# infos: ***dove trovate i file .root e i plot mostrati:***

***Spin0+/ZZ***

- Plot segnale GoodPair/ZZ/WrongPair

  ~erossi/public/analisiSP/Paris/Figures-usedFits/Z1Z2_cut

- Root segnale GoodPair/ZZ/WrongPair

  ~erossi/public/analisiSP/Paris/RootFitFiles_paris/Z1Z2_cut

***Spin 0- co***

- Plot segnale GoodPair/WrongPair

  ~erossi/public/analisiSP/Paris/Figures-usedFits/Spin0m/

  Root segnale GoodPair/WrongPair

  ~erossi/public/analisiSP/Paris/RootFitFiles_paris/Spin0m/

***Spin 2+***

- Plot segnale GoodPair/WrongPair

  ~erossi/public/analisiSP/Paris/Figures-usedFits/Spin2p/

  Root segnale GoodPair/WrongPair

  ~erossi/public/analisiSP/Paris/RootFitFiles_paris/Spin2p/

***Spin 2-***

- Plot segnale GoodPair/WrongPair

  ~erossi/public/analisiSP/Paris/Figures-usedFits/Spin2m/

  Root segnale GoodPair/WrongPair

  ~erossi/public/analisiSP/Paris/RootFitFiles_paris/Spin2m/

# Link to the directory: root files (1)

***sample 0+***

***sample 0+ con pT reweight:***

/afs/cern.ch/user/e/erossi/public/analisiSP/Paris/RootFitFiles_paris/Spin0p/signalWP_pTreweight

/afs/cern.ch/user/e/erossi/public/analisiSP/Paris/RootFitFiles_paris/Spin0p/signalGP_pTreweight

***sample 0+ con pT reweightUP:***

/afs/cern.ch/user/e/erossi/public/analisiSP/Paris/RootFitFiles_paris/Spin0p/signalWP_pTreweightUP

/afs/cern.ch/user/e/erossi/public/analisiSP/Paris/RootFitFiles_paris/Spin0p/signalGP_pTreweightUP

***sample 0+ con pT reweightDOWN:***

/afs/cern.ch/user/e/erossi/public/analisiSP/Paris/RootFitFiles_paris/Spin0p/signalWP_pTreweightDOWN

/afs/cern.ch/user/e/erossi/public/analisiSP/Paris/RootFitFiles_paris/Spin0p/signalGP_pTreweightDOWN

***sample 0-***

***sample 0- con pT reweight:***

/afs/cern.ch/user/e/erossi/public/analisiSP/Paris/RootFitFiles_paris/Spin0m/signalWP_pTreweight

/afs/cern.ch/user/e/erossi/public/analisiSP/Paris/RootFitFiles_paris/Spin0m/signalGP_pTreweight

***sample 0- con pT reweightUP:***

/afs/cern.ch/user/e/erossi/public/analisiSP/Paris/RootFitFiles_paris/Spin0m/signalWP_pTreweightUP

/afs/cern.ch/user/e/erossi/public/analisiSP/Paris/RootFitFiles_paris/Spin0m/signalGP_pTreweightUP

***sample 0- con pT reweightDOWN:***

/afs/cern.ch/user/e/erossi/public/analisiSP/Paris/RootFitFiles_paris/Spin0m/signalWP_pTreweightDOWN

/afs/cern.ch/user/e/erossi/public/analisiSP/Paris/RootFitFiles_paris/Spin0m/signalGP_pTreweightDOWN

# Link to the directory: root files (2)

***sample 2-***

***sample 2- con pT reweight:***

/afs/cern.ch/user/e/erossi/public/analisiSP/Paris/RootFitFiles_paris/Spin2m/signalWP_pTreweight

/afs/cern.ch/user/e/erossi/public/analisiSP/Paris/RootFitFiles_paris/Spin2m/signalGP_pTreweight

***sample 2- con pT reweightUP:***

/afs/cern.ch/user/e/erossi/public/analisiSP/Paris/RootFitFiles_paris/Spin2m/signalWP_pTreweightUP

/afs/cern.ch/user/e/erossi/public/analisiSP/Paris/RootFitFiles_paris/Spin2m/signalGP_pTreweightUP

***sample 2- con pT reweightDOWN:***

/afs/cern.ch/user/e/erossi/public/analisiSP/Paris/RootFitFiles_paris/Spin2m/signalWP_pTreweightDOWN

/afs/cern.ch/user/e/erossi/public/analisiSP/Paris/RootFitFiles_paris/Spin2m/signalGP_pTreweightDOWN

***sample 2+***

***sample 2+ con pT reweight:***

/afs/cern.ch/user/e/erossi/public/analisiSP/Paris/RootFitFiles_paris/Spin2p/signalWP_pTreweight

/afs/cern.ch/user/e/erossi/public/analisiSP/Paris/RootFitFiles_paris/Spin2p/signalGP_pTreweight

***sample 2+ con pT reweightUP:***

/afs/cern.ch/user/e/erossi/public/analisiSP/Paris/RootFitFiles_paris/Spin2p/signalWP_pTreweightUP

/afs/cern.ch/user/e/erossi/public/analisiSP/Paris/RootFitFiles_paris/Spin2p/signalGP_pTreweighUP

***sample 2+ con pT reweightDOWN:***

/afs/cern.ch/user/e/erossi/public/analisiSP/Paris/RootFitFiles_paris/Spin2p/signalWP_pTreweightDOWN

/afs/cern.ch/user/e/erossi/public/analisiSP/Paris/RootFitFiles_paris/Spin2p/signalGP_pTreweighDOWN

# Link to the directory: root files (3)

***PowHeg***

/afs/cern.ch/user/e/erossi/public/analisiSP/Paris/RootFitFiles_paris/Z1Z2_cut/signalWP

/afs/cern.ch/user/e/erossi/public/analisiSP/Paris/RootFitFiles_paris/Z1Z2_cut/signalGP

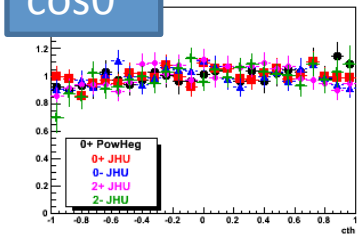
***ZZ***

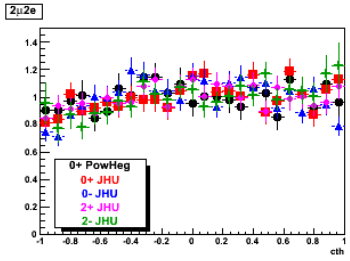
/afs/cern.ch/user/e/erossi/public/analisiSP/Paris/RootFitFiles_paris/Z1Z2_cut/ZZ

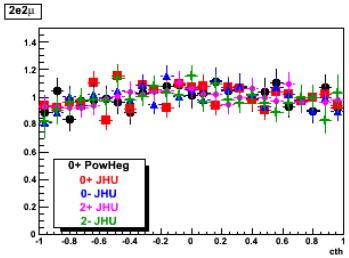
/afs/cern.ch/user/e/erossi/public/analisiSP/Paris/RootFitFiles_paris/Z1Z2_cut/ZZ

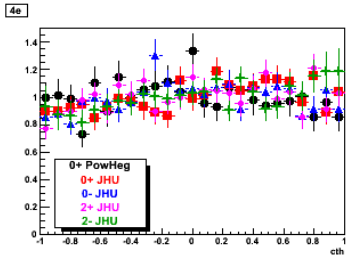
# PowHeg and JHU 0+/0-/2+2-
# Right-Paired Angular Acceptances comparison

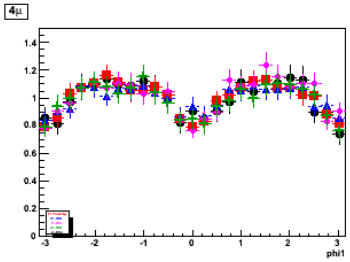
cosθ*

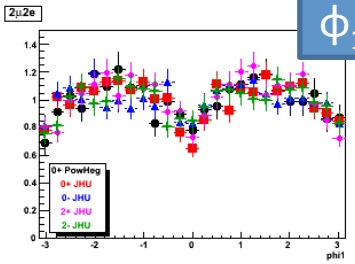


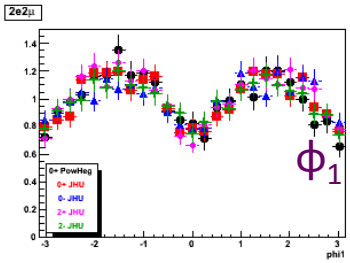



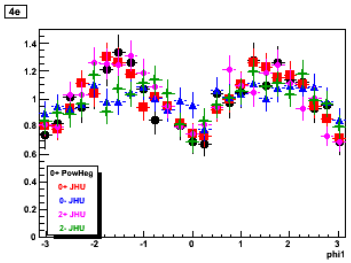




$\phi_1$

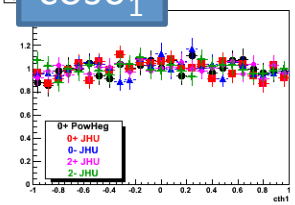


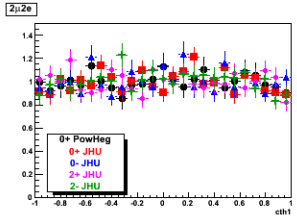

$\phi_1$

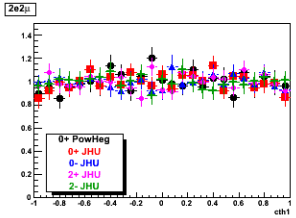


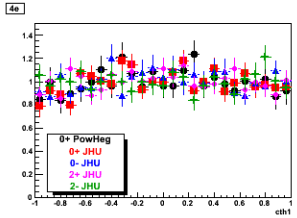

0+ PowHeg
0+ JHU
0- JHU
2+ JHU
2- JHU

cosθ$_1$

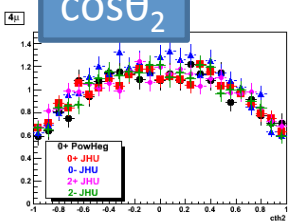


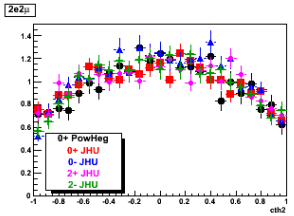



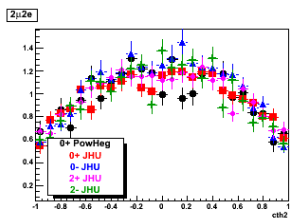



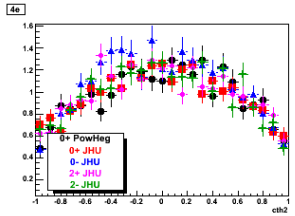



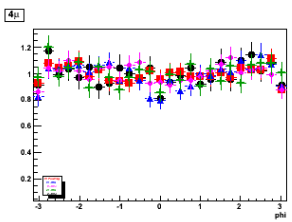

cosθ$_2$

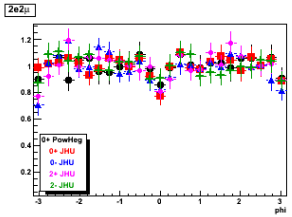


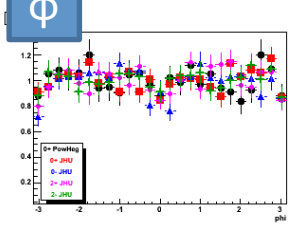



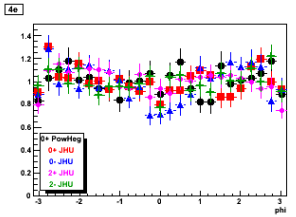



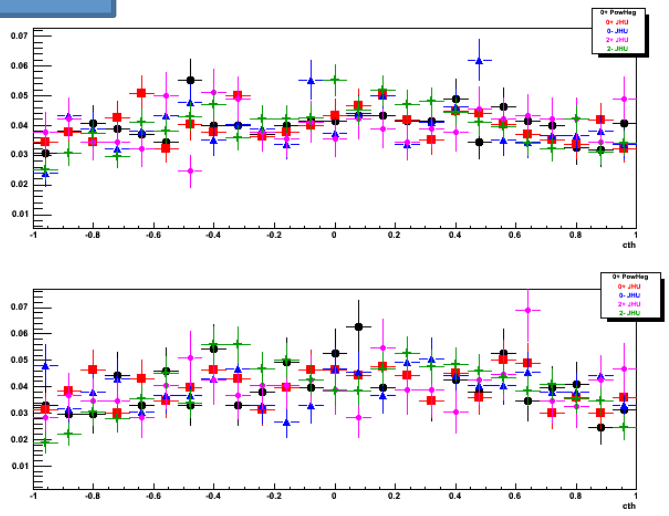

$\phi$



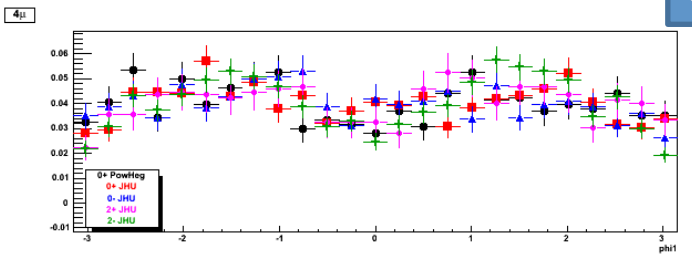
# PowHeg and JHU 0+/0-/2+2-
# Wrong-Paired Angular PDF comparison

