIR/gntp.R-2_6_3.OfficialDefault.Default.MINERvA_rhc_numubar.CH.2500000.2.prepa
- **type** : DEFAULT
- **description** :
  |--> MINERvA_CCCOHPI_XSec_1DEnu_antinu sample.
  |--> Target: CH
  |--> Flux: MINERvA Reverse Horn Current numu
  |--> Signal: Any event with 1 mu+, 1pi-, and no other FS particles
- **xtitle** : E_ν (GeV)
- **ytitle** : $d\sigma/dE_\nu$ ($cm^2/GeV/C^{12}$)
- **default_types** : FIX,FREE,SHAPE/DIAG,FULL/NORM/MASK
- **allowed_types** : FIX/FULL
- **enu_min** : 1.5
- **enu_max** : 20
- **title** : MINERvA_CCCOHPI_XSec_1DEnu_antinu
- **data** : /data/stowell/NIWG/NUISANCEMC/minerva_tuning/sample_validations/minerva-validation-061117/builds/n
- **covar** : /data/stowell/NIWG/NUISANCEMC/minerva_tuning/sample_validations/minerva-validation-061117/builds/
- **originalname** : MINERvA_CCCOHPI_XSec_1DEnu_antinu
- χ^2 : 0
- **NDOF** : 9
- χ^2/**NDOF** : 0



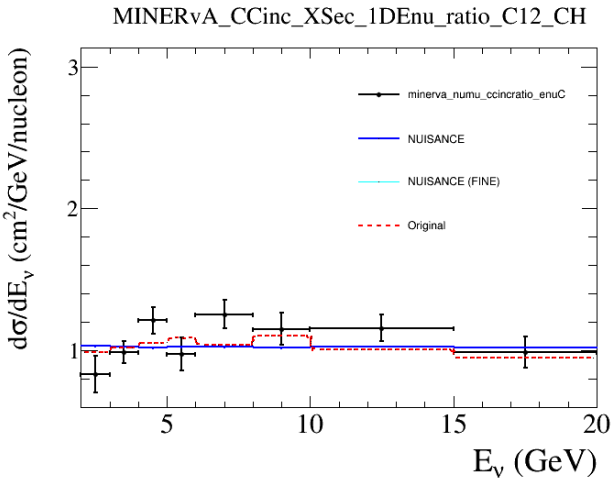
MINERvA_CCCOHPI_XSec_1Dth_antinu_settings

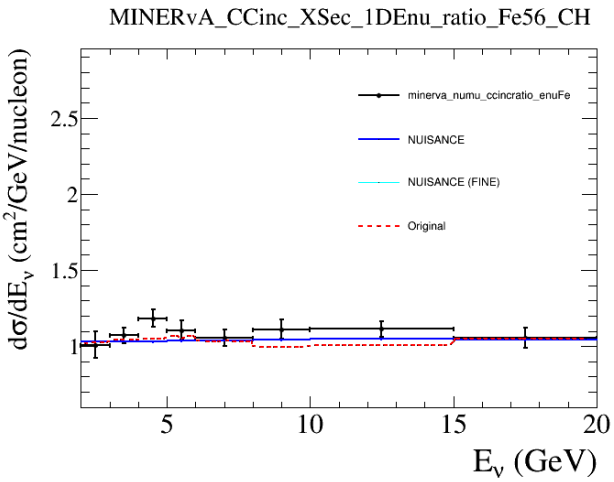
- **name** : MINERvA_CCCOHPI_XSec_1Dth_antinu
- **input** : GENIE:@GENIE_DIR/gntp.R-2_6_3.OfficialDefault.Default.MINERvA_rhc_numubar.CH.2500000.2.prepa
- **type** : DEFAULT
- **description** :
  |--> MINERvA_CCCOHPI_XSec_1Dth_antinu sample.
  |--> Target: CH
  |--> Flux: MINERvA Reverse Horn Current numu
  |--> Signal: Any event with 1 mu+, 1pi-, and no other FS particles
- **xtitle** : θ_π (deg.)
- **ytitle** : $d\sigma/d\theta_\pi$ ($cm^2/deg./C^{12}$)
- **default_types** : FIX,FREE,SHAPE/DIAG,FULL/NORM/MASK
- **allowed_types** : FIX/FULL
- **enu_min** : 1.5
- **enu_max** : 20
- **title** : MINERvA_CCCOHPI_XSec_1Dth_antinu
- **data** : /data/stowell/NIWG/NUISANCEMC/minerva_tuning/sample_validations/minerva-validation-061117/builds/n
- **covar** : /data/stowell/NIWG/NUISANCEMC/minerva_tuning/sample_validations/minerva-validation-061117/builds/
- **originalname** : MINERvA_CCCOHPI_XSec_1Dth_antinu
- χ^2 : 0
- **NDOF** : 12
- χ^2/**NDOF** : 0

