

```
• name : MINERvA_CCinc_XSec_2DEavq3_nu
• input : GENIE:@GENIE_DIR/gntp.R-2_8_6.OfficialDefault.Default.MINERvA_fhc_numu.CH.2500000.1.prepared
• type : DEFAULT
• description :
|-> MINERvA_CCinc_XSec_2DEavq3_nu sample.
|-> Taget : CH
|-> Flux: MINERvA Medium Energy FHC numu
|-> Signal: CC-inclusive with theta < 20deg

**xtitle : q3_(GeV)

**ytitle : Eymal: GGEV

**ytitle : Eymal: GGEV

**ytitle : Eymal: GGEV

**ytitle : Eymal: GGEV

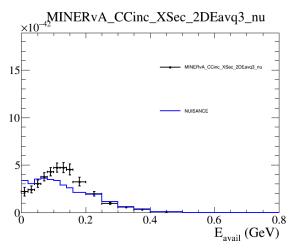
**default_types : FIX_FREE,SHAPE/FULL.DIAG/MASK

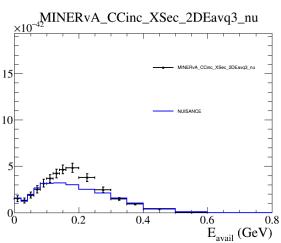
**allowed_types : FIX_FREE,SHAPE/FULL.DIAG/
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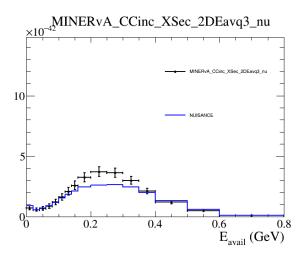
#### MINERvA\_CCinc\_XSec\_2DEavq3\_nu\_settings

# MINERvA\_CCinc\_XSec\_2DEavq3\_nu\_settings

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```
• name : MINERVA_CCinc_XSec_2DEavq3_nu
• input : GENIE:@GENIE_DIR/gntp.R-2_8_6.OfficialDefault.Default.MINERVA_fhc_numu.CH.2500000.1.prepared
• type : DEFAULT
• description :
|-> MINERVA_CCinc_XSec_2DEavq3_nu sample.
|-> Target: CH
|-> Flux: MINERVA Medium Energy FHC numu
|-> Signal: CC-inclusive with theta < 20deg
• wittle : q_3 (GeV)
• yittle : E_grant (cm²/GeV²)
• yittle : E_grant (cm²/GeV²)
• yittle : FX_FREE,SHAPE/FULL_DIAG/MASK
• allowed_types : FIX_FREE,SHAPE/FULL_DIAG/MASK
• allowed_types : Galaxies of the control of the
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#### MINERvA\_CCinc\_XSec\_2DEavq3\_nu\_settings

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• name : MINERVA_CCinc_XSec_2DEavq3_nu
• input : GENIE:@GENIE_DIR/gntp.R-2_8_6.OfficialDefault.Default.MINERVA_fhc_numu.CH.2500000.1.prepared
• type : DEFAULT
• description :
|-> MINERVA_CCinc_XSec_2DEavq3_nu sample.
|-> Taget : CH
|-> Flux: MINERVA Medium Energy FHC numu
|-> Signal: CC-inclusive with theta < 20deg
• wittle : q, (GeV)
• yittle : E<sub>grad</sub> (GeV)
• yittle : E<sub>grad</sub> (GeV)
• yittle : E<sub>grad</sub> (GeV)
• yittle : FIX_FREE.SHAPE/FULL.DIAG/MASK
• allowed_types : FIX_FREE.SHAPE/FULL.DIAG/MASK
• allowed_types : FIX_FRULL
• enu_min : 2
• enu_min : 2
• enu_max : 6
• title : MINERVA_CCinc_XSec_2DEavq3_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/n
• originalname : MINERVA_CCinc_XSec_2DEavq3_nu
• \( \frac{\gamma}{\gamma} : 252.07
• NDOF: 67
• \( \frac{\gamma}{\gamma} \frac{\gamma}{\gamma} = \frac{\gamma}{\gamma} \frac{\gamma}{\gamma} \frac{\gamma}{\gamma} = \frac{\gamma}{\gamma} \frac{\gamma}{\gamma} \frac{\gamma}{\gamma} = \frac{\gamma}{\gamma} \frac{\gamma}{\gamma} \frac{\gamma}{\gamma} = \frac{\gamma}{\gamma} \fr
```