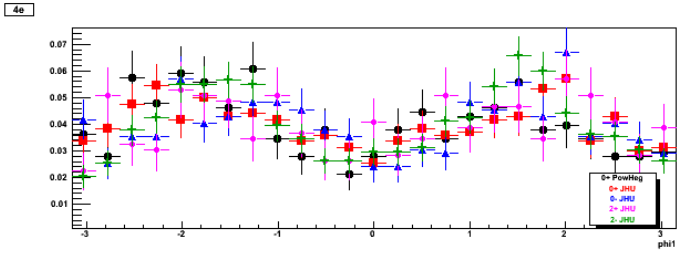
cosθ*





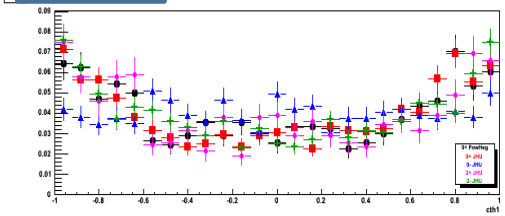
$\phi_1$

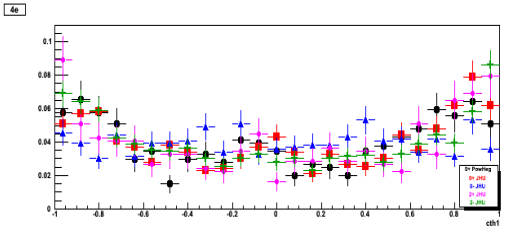




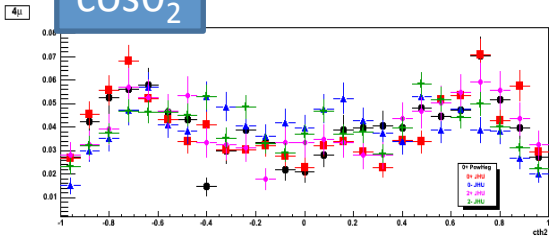
0+ PowHeg
0+ JHU
0- JHU
2+ JHU
2- JHU

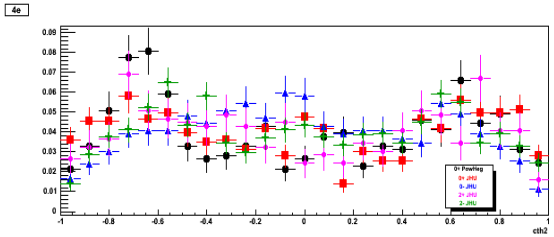
$\cos\theta_1$



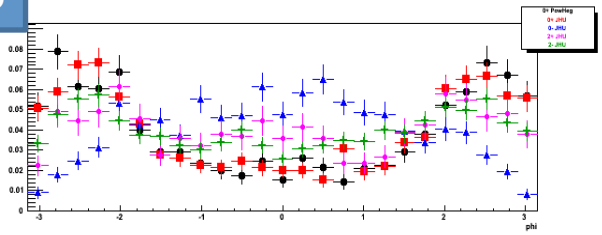


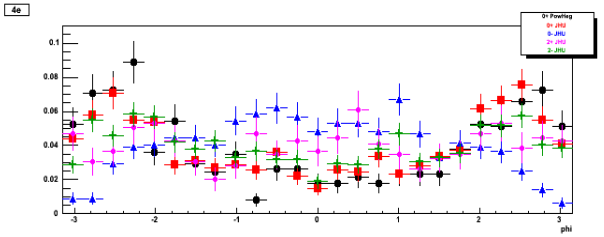
$\cos\theta_2$





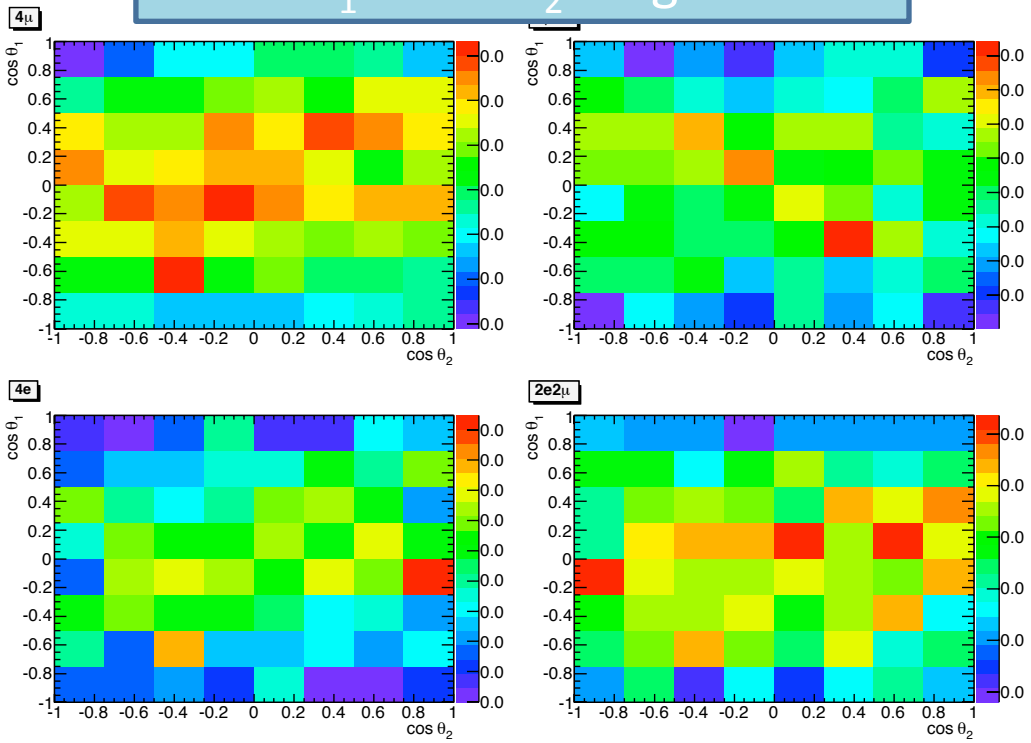
$\phi$



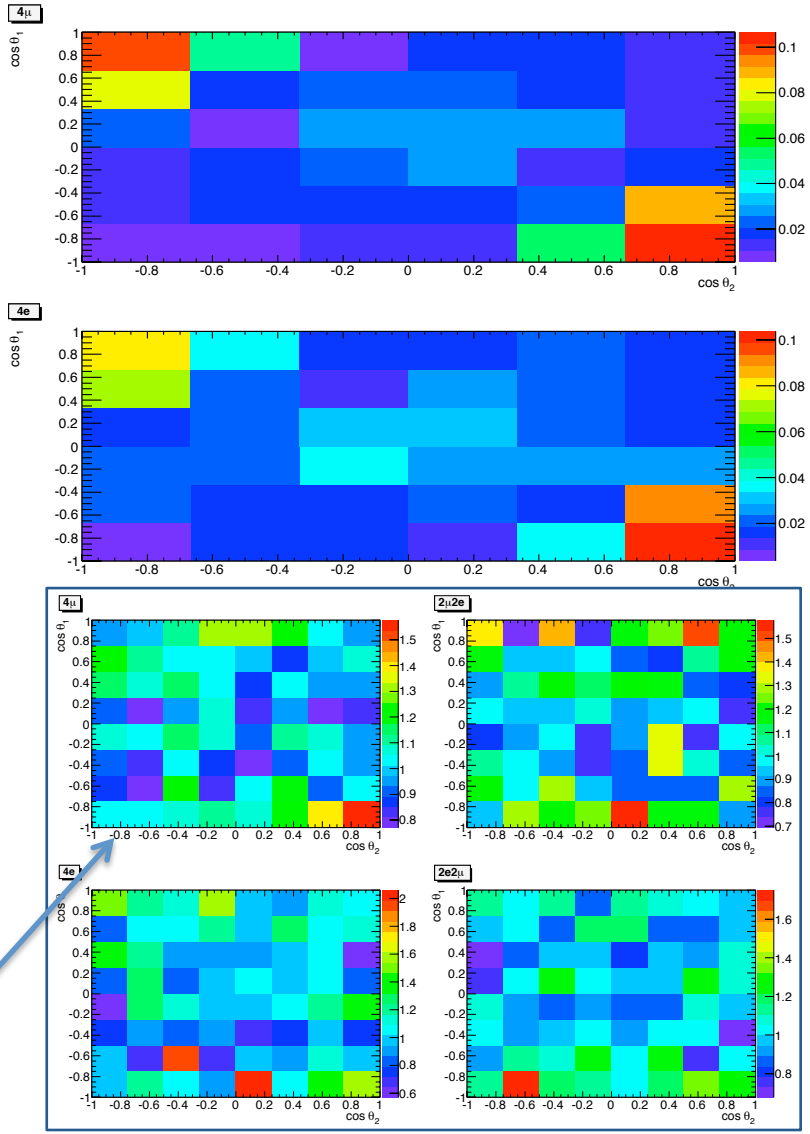


# 2D Angular Acceptances: Spin 0+

## $\cos\theta_1$ vs $\cos\theta_2$ : Right Pair




## $\cos\theta_1$ vs $\cos\theta_2$ : Wrong Pair

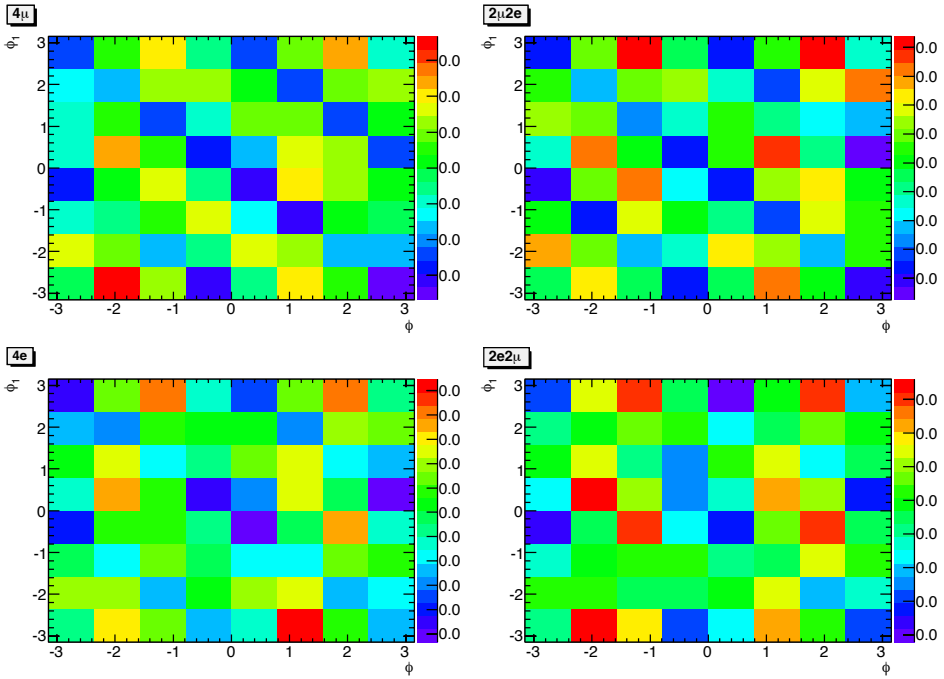



Use the 2D template in the angular pdf's wrt to uncorrelated 1D parametrizations to get systematic on pMela discriminant

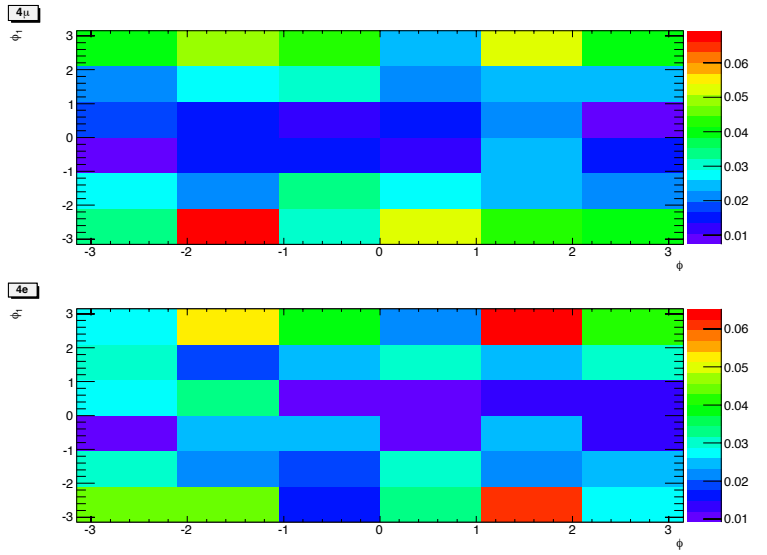
$\cos\theta_1$ vs $\cos\theta_2$ : Right Pair
**Ratio of 0+/0- 2D acceptance**
expected to be ≈ flat

# 2D Angular Acceptances: Spin 0+

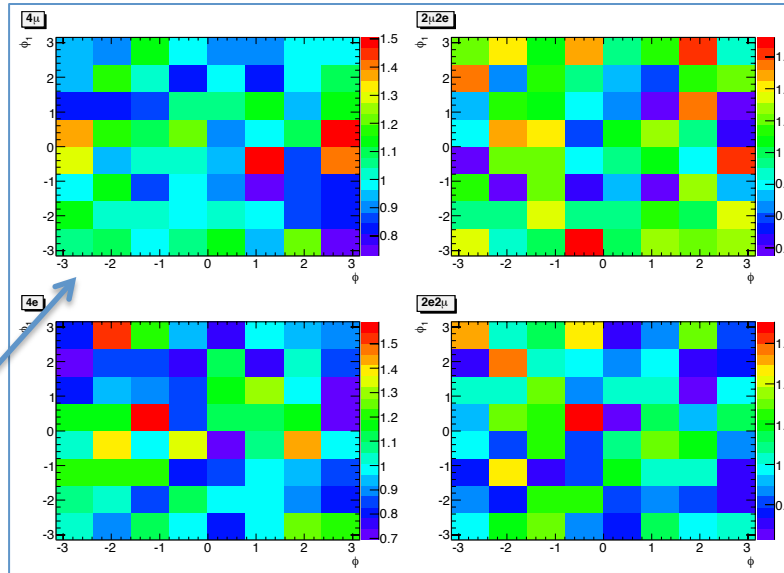
## $\phi_1$ vs $\phi$ : Right Pair




## $\phi_1$ vs $\phi$ : Wrong Pair




Use the 2D template in the angular pdf's wrt to uncorrelated 1D parametrizations to get systematic on pMela discriminant