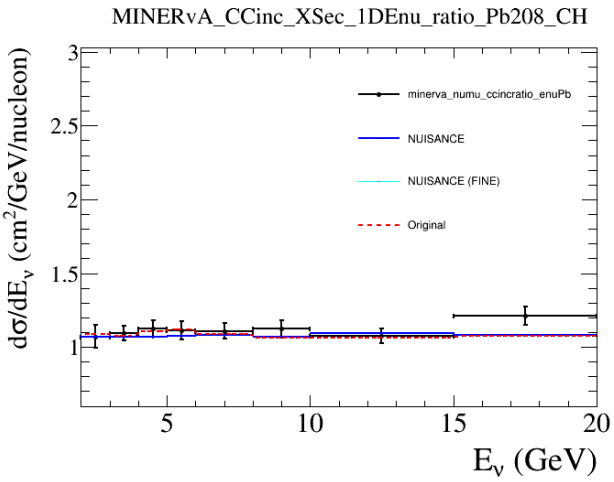


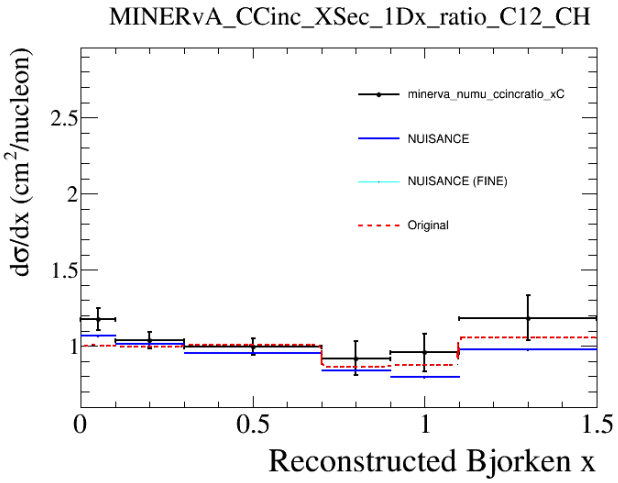
MINERvA_CCCOHPI_XSec_1DEpi_antinu_settings