# MINERvA\_CCinc\_XSec\_2DEavq3\_nu\_settings

```
• name: MINERVA_CCinc_XSec_2DEavq3_nu

• input: GENIE:@GENIE_DIR/gntp.R-2_8_6.OfficialDefault.Default.MINERVA_fhc_numu.CH.2500000.1.prepared

• type: DEFAULT
• description:

1-> MINERVA_CCinc_XSec_2DEavq3_nu sample.

1-> Target: CH

1-> Flux: MINERVA Medium Energy FHC numu

1-> Signal: CC-inclusive with theta < 20deg

• xtitle: q_1 (GeV)

• ztitle: d*cridq_dE_mil_cm^3/GeV^2)

• ztitle: d*cridq_dE_mil_cm^3/GeV^2)

• default_types: FIX.FREE,SHAPE/FULL.DIAG/MASK

• allowed_types: FIX.FULL
• enu_min: 2

• enu_min: 2

• enu_max: 6

• title: MINERVA_CCinc_XSec_2DEavq3_nu

• data: /data/stowell/NIWG/NUISANCEMC/minerva_tuning/sample_validations/minerva-validation-061117/builds/n

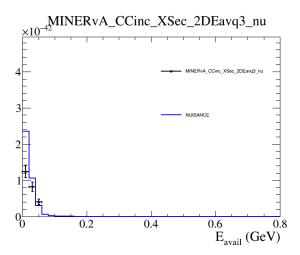
• oray: /data/stowell/NIWG/NUISANCEMC/minerva_tuning/sample_validations/minerva-validation-061117/builds/n

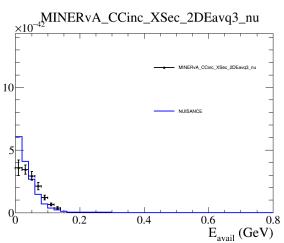
• originalname: MINERVA_CCinc_XSec_2DEavq3_nu

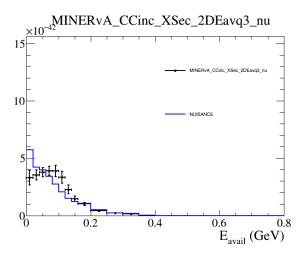
• y*: 2152.07

• NDOF: 67

• y*/NDOF: 32.1204
```



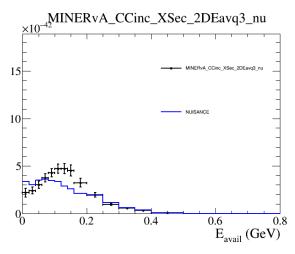


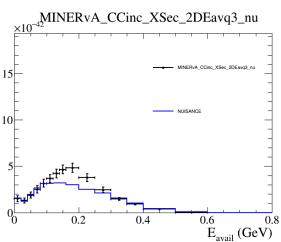


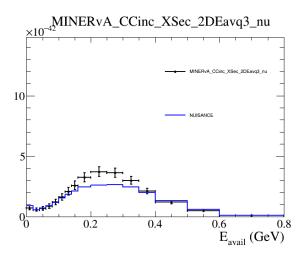
#### MINERvA\_CCinc\_XSec\_2DEavq3\_nu\_settings

```
name: MINERVA_CCinc_XSec_2DEavq3_nu
input: GENIE::@GENIE_DIR/gntp.R-2_8_6.OfficialDefault.Default.MINERVA_fhc_numu.CH.2500000.1.prepared
type: DEFAULT
description:
|-> MINERVA_CCinc_XSec_2DEavq3_nu sample.
|-> Target: CH
|-> Flux: MINERVA Medium Energy FHC numu
|-> Signal: CC-inclusive with theta < 20deg
xtitle: q_3 (GeV)
ytitle: E_yout (GeV)
ytitle: E_yout (GeV)
default_types: FIX.FREE.SHAPE/FULL.DIAG/MASK
allowed_types: FIX.FREE.SHAPE/FULL.DIAG/MASK
allowed_types: FIX.FREE.SHAPE/FULL.DIAG/MASK
title: q_1 (Galva)
default_types: FIX.FREE.SHAPE/FULL.DIAG/MASK
default_types: FIX.FREE.SHAPE/FULL.DIAG/MASK
default_types: FIX.FREE.SHAPE/FULL.DIAG/MASK
default_types: FIX.FREE.SHAPE/FULL.DIAG/MASK
default_types: Galva (Gev)
default_types: Galva (
```