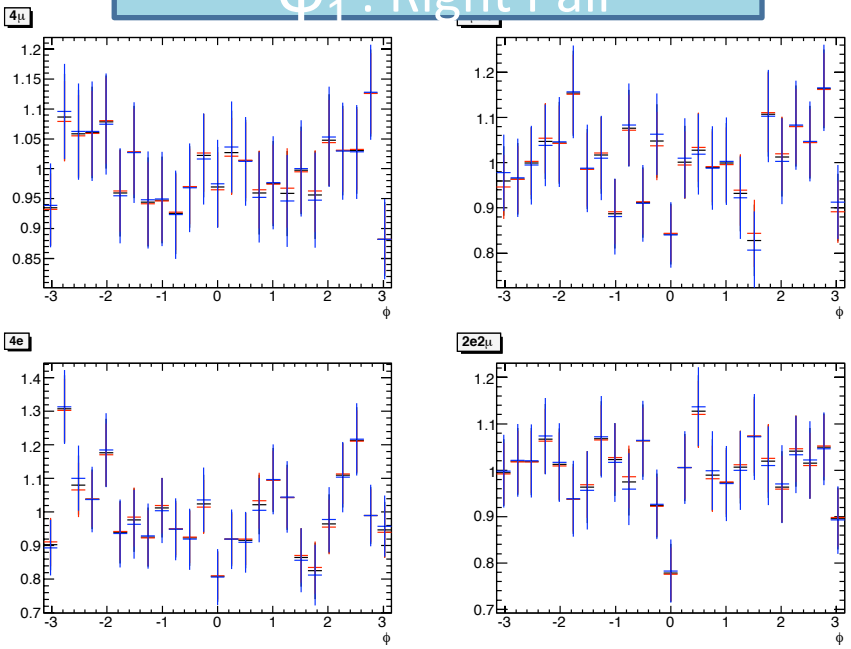

$\phi_1$ vs $\phi$: Right Pair

**Ratio of 0+/0- 2D acceptances expected to be ≈ flat**

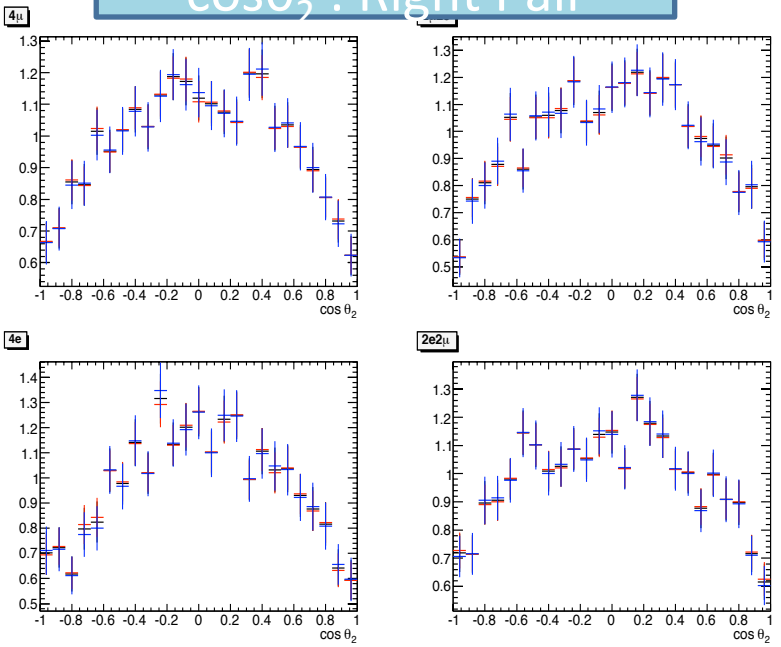
# JHU pt reweighting: Spin 0+

**JHU with pT reweight**
**JHU with pT reweight up**
**JHU with pT reweight down**

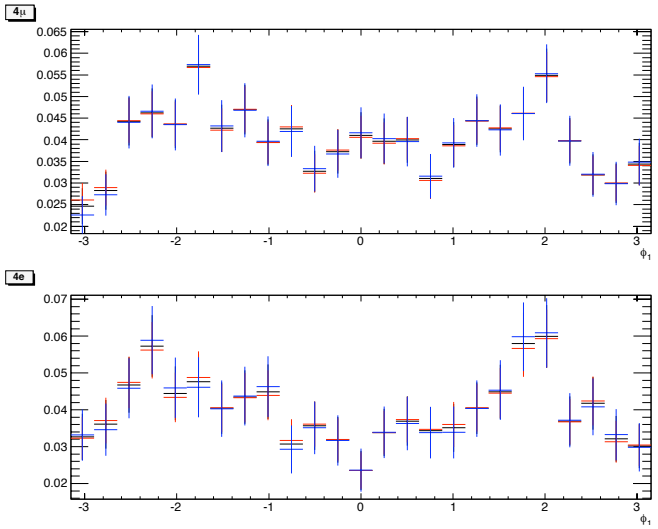
## $\Phi_1$ : Right Pair



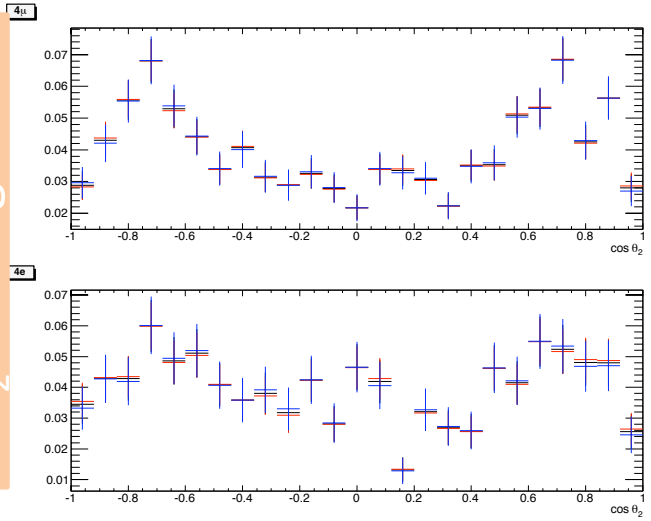

## $\cos\theta_2$ : Right Pair




## $\Phi_1$ : Wrong Pair

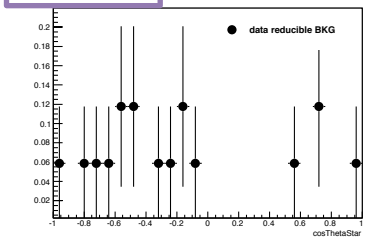


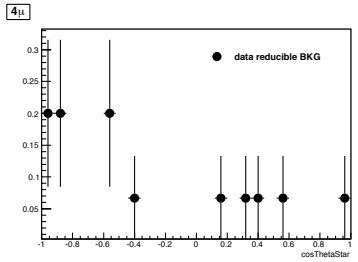

## $\theta_2$: Wrong Pair

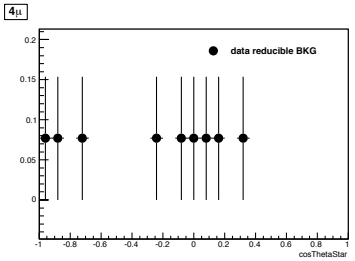


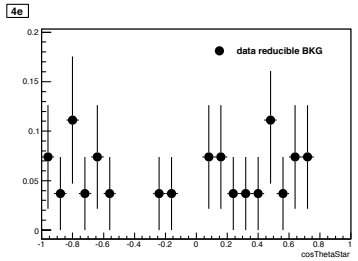
# Reducible Background

$\cos\theta^*$



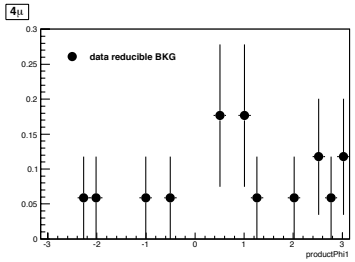



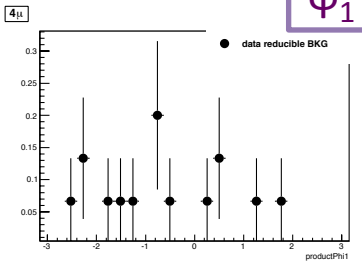



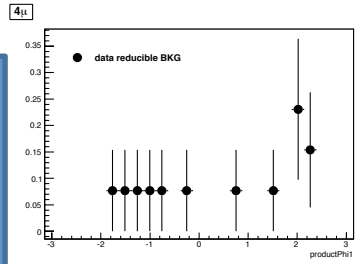



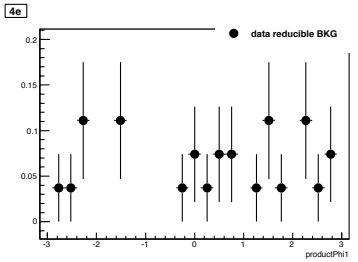

4e → 27
4mu → 17
2e2mu → 15
2mu2e → 13

$\phi_1$

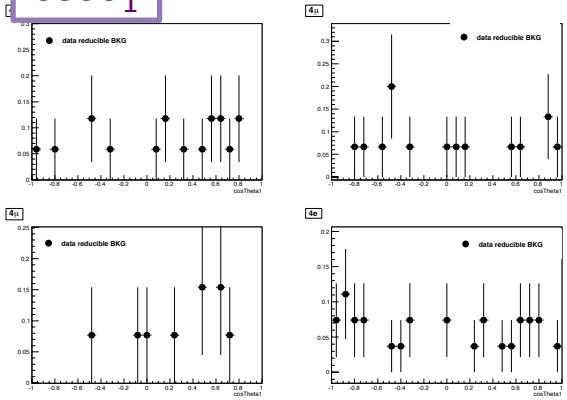


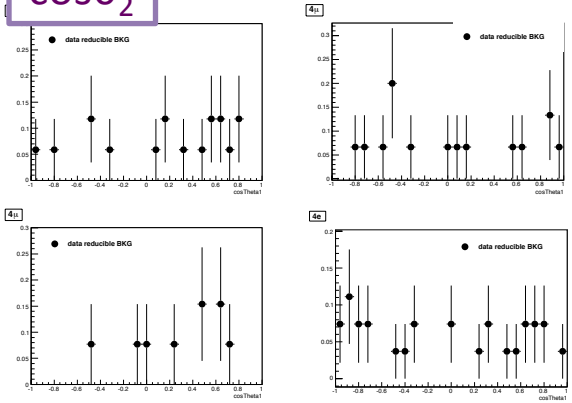



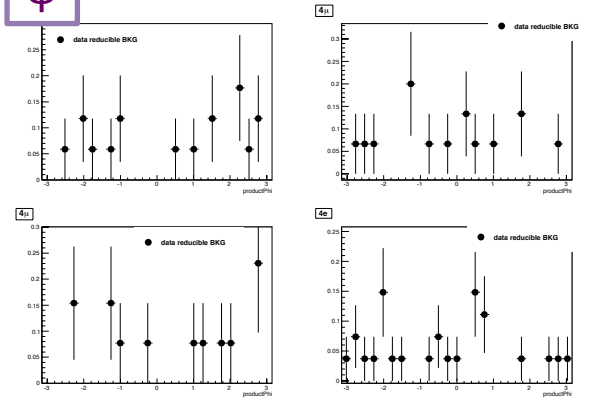

$\cos\theta_1$




$\cos\theta_2$

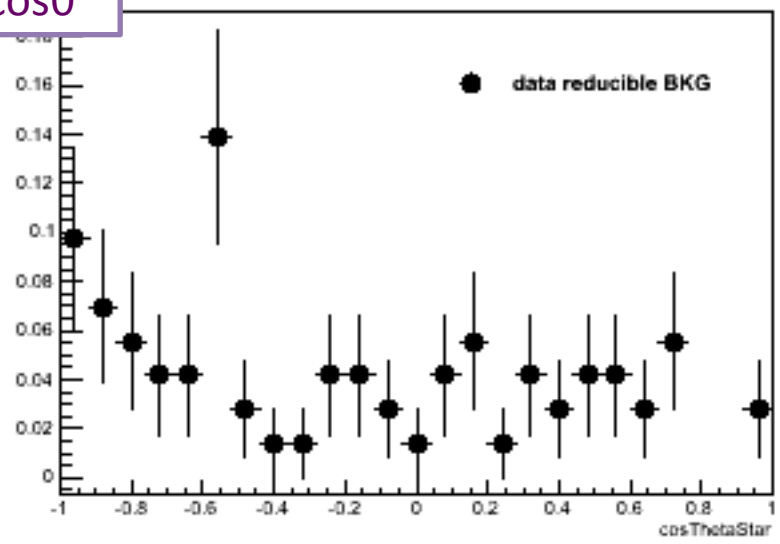



$\phi$

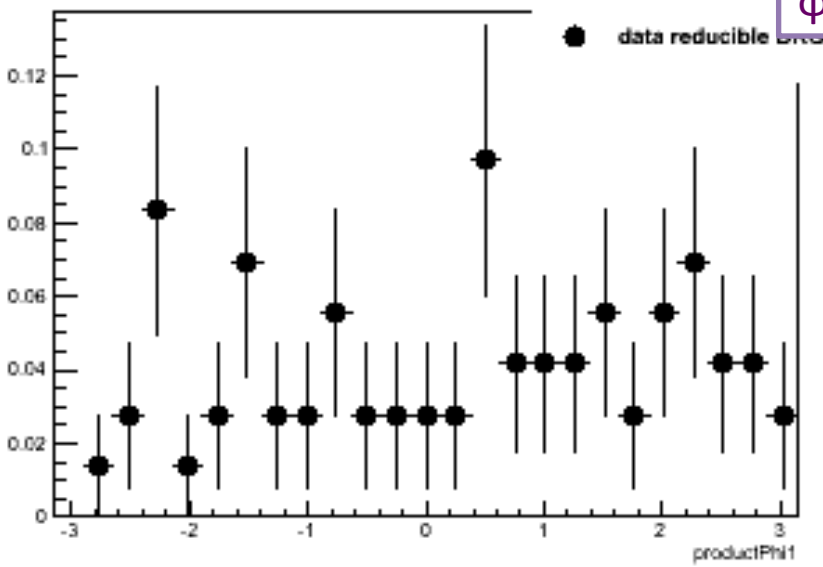


# Reducible Background

$\cos\theta^*$

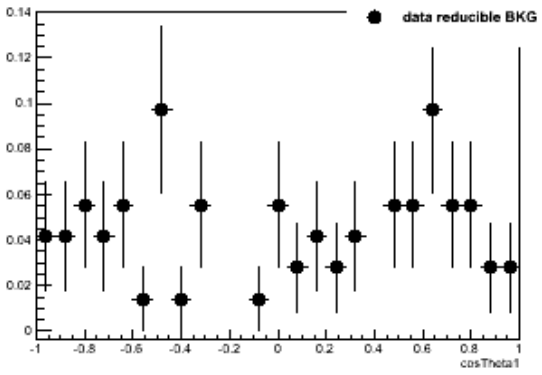



$\phi_1$

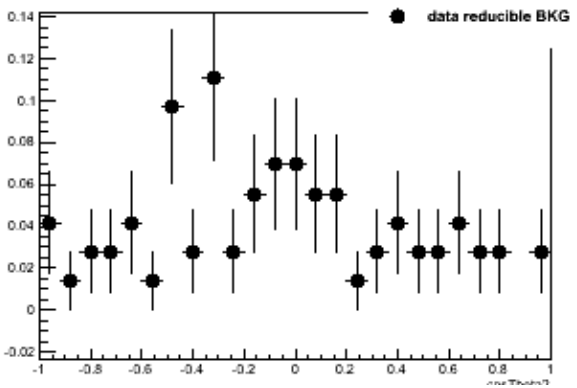



All Channel together

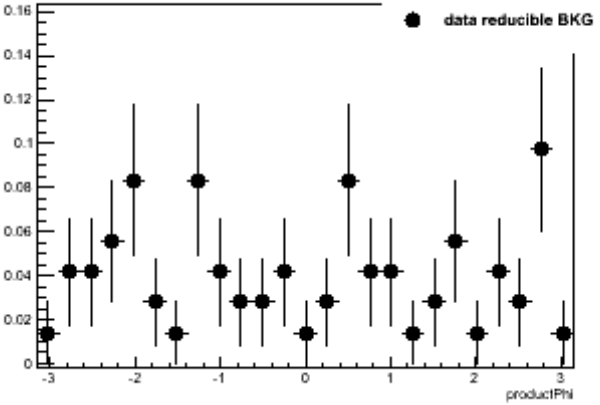
$\cos\theta_1$




$\cos\theta_2$



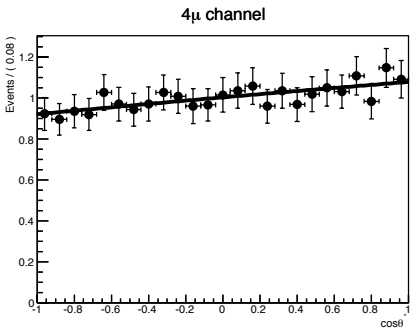

$\phi$

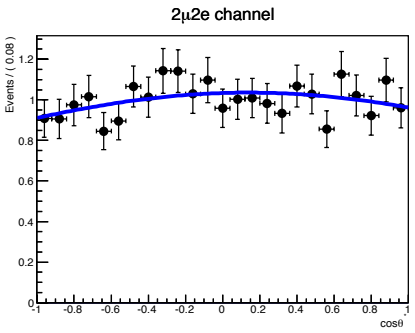


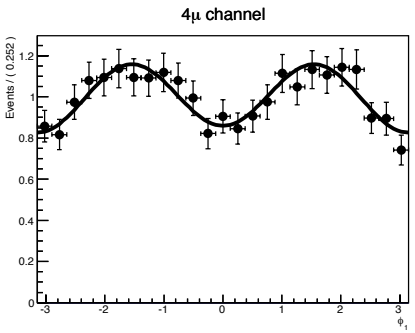
# signal

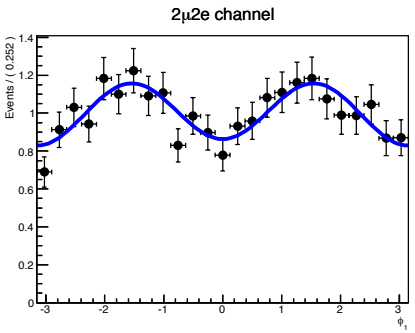
PowHeg 0+

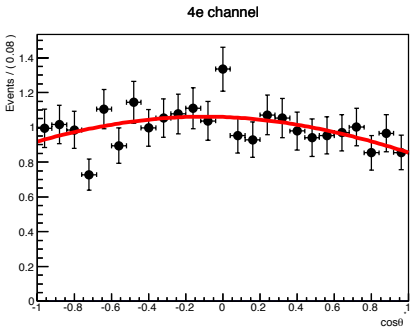
# goodpair acceptances: cosθ* and $\phi_1$

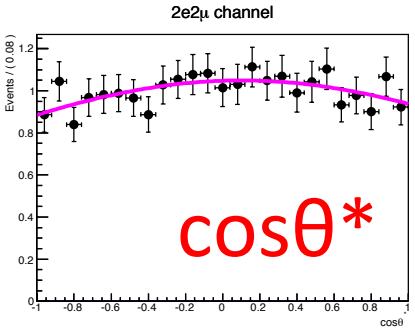


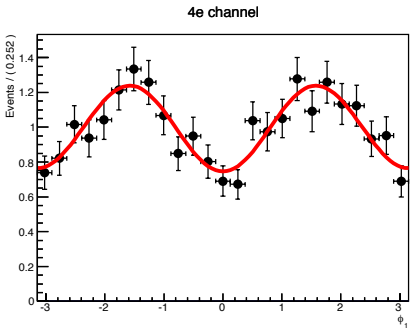



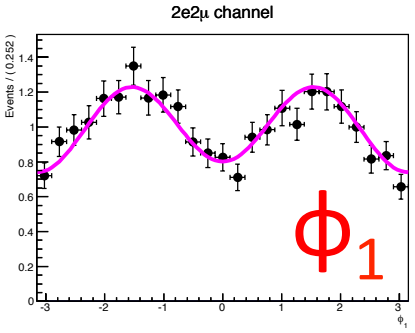



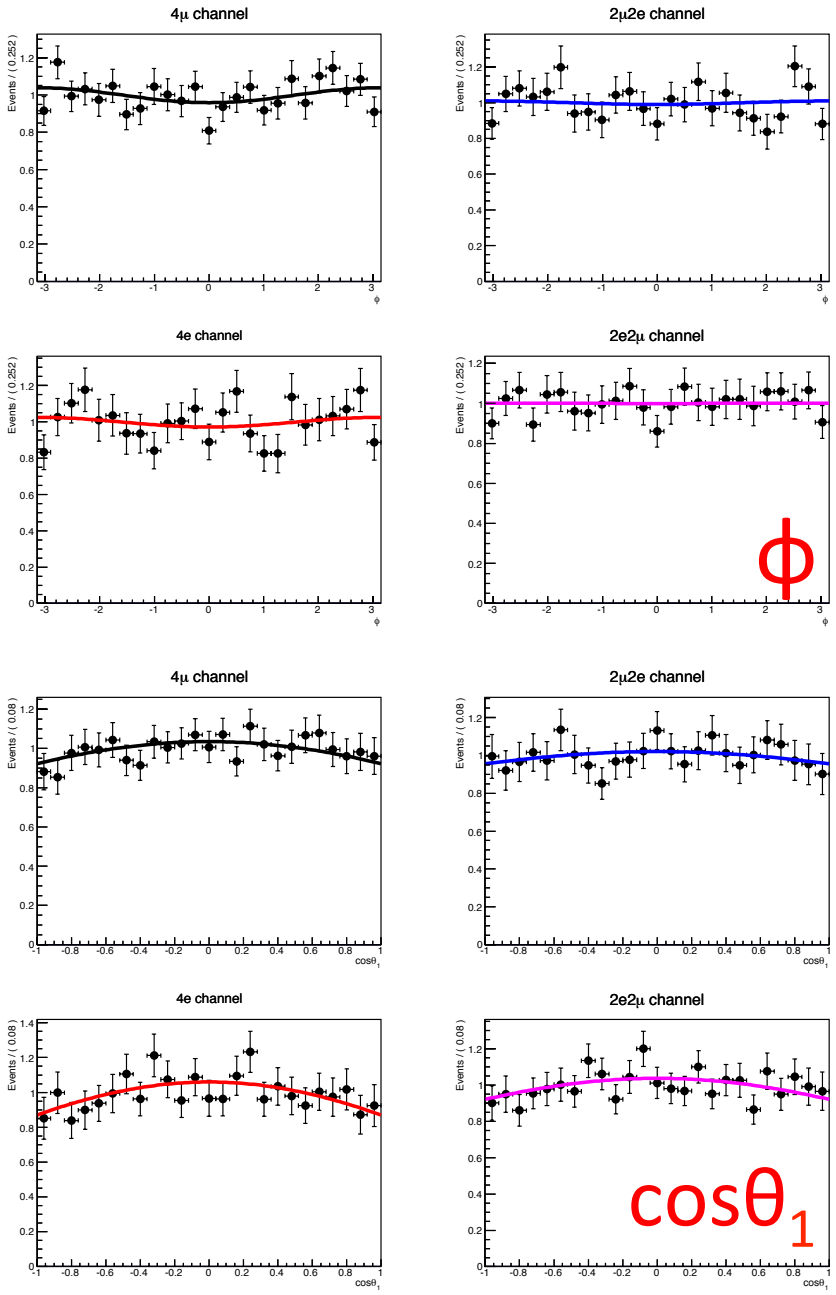



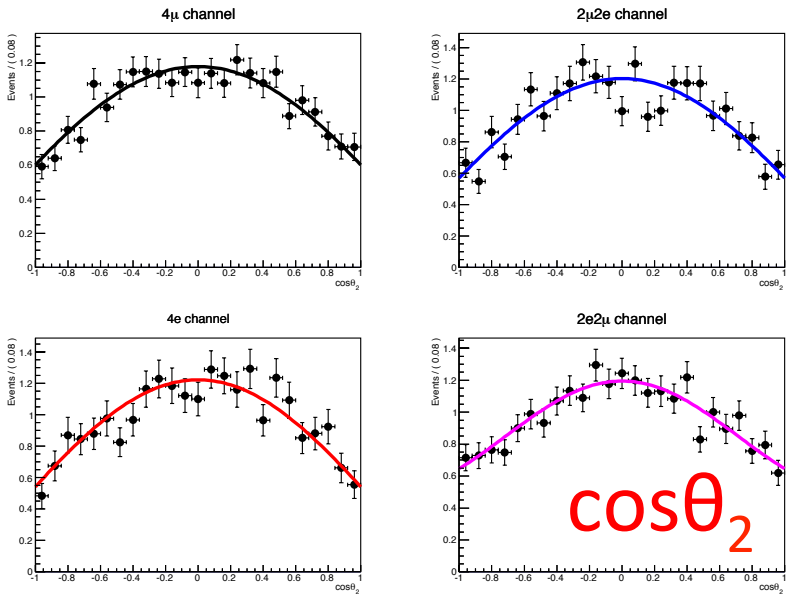




**fit functioncosθ*:**
**(p9_fit+X*p10_fit)*(1+cosX *p1_fit)**

**fit function: 1+cosX *p1_fit**
**+cos2X *p2_fit**

# goodpair acceptances: ϕ, cosθ$_1$ and cosθ$_2$

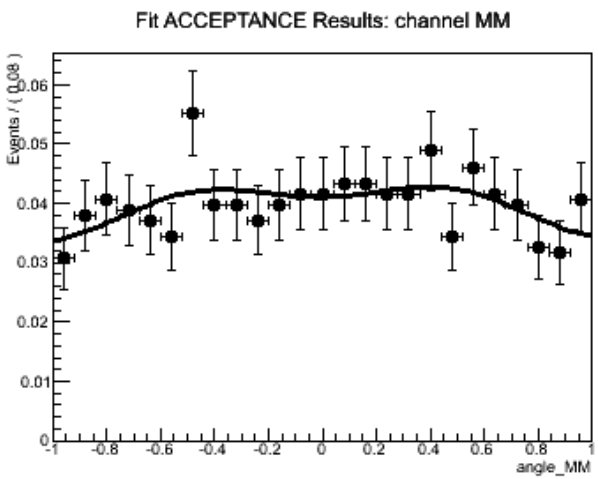


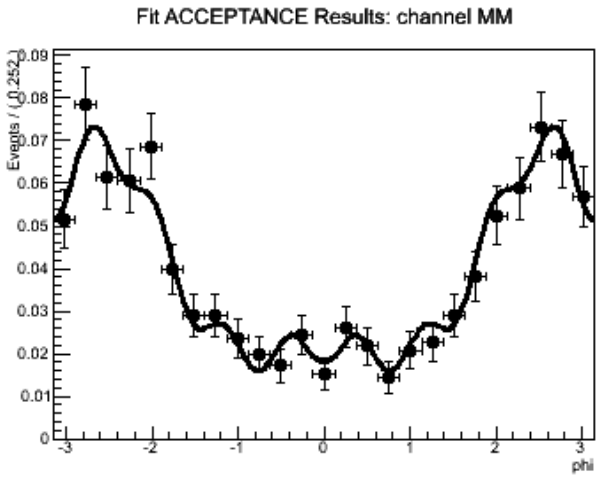



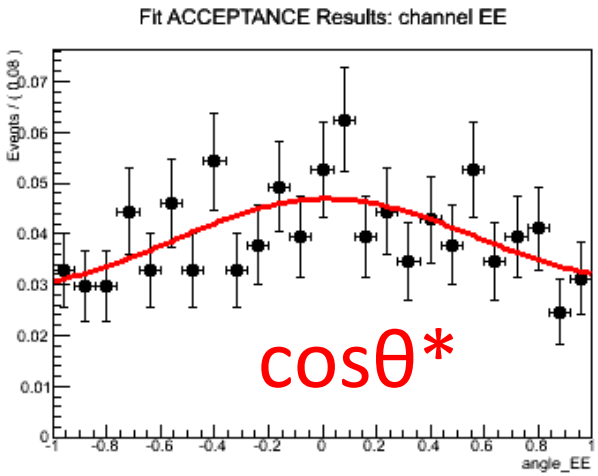

**fit function for ϕ and cosθ$_1$ : 1+cosX *p1_fit**

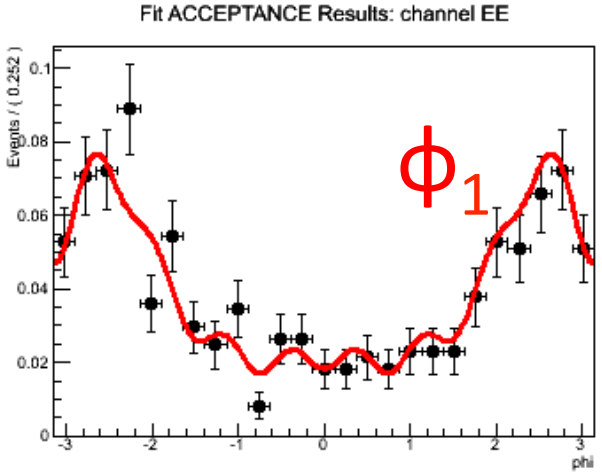
**function for cosθ$_2$ : 1+cosX *p1_fit+cos2X *p2_fit**