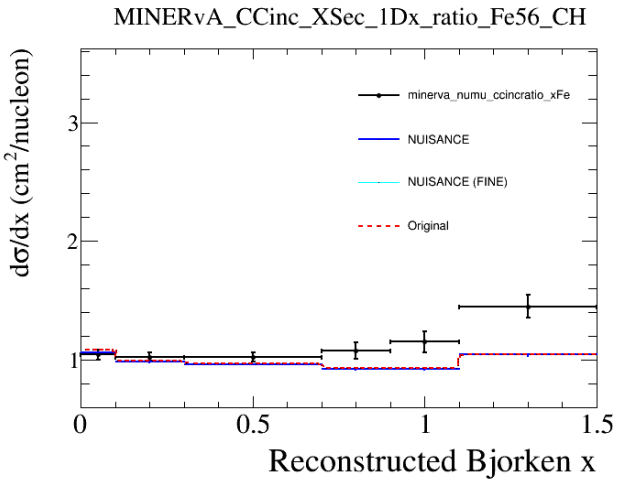
- **name** : MINERvA_CCCOHPI_XSec_1DEpi_antinu
- **input** : GENIE:@GENIE_DIR/gntp.R-2_6_3.OfficialDefault.Default.MINERvA_rhc_numubar.CH.2500000.2.prepa
- **type** : DEFAULT
- **description** :
  |--> MINERvA_CCCOHPI_XSec_1DEpi_antinu sample.
  |--> Target: CH
  |--> Flux: MINERvA Reverse Horn Current numu
  |--> Signal: Any event with 1 mu+, 1pi-, and no other FS particles
- **xtitle** : E_π (GeV)
- **ytitle** : $d\sigma/dE_\pi$ ($cm^2/GeV/C^{12}$)
- **default_types** : FIX,FREE,SHAPE/DIAG,FULL/NORM/MASK
- **allowed_types** : FIX/FULL
- **enu_min** : 1.5
- **enu_max** : 20
- **title** : MINERvA_CCCOHPI_XSec_1DEpi_antinu
- **data** : /data/stowell/NIWG/NUISANCEMC/minerva_tuning/sample_validations/minerva-validation-061117/builds/n
- **covar** : /data/stowell/NIWG/NUISANCEMC/minerva_tuning/sample_validations/minerva-validation-061117/builds/
- **originalname** : MINERvA_CCCOHPI_XSec_1DEpi_antinu
- χ^2 : 0
- **NDOF** : 9
- χ^2/**NDOF** : 0

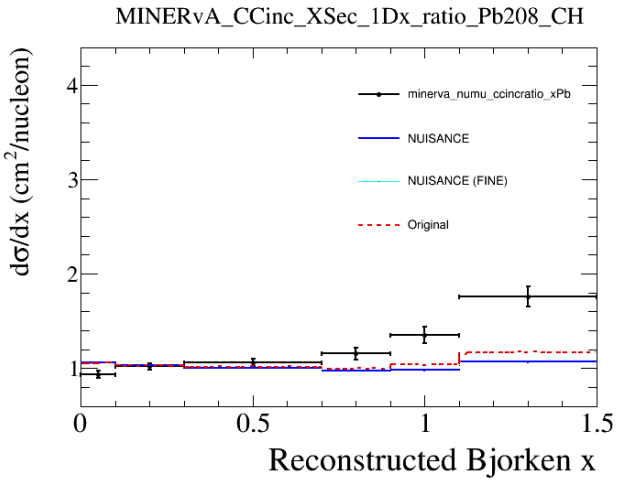

MINERvA_CCinc_XSec_1DEnu_ratio_C12_CH
minerva_numu_ccincratio_enuC
NUISANCE
NUISANCE (FINE)
Original
dσ/dE$_\nu$ (cm^2/GeV/nucleon)
E$_\nu$ (GeV)


MINERvA_CCinc_XSec_1DEnu_ratio_Fe56_CH
minerva_numu_ccincratio_enuFe
NUISANCE
NUISANCE (FINE)
Original
dσ/dE$_\nu$ (cm^2/GeV/nucleon)
E$_\nu$ (GeV)


MINERvA_CCinc_XSec_1DEnu_ratio_Pb208_CH
minerva_numu_ccincratio_enuPb
NUISANCE
NUISANCE (FINE)
Original
dσ/dE$_\nu$ (cm^2/GeV/nucleon)
E$_\nu$ (GeV)


MINERvA_CCinc_XSec_1Dx_ratio_C12_CH
minerva_numu_ccincratio_xC
NUISANCE
NUISANCE (FINE)
Original
dσ/dx (cm²/nucleon)
Reconstructed Bjorken x


MINERvA_CCinc_XSec_1Dx_ratio_Fe56_CH
minerva_numu_ccincratio_xFe
NUISANCE
NUISANCE (FINE)
Original
dσ/dx (cm²/nucleon)
Reconstructed Bjorken x


MINERvA_CCinc_XSec_1Dx_ratio_Pb208_CH
minerva_numu_ccincratio_xPb
NUISANCE
NUISANCE (FINE)
Original
dσ/dx (cm²/nucleon)
Reconstructed Bjorken x