# MINERvA\_CCinc\_XSec\_2DEavq3\_nu\_settings







```
• name : MINERVA_CCinc_XSec_2DEavq3_nu
• input : GENIE:@GENIE_DIR/gntp.R-2_8_6.OfficialDefault.Default.MINERVA_fhc_numu.CH.2500000.1.prepared
• type : DEFAULT
• description :
|-> MINERVA_CCinc_XSec_2DEavq3_nu sample.
|-> Target: CH
|-> Flux: MINERVA Medium Energy FHC numu
|-> Signal: CC-inclusive with theta < 20deg
• wittle : q_3 (GeV)
• yittle : E_grant (cm²/GeV²)
• yittle : E_grant (cm²/GeV²)
• yittle : FX_FREE,SHAPE/FULL_DIAG/MASK
• allowed_types : FIX_FREE,SHAPE/FULL_DIAG/MASK
• allowed_types : Galaxies of the control of the
```

#### MINERvA\_CCinc\_XSec\_2DEavq3\_nu\_settings

```
• name : MINERVA_CCine_XSec_2DEavq3_nu

• input : GENIE:@GENIE_DIR/gntp.R-2_8_6.OfficialDefault.Default.MINERVA_fhc_numu.CH.2500000.1.prepared

• type : DEFAULT

• description :

-> MINERVA_CCine_XSec_2DEavq3_nu sample.

-> Target: CH

-> Flux: MINERVA Medium Energy FHC numu

-> Signal: CC-inclusive with theta < 20deg

* stifte : q, (GeV)

• ytitle : E<sub>grain</sub> (GeV)

• ytitle : E<sub>grain</sub> (GeV)

• ztitle : d'ordq, dE<sub>grain</sub> (cm²/GeV²)

• default_types : FIX_FREE_SHAPE/FULL_DIAG/MASK

• allowed_types : FIX_FREE_SHAPE/FULL_DIAG/MASK

• allowed_types : FIX_FVELL

• enu_min : 2

• enu_max : 6

• title : MINERVA_CCinc_XSec_2DEavq3_nu

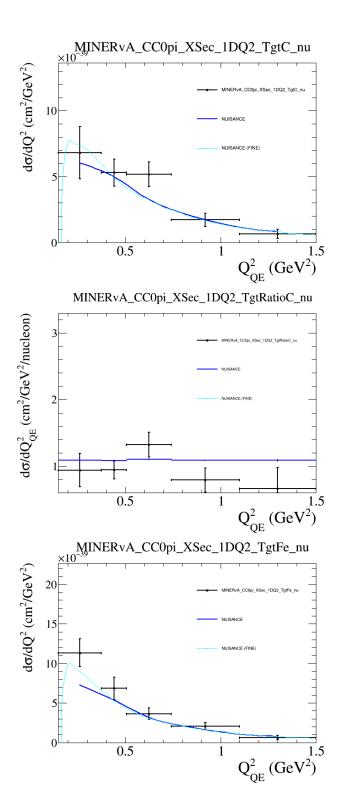
• data : /data/stowell/NIWG/NUISANCEMC/minerva_tuning/sample_validations/minerva-validation-061117/builds/n

• covar : /data/stowell/NIWG/NUISANCEMC/minerva_tuning/sample_validations/minerva-validation-061117/builds/n

• originalname : MINERVA_CCinc_XSec_2DEavq3_nu

**\forall \frac{\frac{1}{2}}{2} \frac{1}{2} \frac{1}
```

# MINERvA\_CCinc\_XSec\_2DEavq3\_nu\_settings



## MINERvA\_CC0pi\_XSec\_1DQ2\_TgtC\_nu\_settings

- name : MINERvA\_CC0pi\_XSec\_1DQ2\_TgtC\_nu
   input : GENIE:@GENIE\_DIR/gntp.R-2\_8\_6.0fficialDefault.Default.MINERvA\_fhc\_numu.C.2500000.5.prepared.r
- type : DEFAULT description :
- |--> MINERvA\_CC0pi\_XSec\_1DQ2\_Tgt\_nu sample. |--> Target: Either C, CH, Fe, Pb