# wrongpair: Recontructed cosθ* and $\phi_1$



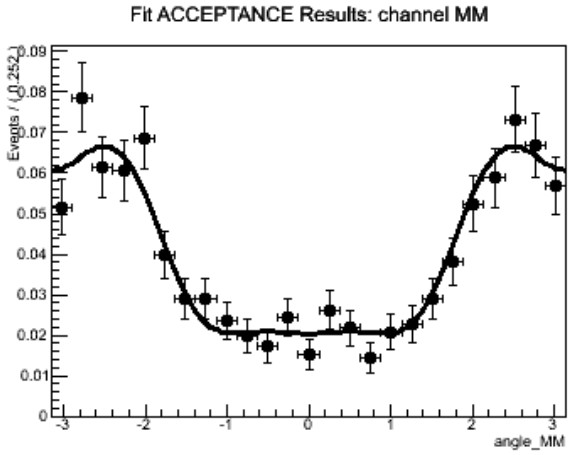



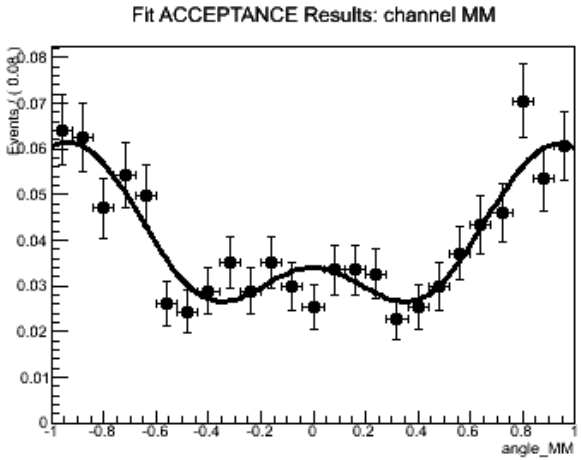



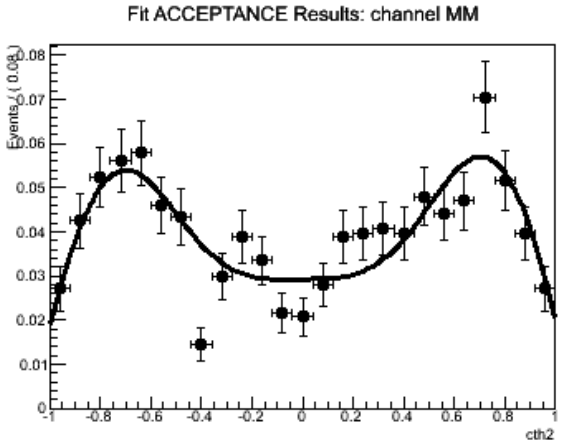

**fit function for cosθ*:**
**4MU/4e: (p9_fit + p10_fit * X) *(1+(cosX)^4 *p1_fit+(cos2X) *p2_fit+(cos4X) *p3_fit+ (cos6X) *p4_fit)**

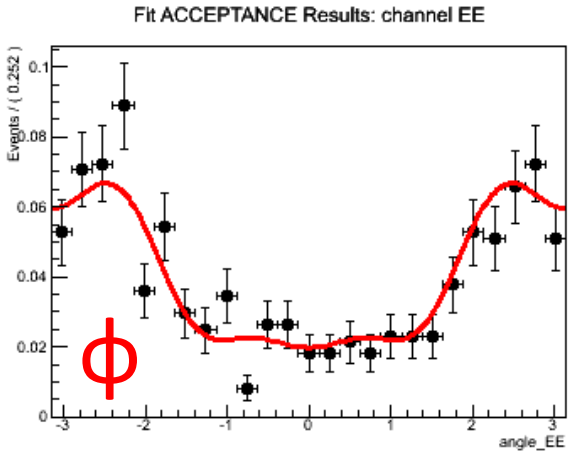
**fit function: 1+cosX *p1_fit+cos2X *p2_fit+cos3X *p3_fit+cos4X *p4_fit +cos5X *p5_fit+cos6X *p6_fit+cos7X *p7_fit+cos8X *p8_fit**

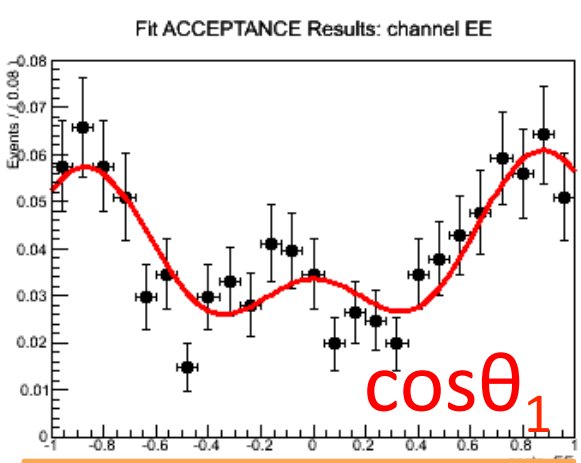
# wrongpair: Reconstructed $\phi$, $\cos\theta_1$ and $\cos\theta_2$

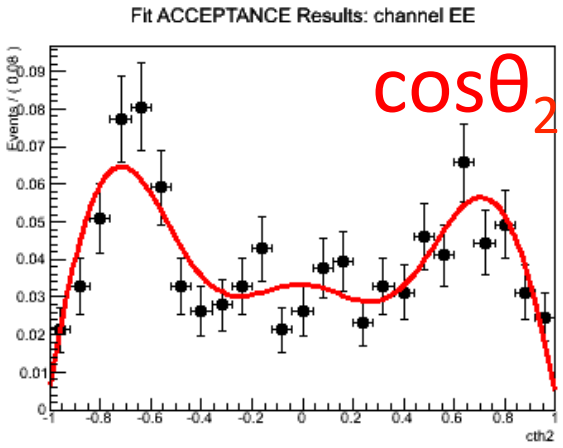



**fit function for ϕ:**
**4MU/4e: (1+(cosX)*p1_fit+(cos2X) *p2_fit+(cos3X) *p3_fit+(cos4X) *p4_fit)**

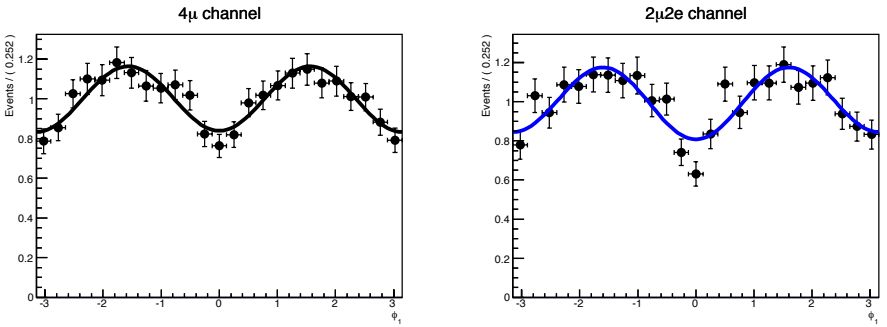
**fit function $\cos\theta_1$ :**
**4MU/4e: (p9_fit + p10_fit * X) *(1+(cosX)^4 *p1_fit+(cos2X) *p2_fit+(cos5X) *p3_fit+(cos7X) *p4_fit)**

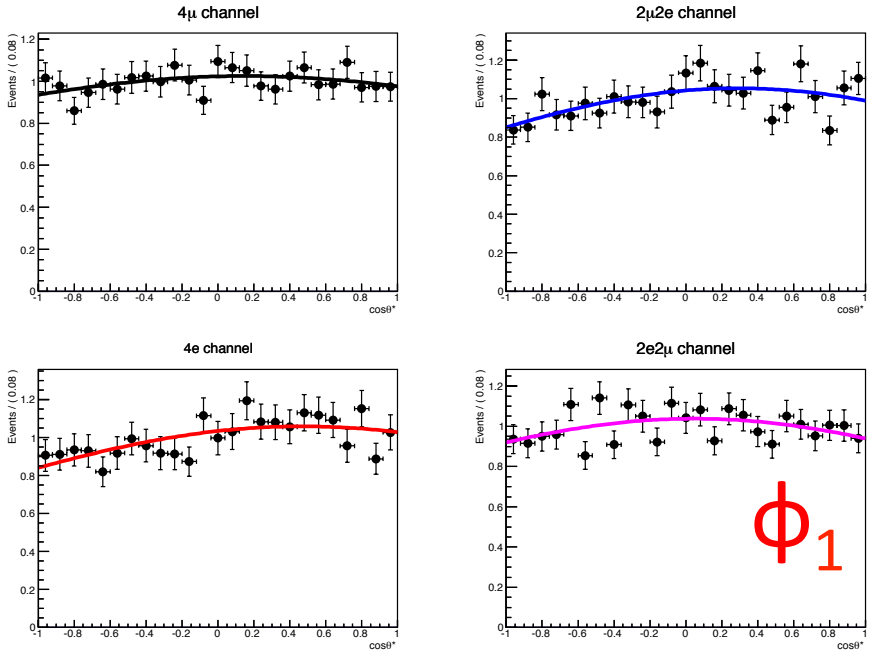
**fit function $\cos\theta_2$ :**
**4MU/4e: (p9_fit + p10_fit * X) *(1+(cosX)^4 *p1_fit+(cos2X) *p2_fit+(cos4X) *p3_fit+(cos5X) *p4_fit+(cos7X) *p5_fit)**

# signal JHU 0+

with pT reweight

# goodpair acceptances: cosθ* and $\phi_1$

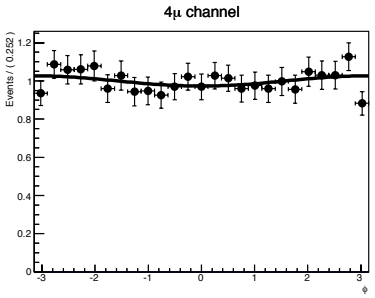


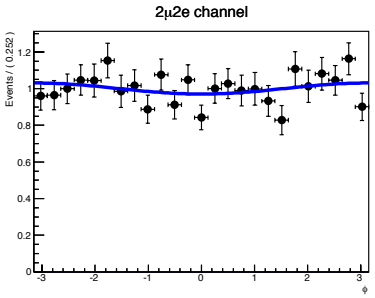



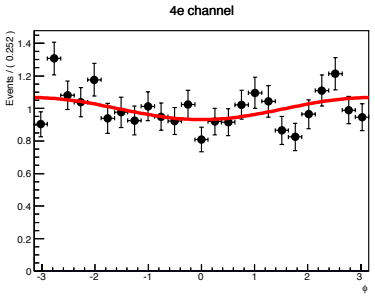

**fit functioncosθ*:**
**(p9_fit+X*p10_fit)*(1+cosX *p1_fit)**

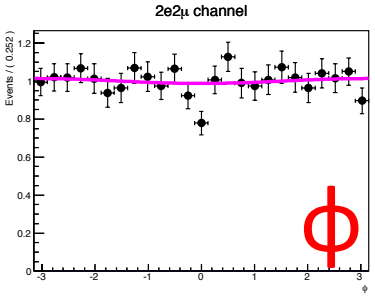
**fit function: 1+cosX *p1_fit**
**+cos2X *p2_fit**

# goodpair acceptances: $\phi$, $\cos\theta_1$ and $\cos\theta_2$

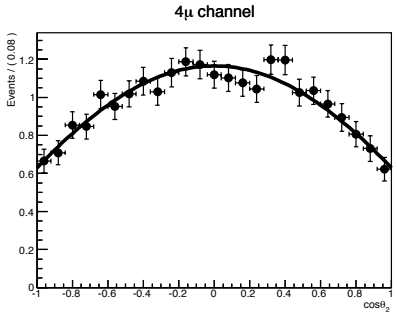


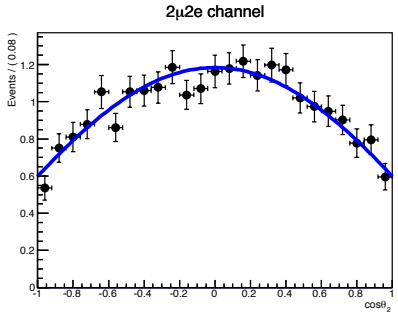



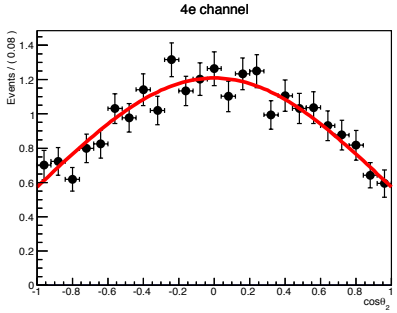



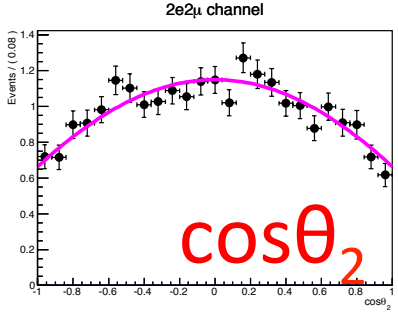




$\phi$

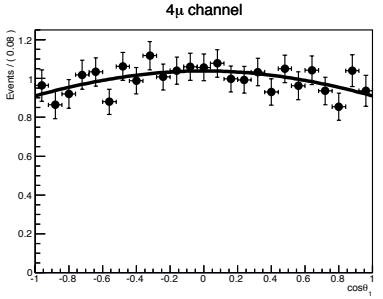


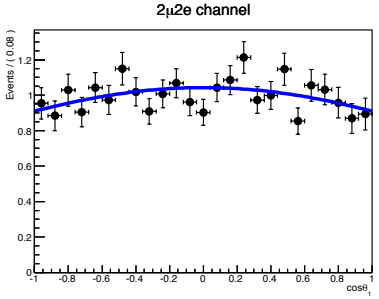



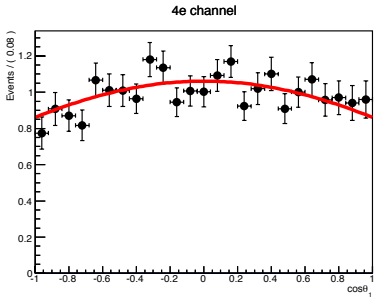



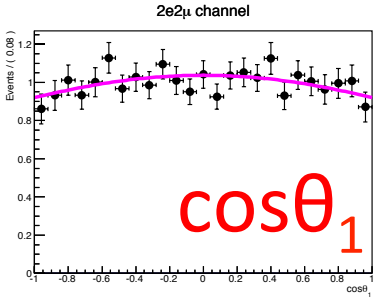




$\cos\theta_2$



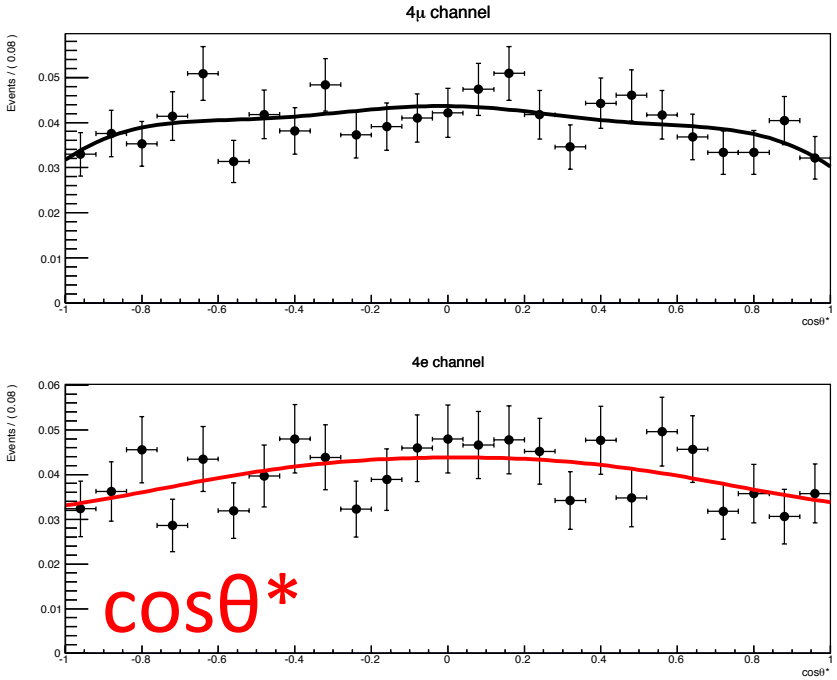



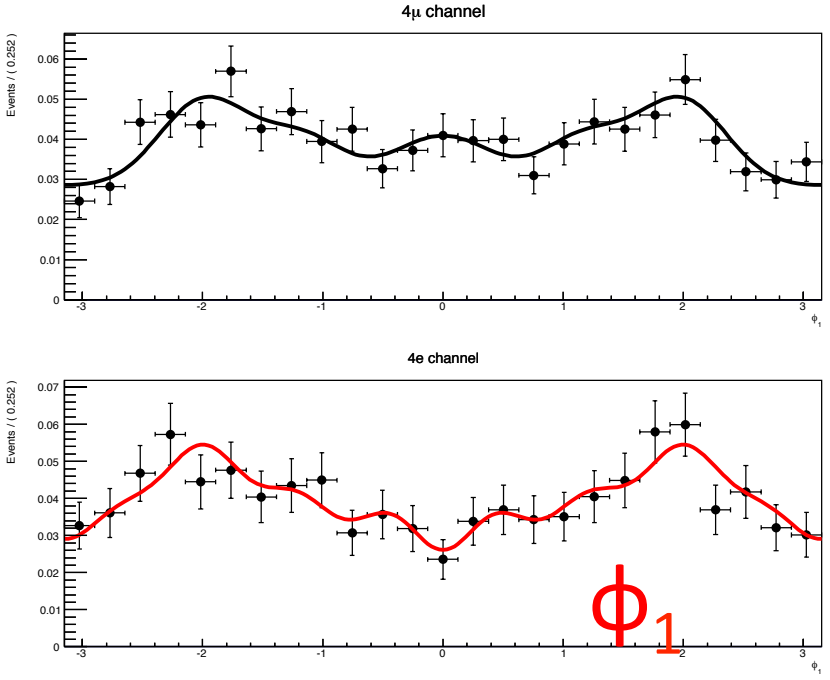

$\cos\theta_1$

**fit function for $\phi$ and $\cos\theta_1$ : 1+cosX *p1_fit**

**function for $\cos\theta_2$ : 1+cosX *p1_fit+cos2X *p2_fit**

# wrongpair: Recontructed cosθ* and $\phi_1$



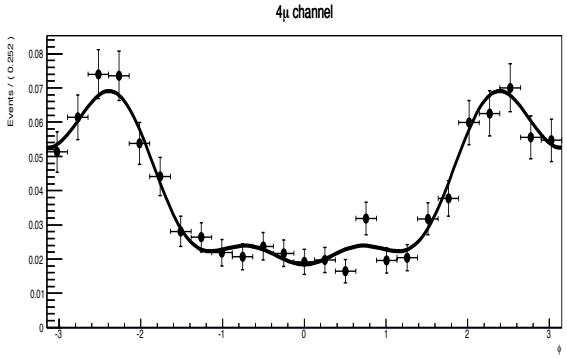



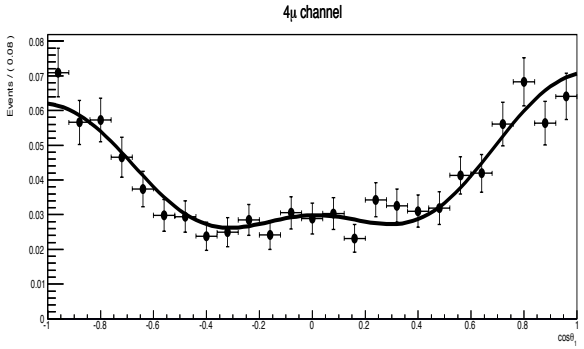

**fit function for cosθ*:**

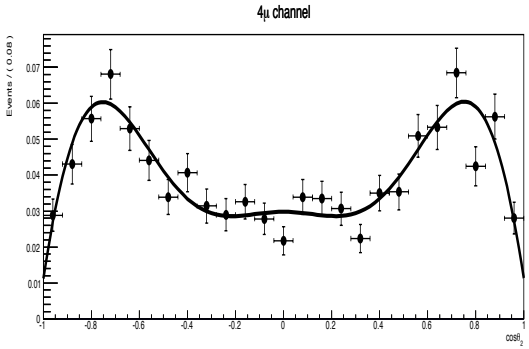
**4MU/4e: (p9_fit + p10_fit * X) *(1+(cosX)^4 *p1_fit+(cos2X) *p2_fit+(cos4X) *p3_fit+ (cos6X) *p4_fit)**

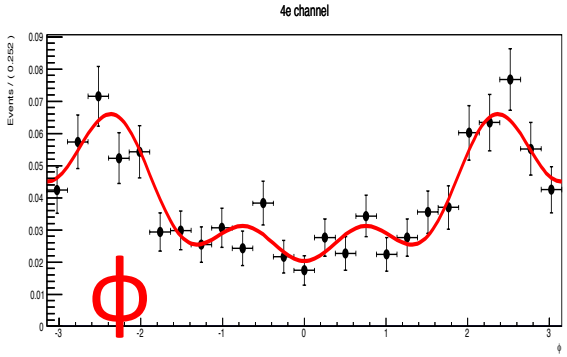
**fit function: 1+cosX *p1_fit+cos2X *p2_fit+cos3X *p3_fit+cos4X *p4_fit +cos5X *p5_fit+cos6X *p6_fit+cos7X *p7_fit+cos8X *p8_fit**

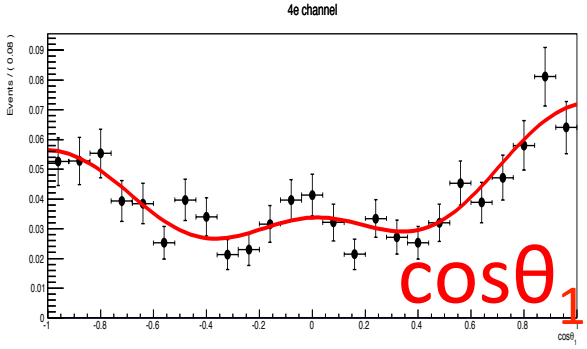
# wrongpair: Reconstructed $\phi$, $\cos\theta_1$ and $\cos\theta_2$

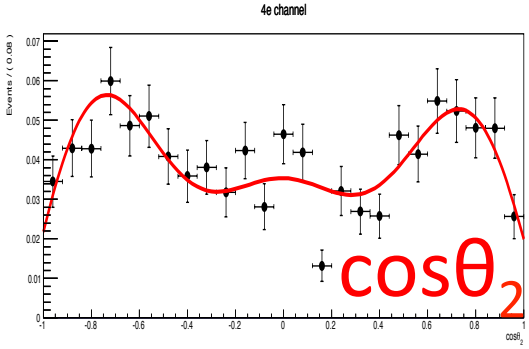



**fit function for ϕ:**
**4MU/4e: (1+(cosX)*p1_fit+(cos2X) *p2_fit+(cos3X) *p3_fit+(cos4X) *p4_fit)**

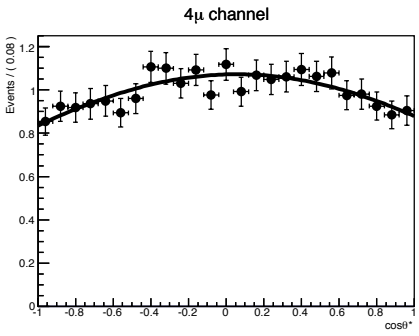
**fit function $\cos\theta_1$ :**
**4MU/4e: (p9_fit + p10_fit * X) *(1+(cosX)^4 *p1_fit+(cos2X) *p2_fit+(cos5X) *p3_fit+(cos7X) *p4_fit)**

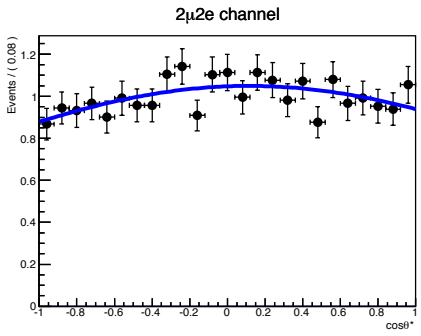
**fit function $\cos\theta_2$ :**
**4MU/4e: (p9_fit + p10_fit * X) *(1+(cosX)^4 *p1_fit+(cos2X) *p2_fit+(cos4X) *p3_fit+(cos5X) *p4_fit+(cos7X) *p5_fit)**

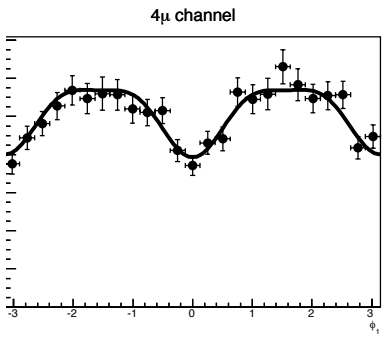
# signal JHU 0-

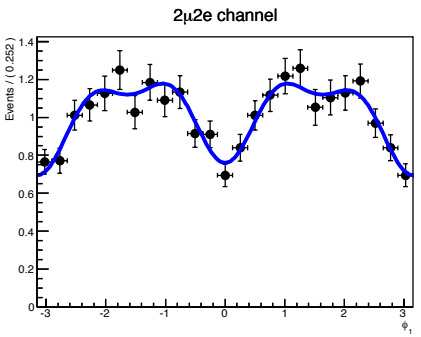
with pT reweight

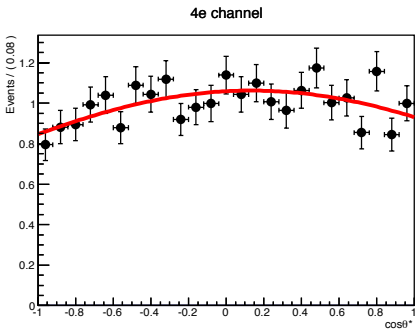
# goodpair acceptances: cosθ* and $\phi_1$

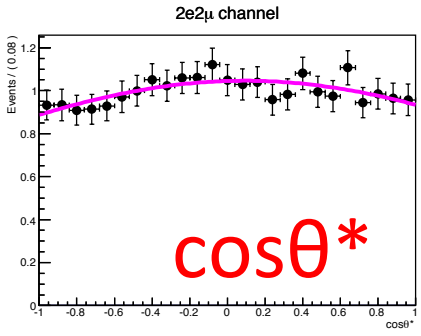


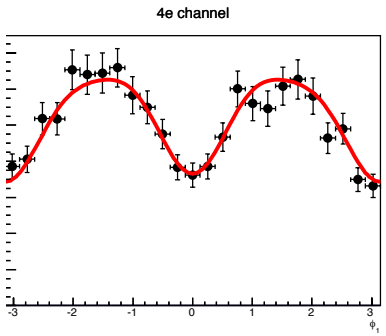



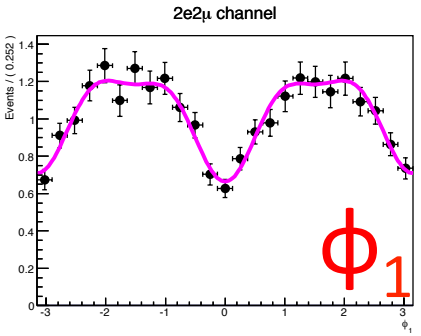



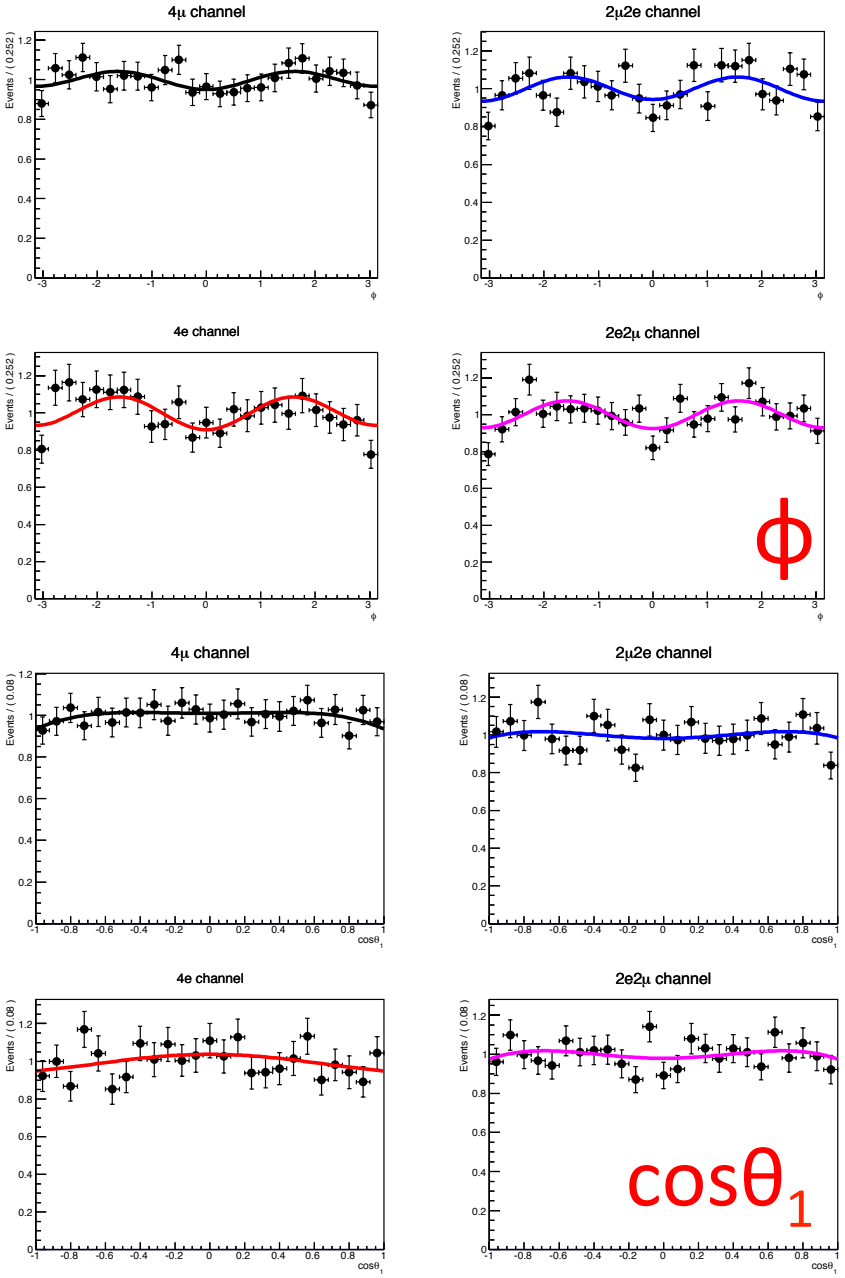



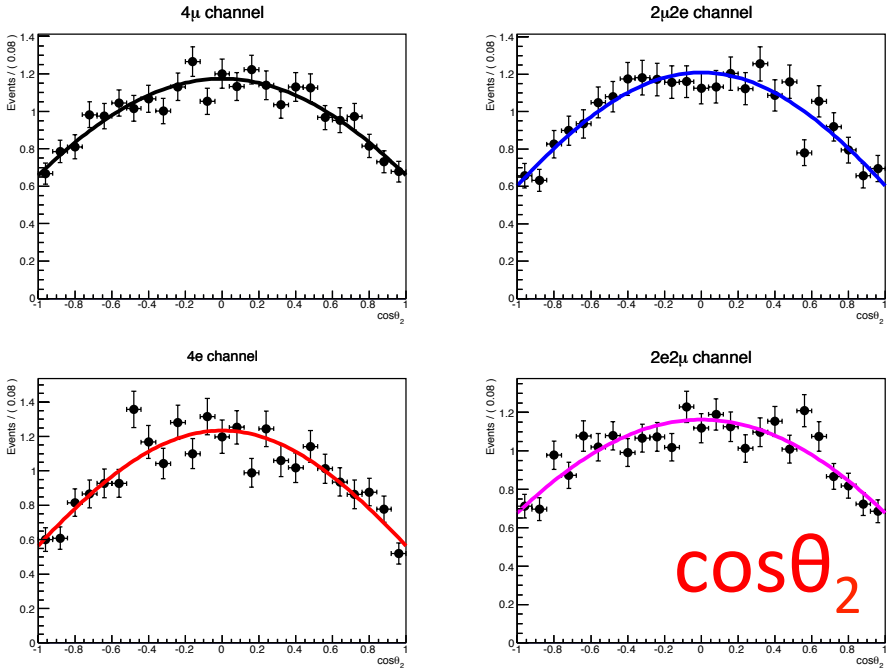




**fit functioncosθ*:**
**(p9_fit+X*p10_fit)*(1+cosX *p1_fit)**

**fit function: 1+cosX *p1_fit**
**+cos2X *p2_fit+cos3X *p3_fit**
**+cos4X *p4_fit**

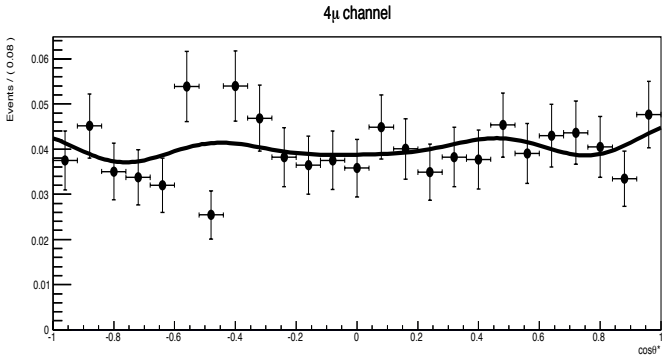
# goodpair acceptances: $\phi$, $\cos\theta_1$ and $\cos\theta_2$