- |--> flux MiNERVA Forward Horn numu |--> flux MiNERVA Forward Horn numu |--> flux MiNERVA Forward Horn numu |--> flux GeV<sup>2</sup>| vitile : Q<sup>2</sup><sub>GE</sub> (GeV<sup>2</sup>) vitile : do/dQ<sup>2</sup> (cm<sup>2</sup>/GeV<sup>2</sup>) default\_types : FIX\_FREE\_SHAPE/DIAG/NORM

- allowed\_types : FIX/DIAG

- enu\_mm: 0
  enu\_max: 100
  etitle: MINERVA\_CC0pi\_XSec\_1DQ2\_Tgt\_nu
  etitle: MINERVA\_CC0pi\_XSec\_1DQ2\_Tgt\_nu
  etitle: MINERVA\_CC0pi\_XSec\_1DQ2\_Tgt\_nu
  etitle: Adata: Adata/stowell/NIWG/NUISANCEMC/minerva\_tuning/sample\_validations/minerva-validation-061117/builds/n
  ecovar: Adata/stowell/NIWG/NUISANCEMC/minerva-validation-061117/builds/n
  ecovar: Adata/stowell/NIWG/NUISANCEMC/minerva-validation-061117/builds/n
  ecovar: Adata/stowell/NIWG/NUISANCEMC/minerva-validation-061117/builds/n
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  ecovariant/niwerva-validation-061117/builds/n
  ecovariant/niwerva-validation-061117/builds/n
  ecovariant/niwecovariant/niwerva-validation-061117/builds/n
  ecovariant/niwerva-v
- $\bullet \ original name : MINERvA\_CC0pi\_XSec\_1DQ2\_TgtC\_nu \\$
- NDOF : 5
- χ<sup>2</sup>/NDOF : 1.16902

#### MINERvA\_CC0pi\_XSec\_1DQ2\_TgtRatioC\_nu\_settings

- name : MINERvA\_CC0pi\_XSec\_1DQ2\_TgtRatioC\_nu
   input : GENIE:@GENIE\_DIR/gntp.R-2\_8\_6.0fficialDefault.Default.MINERvA\_fhc\_numu.C.2500000.5.prepared.r
- type : DEFAULT
- description :
- |--> MINERvA\_CC0pi\_XSec\_1DQ2\_TgtRatio\_nu sample |--> Target: Target;CH (2 INPUTS)
- I--> Flux: MINERvA Forward Horn Current Num
- | I-> Signal: Any event with I muon, 1 proton p>450, no pions
  | xtitle: Q<sub>Qc</sub> (GeV<sup>2</sup>)
  | ytitle: do/dQ<sub>Qc</sub> (cm<sup>2</sup>/GeV<sup>2</sup>/nucleon)
  | default\_types: FIX/DIAG,FULL/MASK

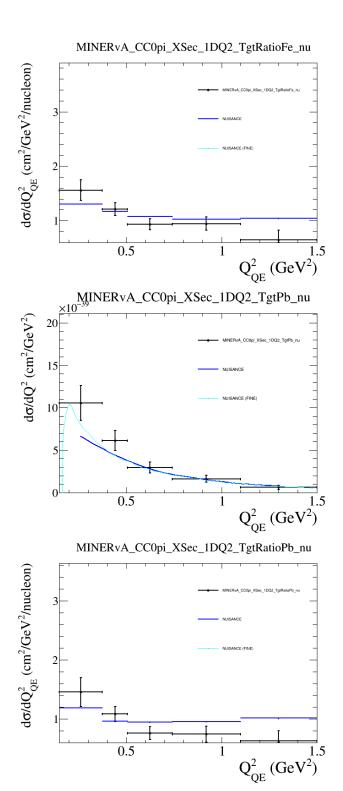
- allowed\_types : FIX/FULL enu\_min : 0

- enu\_max : 100 title : MINERvA\_CC0pi\_XSec\_1DQ2\_TgtRatio\_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\_CC0pi\_XSec\_1DQ2\_TgtRatioC\_nu
- χ<sup>2</sup>: 113.735
- NDOF : 5
- χ<sup>2</sup>/NDOF : 22.7469