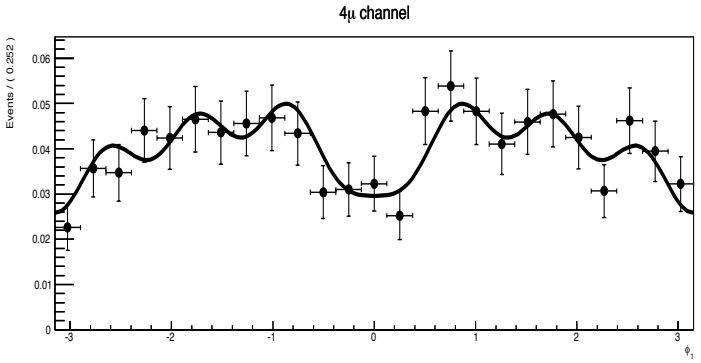


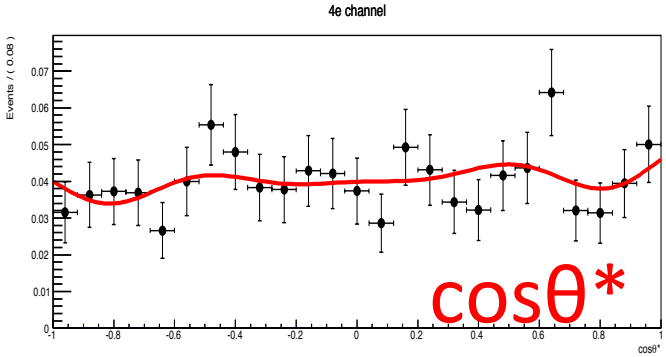



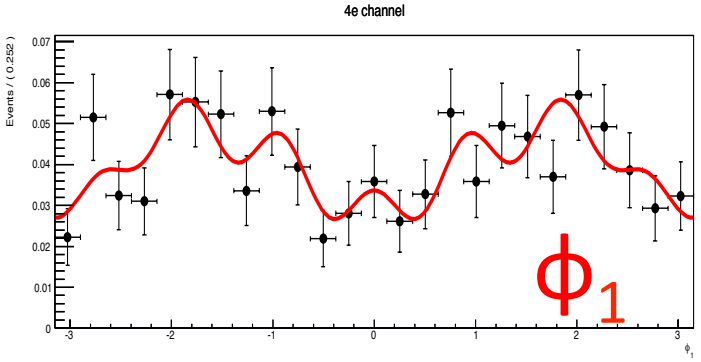

**fit function for $\phi$, $\cos\theta_1$ and $\cos\theta_2$:**
**1+cosX *p1_fit+cos2X *p2_fit**

# wrongpair: Recontructed cosθ* and $\phi_1$



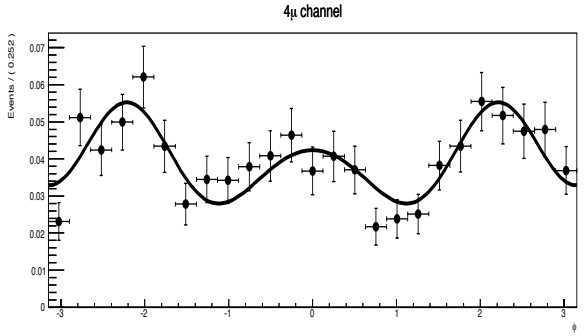

**fit function for cosθ*:**

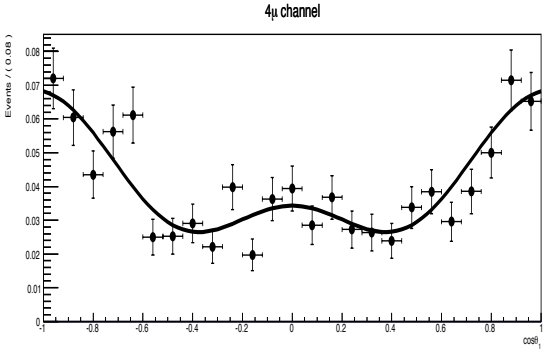
**4MU: (p9_fit + p10_fit * X) *(1+(cosX)^4 *p1_fit+(cos8X) *p2_fit+(cos9X) *p3_fit+ (cos10X) *p4_fit+(cos11X) *p5_fit)**

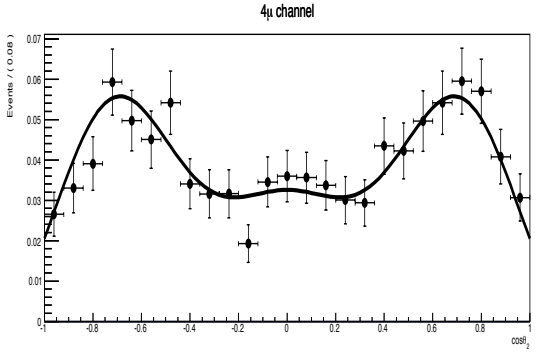
**4e: (p9_fit + p10_fit * X) *(1+(cos8X) *p1_fit+ (cos9X) *p2_fit+(cos10X) *p3_fit+(cos11X) *p4_fit+(cos12X) *p5_fit)**

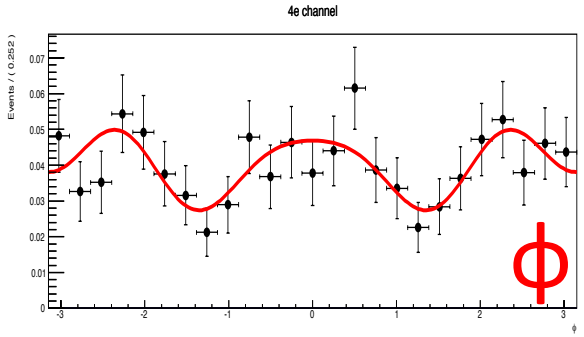
**fit function: 1+cosX *p1_fit+cos2X *p2_fit+cos3X *p3_fit+cos4X *p4_fit +cos5X *p5_fit+cos6X *p6_fit+cos7X *p7_fit+cos8X *p8_fit**

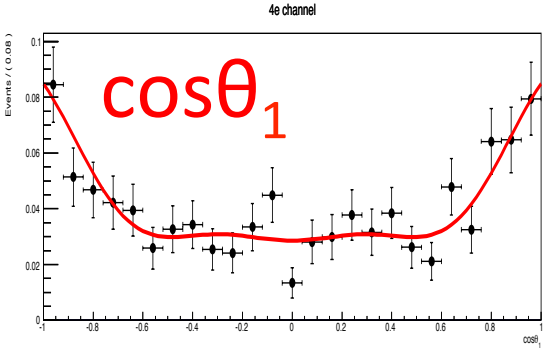
# wrongpair: Reconstructed $\phi$, $\cos\theta_1$ and $\cos\theta_2$

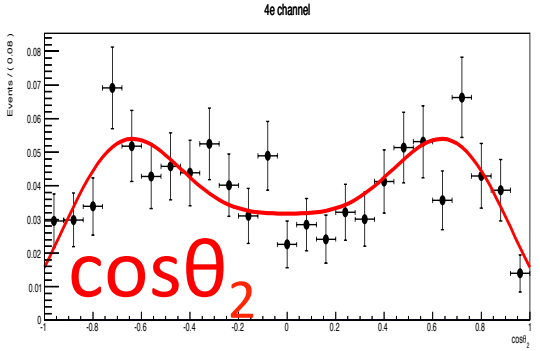



**fit function for $\phi$:**
**4MU/4e: (1+(cosX)*p1_fit+(cos2X) *p2_fit+(cos3X) *p3_fit+(cos4X) *p4_fit)**

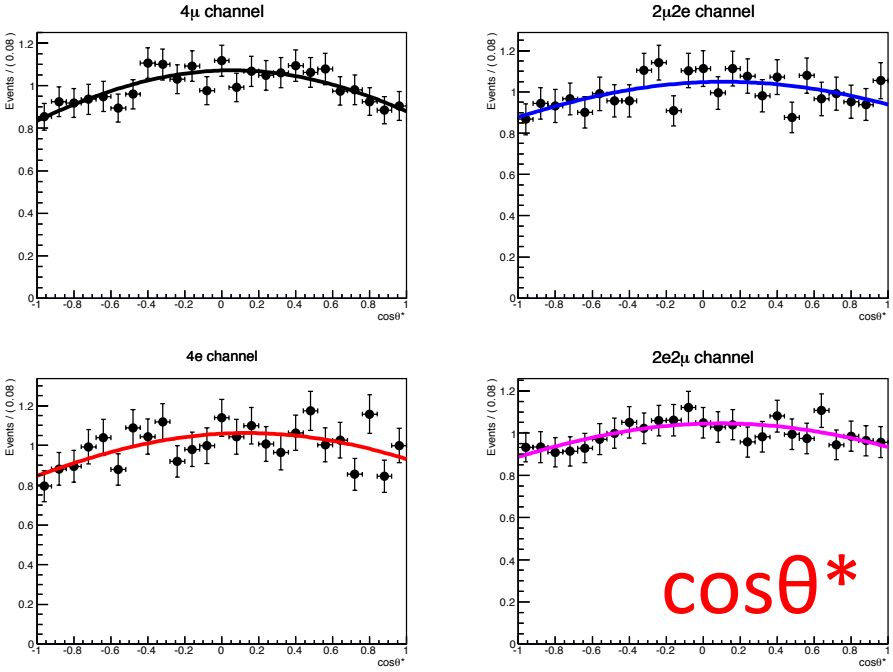
**fit function $\cos\theta_1$ :**
**4MU/4e: 1+cosX *p1_fit +cos2X *p2_fit+cos3X *p3_fit+cos4X *p4_fit +cos5X *p5_fit+cos6X *p6_fit+cos7X *p7_fit +cos8X *p8_fit**

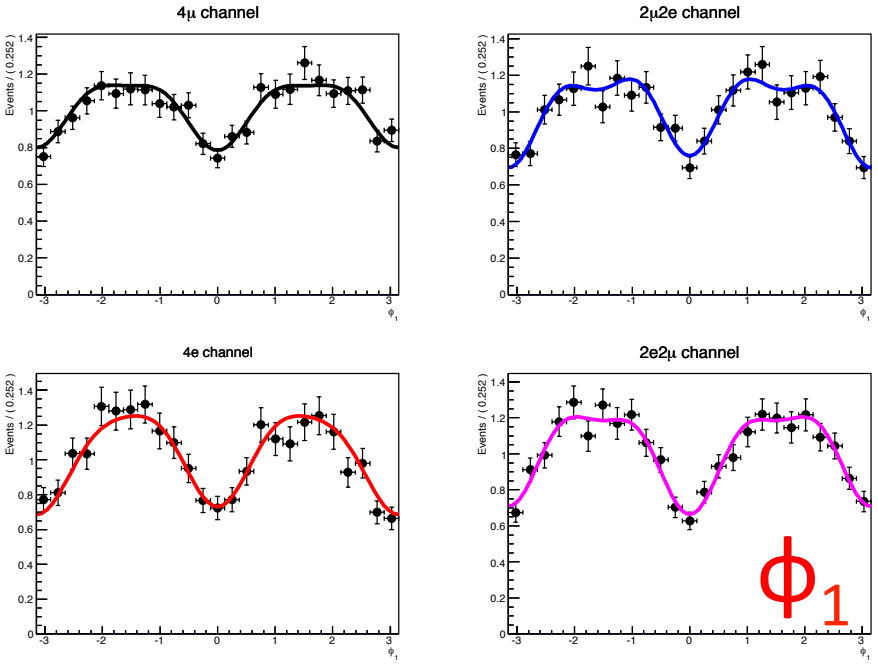
**fit function $\cos\theta_2$ :**
**4MU/4e: 1+cosX *p1_fit +cos2X *p2_fit+cos3X *p3_fit+cos4X *p4_fit +cos5X *p5_fit+cos6X *p6_fit+cos7X *p7_fit +cos8X *p8_fit**

# signal JHU 2+

with pT reweight

# goodpair acceptances: cosθ* and $\phi_1$

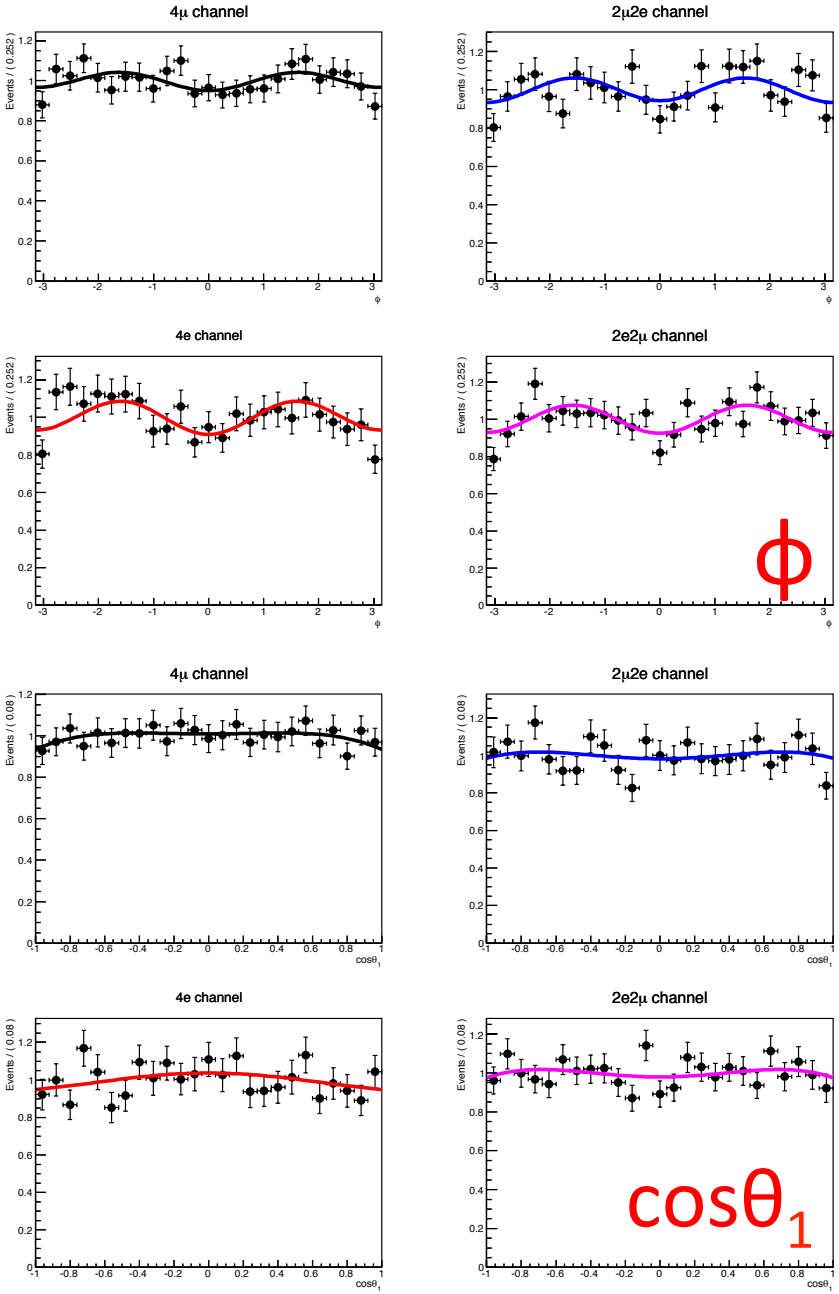


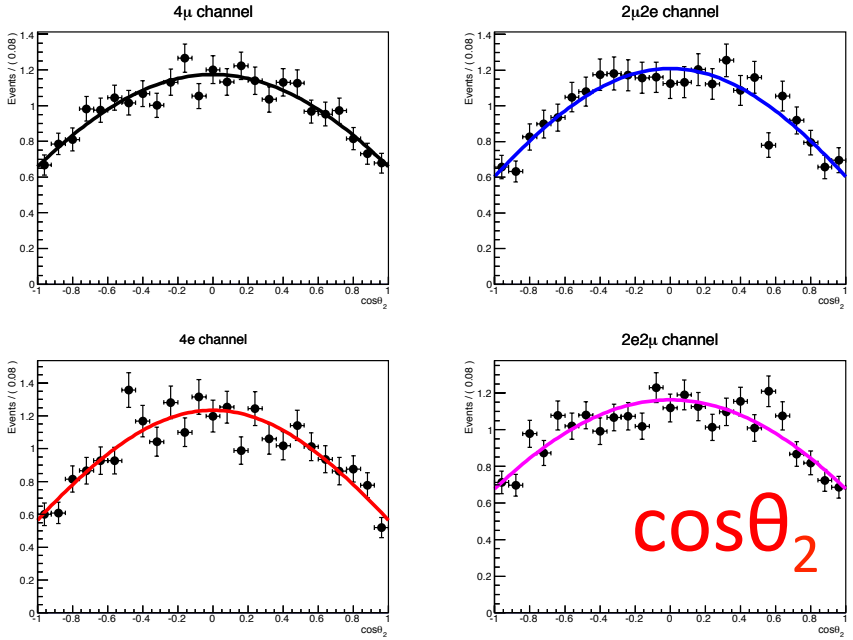




**fit functioncosθ*:**
**(p9_fit+X*p10_fit)*(1+cosX *p1_fit)**

**fit function: 1+cosX *p1_fit +cos2X *p2_fit+cos3X *p3_fit +cos4X *p4_fit**

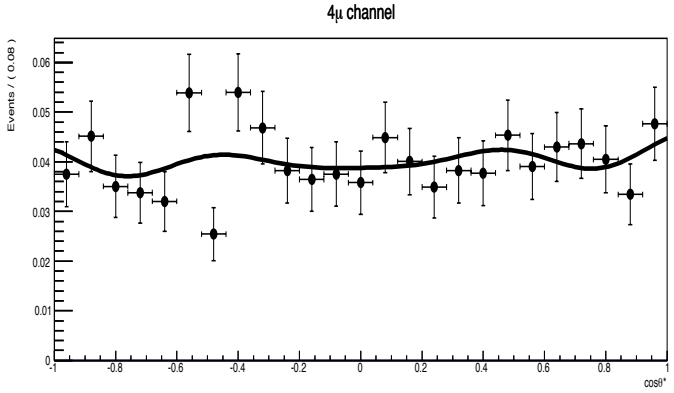
# goodpair acceptances: $\phi$, $\cos\theta_1$ and $\cos\theta_2$

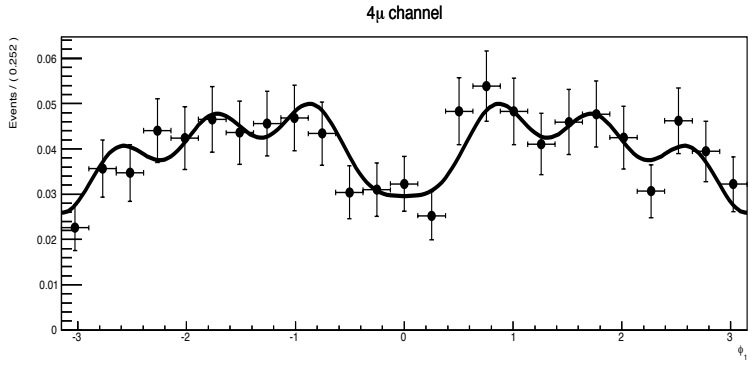


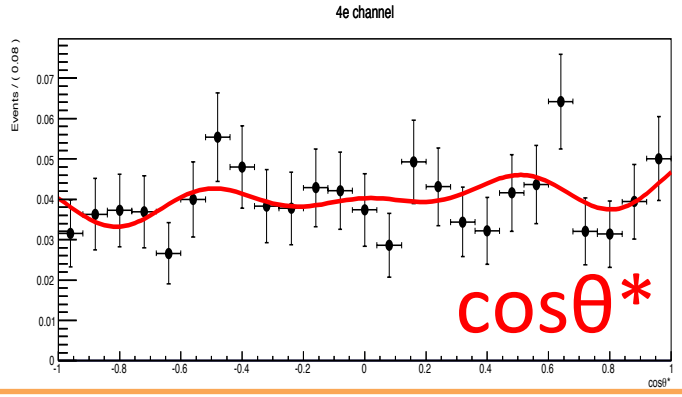



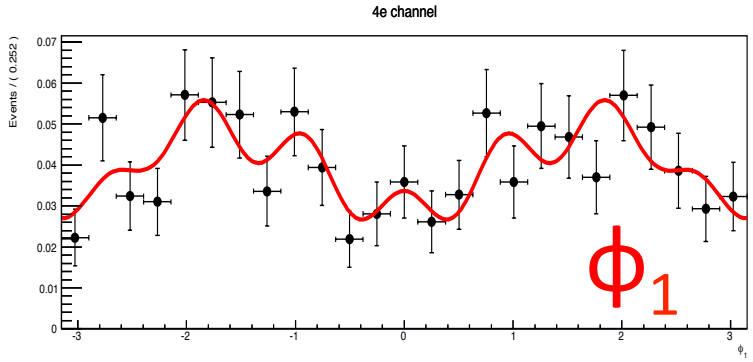

**fit function for $\phi$, $\cos\theta_1$ and $\cos\theta_2$:**
**1+cosX *p1_fit+cos2X *p2_fit**

# wrongpair: Recontructed cosθ* and $\phi_1$



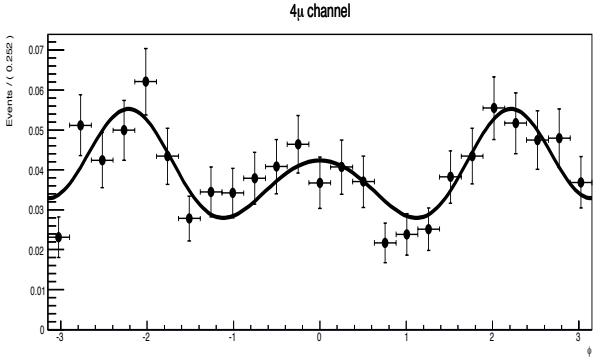



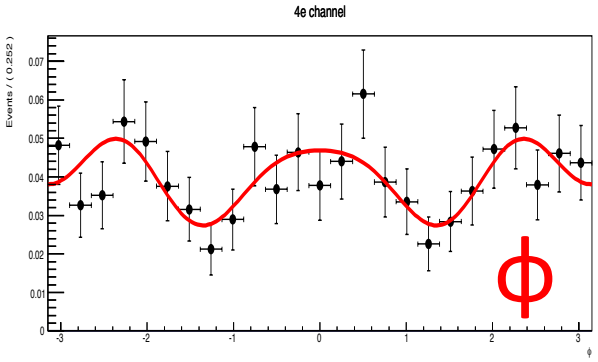

**fit function for cosθ*:**

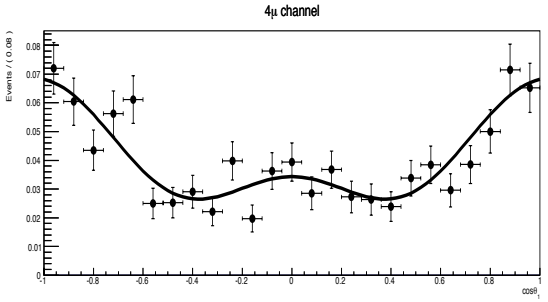
**4MU/4e: (p9_fit + p10_fit * X) *(1+(cosX)^4 *p1_fit+(cos8X) *p2_fit+(cos9X) *p3_fit+ (cos10X) *p4_fit+(cos11X) *p5_fit)**

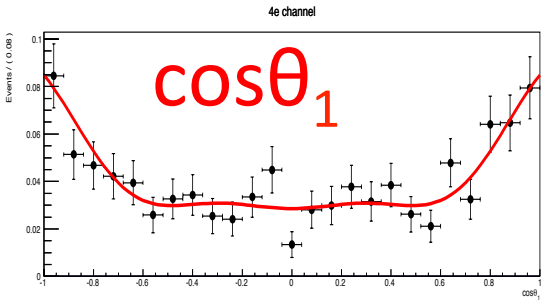
**fit function: 1+cosX *p1_fit+cos2X *p2_fit+cos3X *p3_fit+cos4X *p4_fit +cos5X *p5_fit+cos6X *p6_fit+cos7X *p7_fit+cos8X *p8_fit**

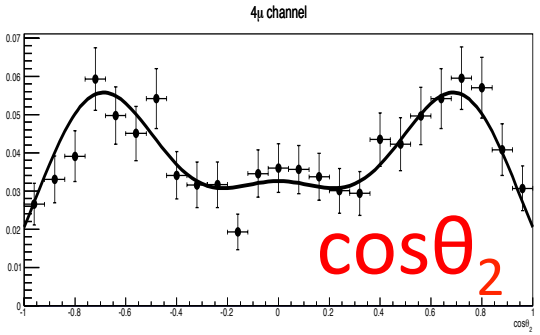
# wrongpair: Reconstructed $\phi$, $\cos\theta_1$ and $\cos\theta_2$

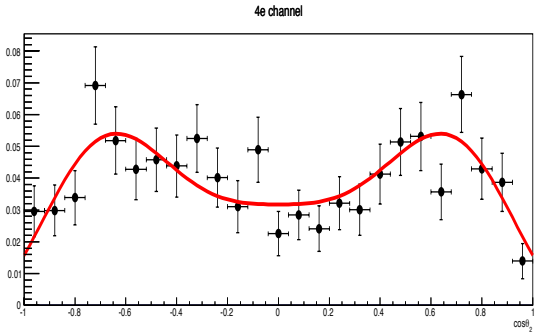



**fit function for ϕ:**
**4MU/4e: (1+(cosX)*p1_fit+(cos2X) *p2_fit+(cos3X) *p3_fit+(cos4X) *p4_fit)**

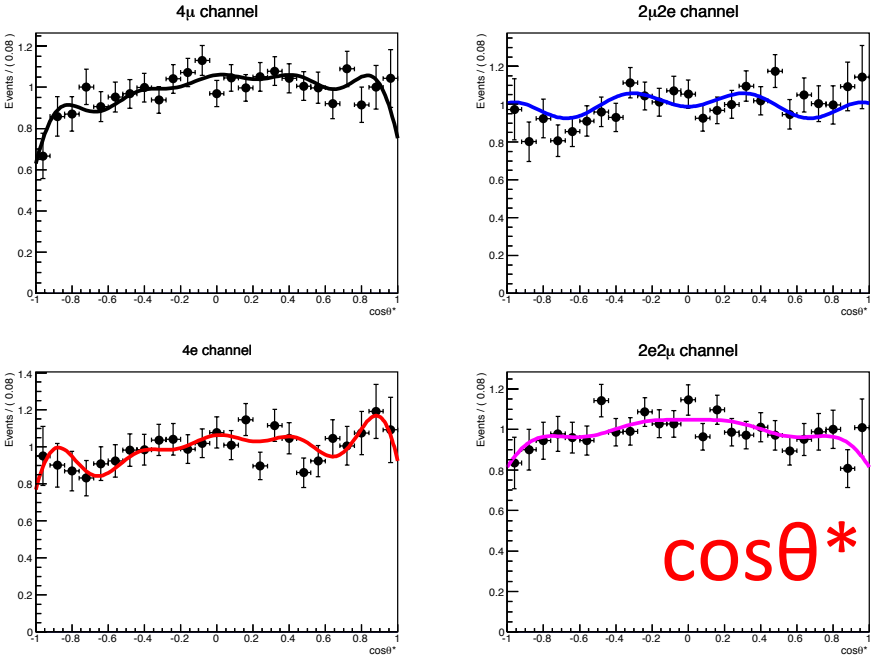
**fit function $\cos\theta_1$ :**
**4MU/4e: 1+cosX *p1_fit +cos2X *p2_fit+cos3X *p3_fit+cos4X *p4_fit +cos5X *p5_fit+cos6X *p6_fit+cos7X *p7_fit +cos8X *p8_fit**

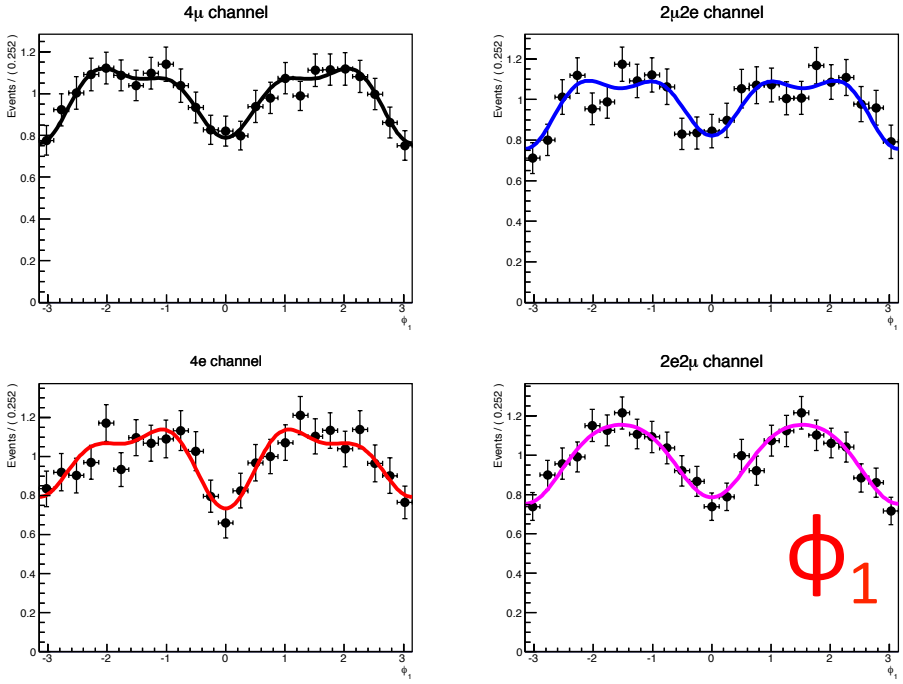
**fit function $\cos\theta_2$ :**
**4MU/4e: 1+cosX *p1_fit +cos2X *p2_fit+cos3X *p3_fit+cos4X *p4_fit +cos5X *p5_fit+cos6X *p6_fit+cos7X *p7_fit +cos8X *p8_fit**

# signal JHU 2-

with pT reweight

# goodpair acceptances: cosθ* and $\phi_1$

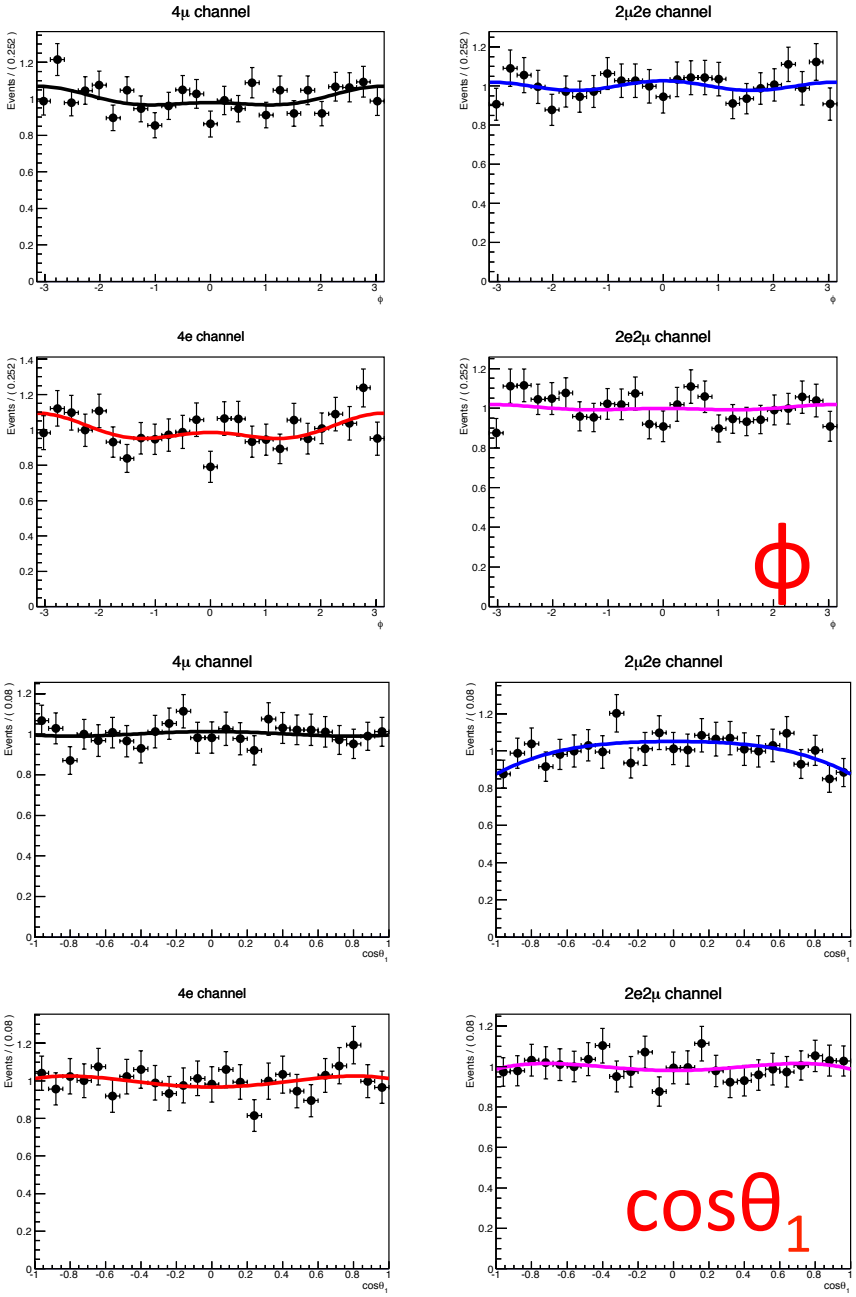


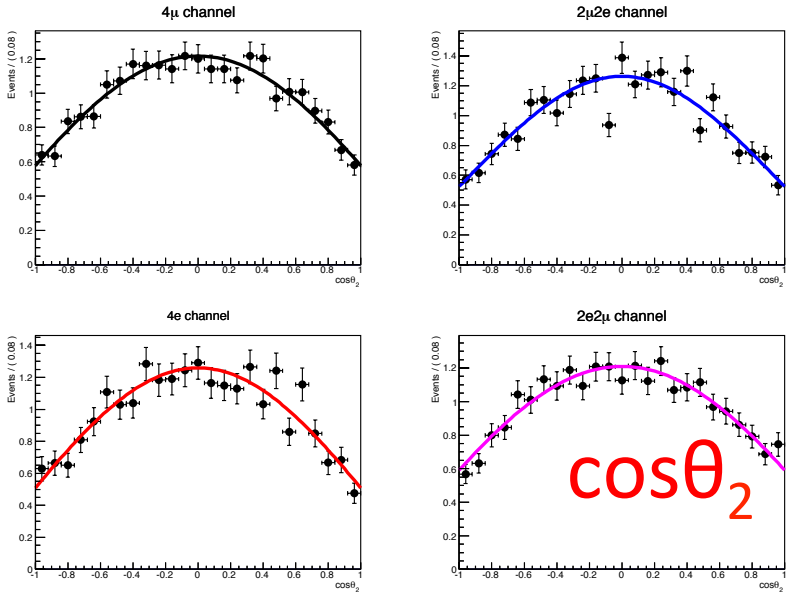




**fit functioncosθ*:**
**(p9_fit+X*p10_fit)*(1+cosX *p1_fit)**

**fit function: 1+cosX *p1_fit +cos2X *p2_fit+cos3X *p3_fit +cos4X *p4_fit**

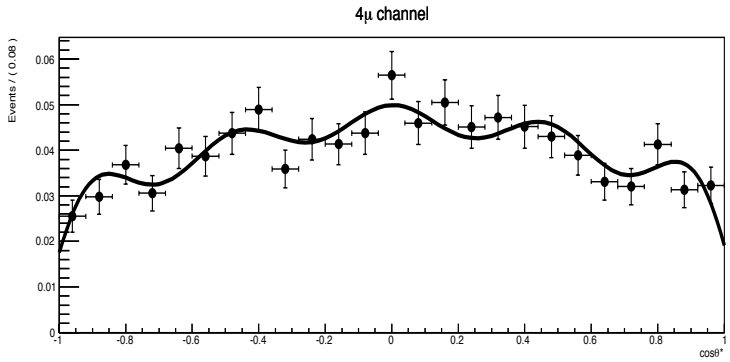
# goodpair acceptances: $\phi$, $\cos\theta_1$ and $\cos\theta_2$