## MINERvA\_CC0pi\_XSec\_1DQ2\_TgtFe\_nu\_settings

- name : MINERvA\_CC0pi\_XSec\_1DQ2\_TgtFe\_nu
   input : GENIE:@GENIE\_DIR/gntp.R-2\_8\_6.OfficialDefault.Default.MINERvA\_fhc\_numu.Fe.2500000.6.prepared:
- type : DEFAULT
- · description :
- |--> MINERvA\_CC0pi\_XSec\_1DQ2\_Tgt\_nu sample |--> Target: Either C, CH, Fe, Pb
- |--> Flux: MINERvA Forward Horn numu
- 1--> Signal: Any event with 1 muon, 1 proton p>450, no pions

- $\begin{array}{ll} \text{Signal. All Vector with Thirdsit, I proton parts }\\ \text{vittle: } Q_{\text{DE}}^{-} \left(\text{GeV}^2\right)\\ \text{vittle: } \text{d}\text{d}\text{/d}Q^2\left(\text{cm}^2/\text{GeV}^2\right)\\ \text{d}\text{efault\_types: } \text{FIX,FREE,SHAPE/DIAG/NORM} \end{array}$
- allowed\_types : FIX/DIAG
- enu\_min : 0
- enu\_max : 100 title : MINERvA\_CC0pi\_XSec\_1DQ2\_Tgt\_nu
- $\bullet \ data: \ / data/stowell/NIWG/NUISANCEMC/minerva\_tuning/sample\_validations/minerva-validation-061117/builds/nulled/lines/minerva-validation-061117/builds/nulled/lines/minerva-validations/minerva-validation-061117/builds/nulled/lines/minerva-validat$ covar : /data/stowell/NIWG/NUISANCEMC/minerva\_tuning/sample\_validations/minerva-validation-061117/builds/
- $\bullet \ original name : MINERvA\_CC0pi\_XSec\_1DQ2\_TgtFe\_nu \\$
- NDOF : 5 •  $\chi^2/NDOF : 2.15285$



## MINERvA\_CC0pi\_XSec\_1DQ2\_TgtRatioFe\_nu\_settings

- name : MINERvA\_CC0pi\_XSec\_1DQ2\_TgtRatioFe\_nu
   input : GENIE:@GENIE\_DIR/gntp.R-2\_8\_6.0fficialDefault.Default.MINERvA\_fhc\_numu.Fe.2500000.6.prepared.
- type : DEFAULT description :
- |--> MINERvA\_CC0pi\_XSec\_1DQ2\_TgtRatio\_nu sample. |--> Target: Target;CH (2 INPUTS)

- |--> Flux: MINERVA Forward Horn Current Numu |--> Flux: MINERVA Forward Horn Current Numu |--> Signal: Any event with 1 muon, 1 proton p>450, no pions \* xtitle: Q<sub>GE</sub> (GeV<sup>2</sup>) ytitle: do/dQ<sub>GE</sub> (cm<sup>2</sup>/GeV<sup>2</sup>/nucleon) default\_types: FIX/DIAG,FULL/MASK \* allegated there, IEE/WELL

- allowed\_types : FIX/FULL
- enu\_min : 0

- enu\_mm: 0
  enu\_max: 100
  etitle: MINERvA\_CC0pi\_XSec\_1DQ2\_TgtRatio\_nu
  etata: /data/stowell/NIWG/NUISANCEMC/minerva\_tuning/sample\_validations/minerva-validation-061117/builds/n
  etata: /data/stowell/NIWG/NUISANCEMC/minerva\_tuning/sample\_validations/minerva-validation-061117/builds/n
  etata: //data/stowell/NIWG/NUISANCEMC/minerva\_tuning/sample\_validations/minerva-validation-061117/builds/n
  etata: //data/stowell/NIWG/NUISANCEMC/minerva-tuning/sample\_validations/minerva-validation-061117/builds/n
  etata: //data/stowell/NIWG/NUISANCEMC/minerva-tuning/sample\_validations/minerva-validation-061117/builds/n
  etata: //data/stowell/NIWG/NUISANCEMC/minerva-validations/minerva-validation-061117/builds/n
  etata: //data/stowell/NIWG/NUISANCEMC/minerva-validation-061117/builds/n
  etata/stowell/NIWG/NUISANCEMC/minerva-validation-061117/builds/n
  etata/stowell/NIWG/NUISANCEMC/minerva-validation-061117/build
- $\bullet \ original name : MINERvA\_CC0pi\_XSec\_1DQ2\_TgtRatioFe\_nu \\$
- NDOF : 5
- χ<sup>2</sup>/NDOF : 2.09631

#### MINERvA\_CC0pi\_XSec\_1DQ2\_TgtPb\_nu\_settings

- name : MINERvA\_CC0pi\_XSec\_1DQ2\_TgtPb\_nu
   input : GENIE:@GENIE\_DIR/gntp.R-2\_8\_6.OfficialDefault.Default.MINERvA\_fhc\_numu.Pb.2500000.7.prepared.
- type : DEFAULT
- description :
- |--> MINERvA\_CC0pi\_XSec\_1DQ2\_Tgt\_nu sample |--> Target: Either C, CH, Fe, Pb
- |--> Flux: MINERvA Forward Horn numu
- l--> Signal: Any event with 1 muon, 1 proton p>450, no pions xtitle :  $Q_{\text{GE}}^2$  (GeV<sup>2</sup>) ytitle : dd/dQ<sup>2</sup> (cm<sup>2</sup>/GeV<sup>2</sup>)

- default\_types : FIX,FREE,SHAPE/DIAG/NORM
- allowed\_types : FIX/DIAG enu\_min : 0

- enu\_max : 100 title : MINERvA\_CC0pi\_XSec\_1DQ2\_Tgt\_nu
- $\bullet \ data: \\ / data/stowell/NIWG/NUISANCEMC/minerva\_tuning/sample\_validations/minerva-validation-061117/builds/nulled (b) \\ / data/stowell/NIWG/NUISANCEMC/minerva\_tuning/sample\_validations/minerva-validation-061117/builds/nulled (b) \\ / data/stowell/NIWG/NUISANCEMC/minerva\_tuning/sample\_validations/minerva-validation-061117/builds/nulled (c) \\ / data/stowell/NIWG/NUISANCEMC/minerva\_tuning/sample\_validations/minerva-validation-061117/builds/nulled (c) \\ / data/stowell/NIWG/NUISANCEMC/minerva\_tuning/sample\_validations/minerva-validation-061117/builds/nulled (c) \\ / data/stowell/NIWG/NUISANCEMC/minerva\_tuning/sample\_validations/minerva-validation-061117/builds/nulled (c) \\ / data/stowell/NIWG/NUISANCEMC/minerva\_tuning/sample\_validation-061117/builds/nulled (c) \\ / data/stowell/NIWG/NUISANCEMC/minerva-validation-061117/builds/nulled (c) \\ / data/stowell/NIWG/NUISANCEMC/minerva-vali$
- covar : /data/stowell/NIWG/NUISANCEMC/minerva\_tuning/sample\_validations/minerva-validation-061117/builds/
- $\bullet \ original name : MINERvA\_CC0pi\_XSec\_1DQ2\_TgtPb\_nu \\$
- χ<sup>2</sup>: 5.43915
- NDOF : 5
- χ<sup>2</sup>/NDOF : 1.08783

## MINERvA\_CC0pi\_XSec\_1DQ2\_TgtRatioPb\_nu\_settings

- name : MINERvA\_CC0pi\_XSec\_1DQ2\_TgtRatioPb\_nu
   input : GENIE:@GENIE\_DIR/gntp.R-2\_8\_6.OfficialDefault.Default.MINERvA\_fhc\_numu.Pb.2500000.7.prepared.
- type : DEFAULT
- · description :
- |--> MINERvA\_CC0pi\_XSec\_1DQ2\_TgtRatio\_nu sample |--> Target: Target;CH (2 INPUTS)
- I--> Flux: MINERvA Forward Horn Current Num
- 1--> Signal: Any event with 1 muon, 1 proton p>450, no pions
- \* xtitle : Q<sup>2</sup><sub>QE</sub> (GeV<sup>2</sup>)
   \* ytitle : do/dQ<sup>2</sup><sub>QE</sub> (cm<sup>2</sup>/GeV<sup>2</sup>/nucleon)
   \* default\_types : FIX/DIAG,FULL/MASK
- allowed\_types : FIX/FULL • enu\_min : 0

- enu\_max : 100
   title : MINERvA\_CC0pi\_XSec\_1DQ2\_TgtRatio\_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/
- $\bullet \ original name : MINERvA\_CC0pi\_XSec\_1DQ2\_TgtRatioPb\_nu \\$
- NDOF : 5 • χ<sup>2</sup>/NDOF : 2.16983