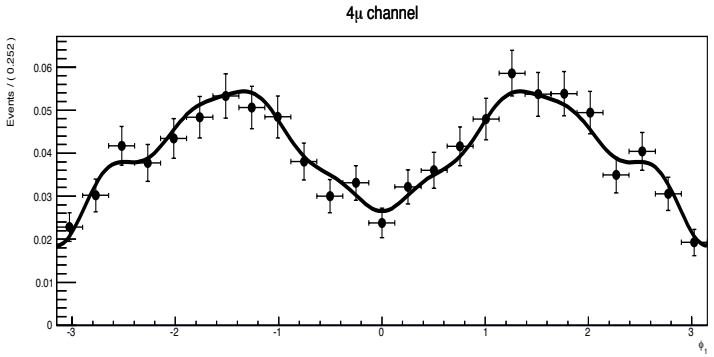


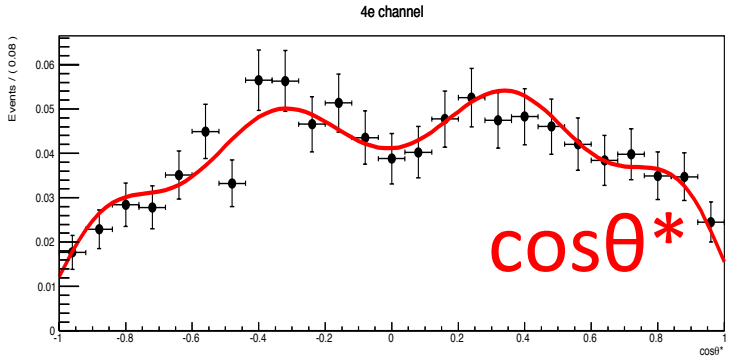



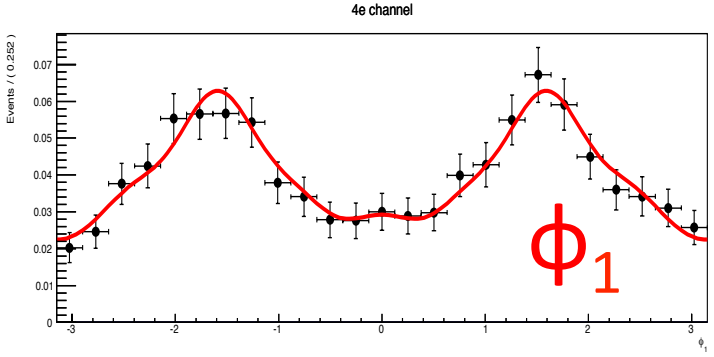

**fit function for $\phi$, $\cos\theta_1$ and $\cos\theta_2$:**
**1+cosX *p1_fit+cos2X *p2_fit**

# wrongpair: Recontructed cosθ* and $\phi_1$



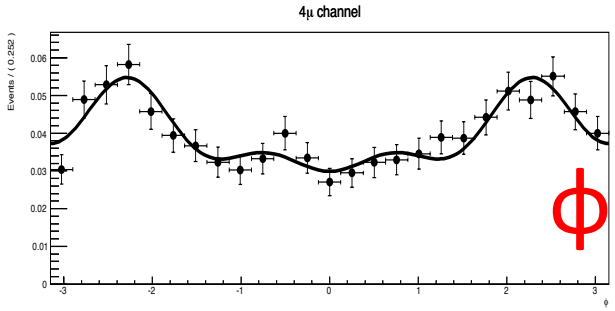



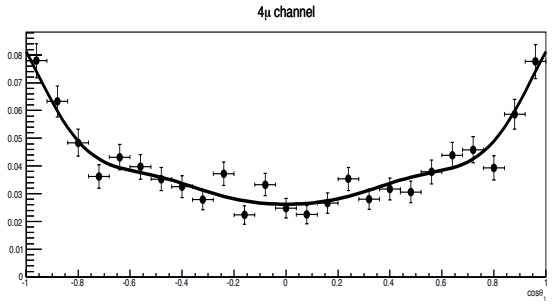

**fit function for cosθ*:**

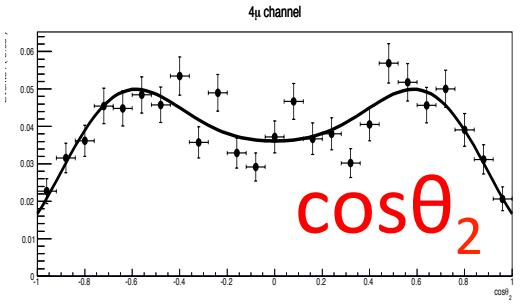
**4MU/4e: (p9_fit + p10_fit * X) *(1+(cosX)^4 *p1_fit+(cos8X) *p2_fit+(cos9X) *p3_fit+ (cos10X) *p4_fit+(cos11X) *p5_fit)**

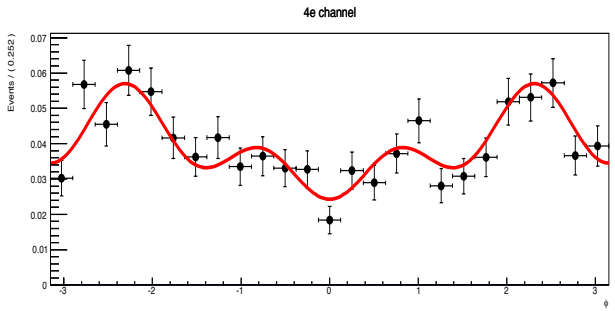
**fit function: 1+cosX *p1_fit+cos2X *p2_fit+cos3X *p3_fit+cos4X *p4_fit +cos5X *p5_fit+cos6X *p6_fit+cos7X *p7_fit+cos8X *p8_fit**

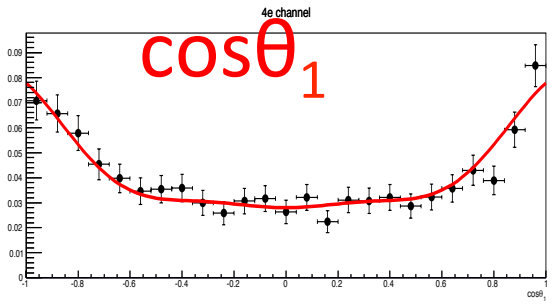
# wrongpair: Reconstructed $\phi$, $\cos\theta_1$ and $\cos\theta_2$

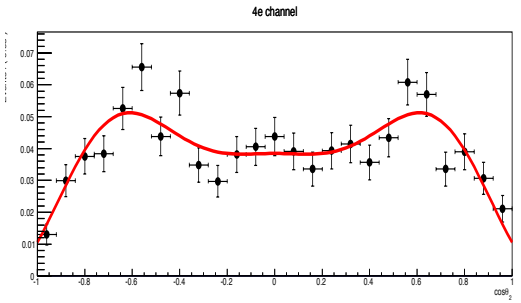


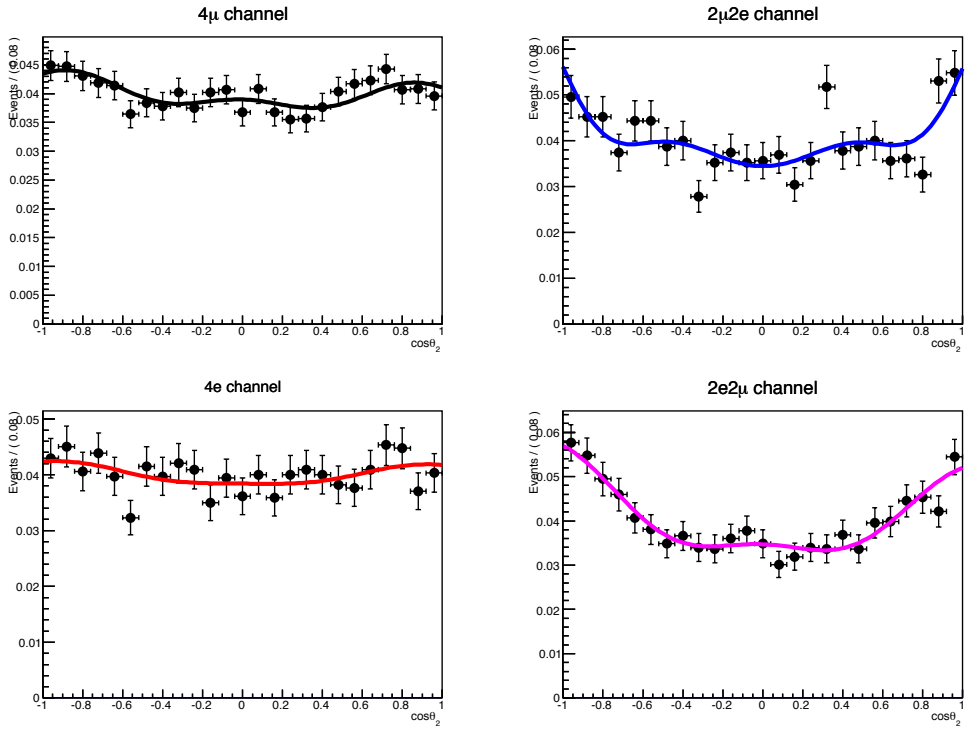

**fit function for ϕ:**
**4MU/4e: (1+(cosX)*p1_fit+ (cos2X) *p2_fit+(cos3X) *p3_fit +(cos4X) *p4_fit)**

**fit function $\cos\theta_1$ :**
**4MU/4e: 1+cosX *p1_fit +cos2X *p2_fit+cos3X *p3_fit+cos4X *p4_fit +cos5X *p5_fit+cos6X *p6_fit+cos7X *p7_fit +cos8X *p8_fit**

**fit function $\cos\theta_2$ :**
**4MU/4e: 1+cosX *p1_fit +cos2X *p2_fit+cos3X *p3_fit+cos4X *p4_fit +cos5X *p5_fit+cos6X *p6_fit+cos7X *p7_fit +cos8X *p8_fit**

ZZ

# ZZ: Reconstructed cosθ*




**fit function:**

**2mu2e: (p9_fit + p10_fit * X) * (1+(cosX)^4 *p1_fit+(cos2X) *p2_fit+(cos4X) *p3_fit+(cos8X) *p4_fit+(cos10X) *p5_fit)**

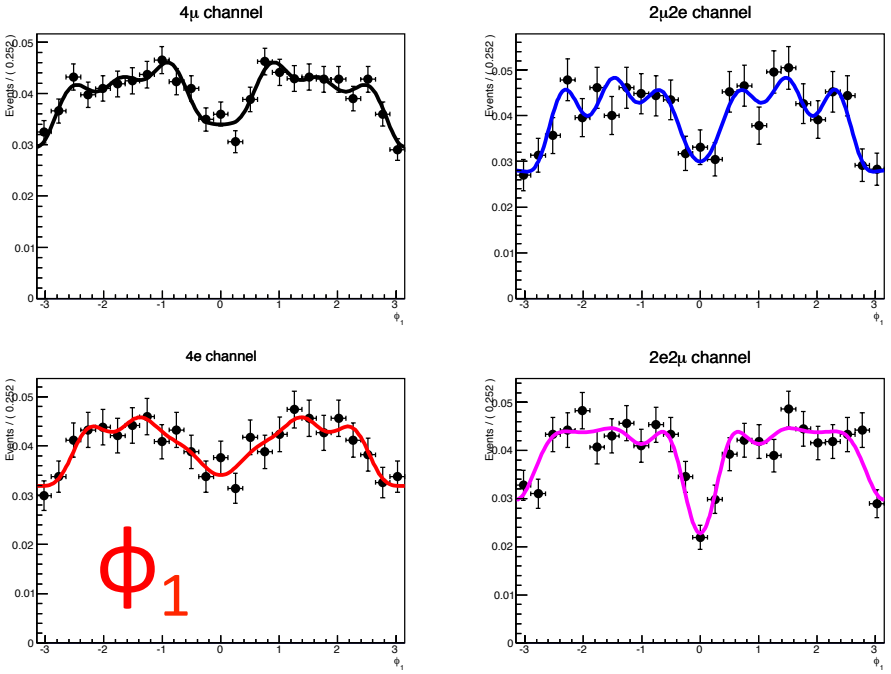
**2e2mu: (p9_fit + p10_fit * X) * (1+(cosX)^4 *p1_fit+(cos2X) *p2_fit+(cos4X) *p3_fit+(cos6X) *p4_fit+(cos8X) *p5_fit)**

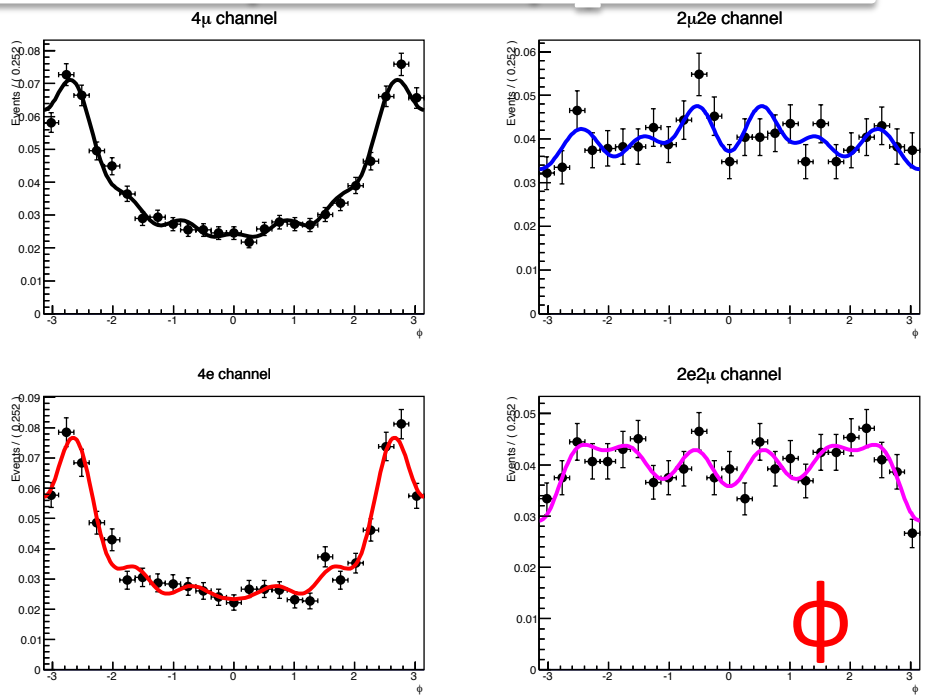
**4e: (p9_fit + p10_fit * X) * (1+(cosX)^4 *p1_fit+(cos2X) *p2_fit+(cos4X) *p3_fit+(cos6X) *p4_fit+(cos7X) *p5_fit)**

**4MU: (p9_fit + p10_fit * X) * (1+(cosX)^4 *p1_fit+(cos2X) *p2_fit+(cos4X) *p3_fit+(cos5X) *p4_fit+(cos7X) *p5_fit)**

# ZZ: Reconstructed ϕ and $\phi_1$

**fit function $\phi_1$:**
**1+cosX *p1_fit+cos2X *p2_fit**
**+cos3X *p3_fit+cos4X *p4_fit**
**+cos5X *p5_fit+cos6X *p6_fit**
**+cos7X *p7_fit+cos8X *p8_fit**

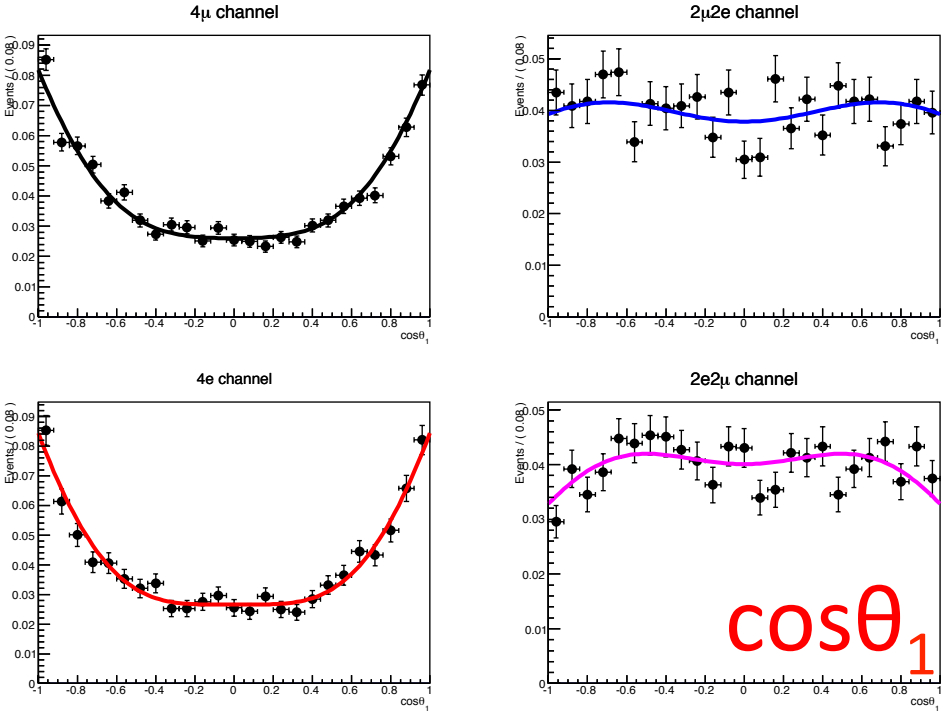


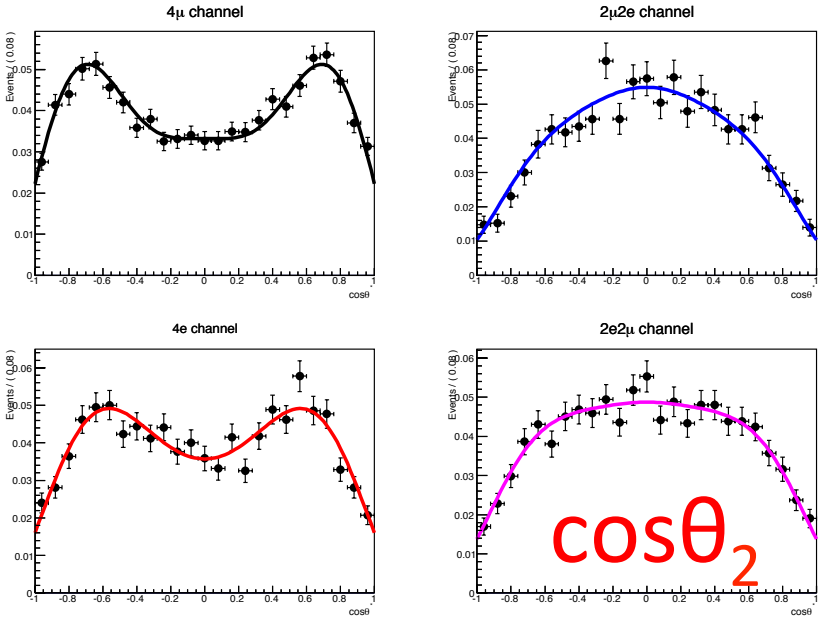




**fit function ϕ: 1+cosX *p1_fit+cos2X**
***p2_fit+cos3X *p3_fit+cos4X *p4_fit**
**+cos5X *p5_fit+cos6X *p6_fit+cos7X**
***p7_fit**

# ZZ: Reconstructed $\cos\theta_1$ and $\cos\theta_2$

**fit function $\cos\theta_1$: 1+cosX *p1_fit+cos2X *p2_fit+cos3X *p3_fit+cos4X *p4_fit**




**fit function $\cos\theta_2$: 1+cosX *p1_fit+cos2X *p2_fit +cos3X *p3_fit+cos4X *p4_fit +cos5X *p5_fit+cos6X *p6_fit +cos7X *p7_fit**