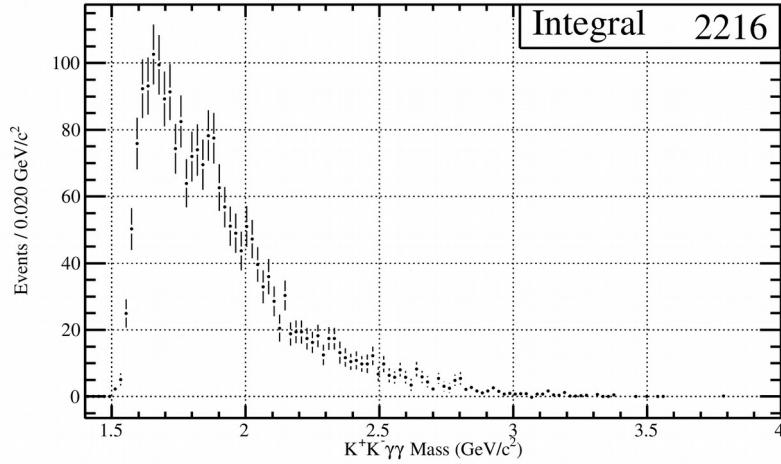


# PhiEta Invariant Mass Study

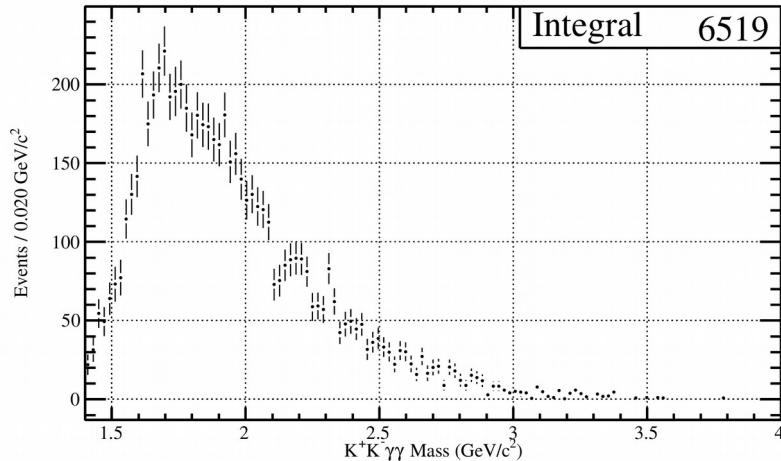
- I look at the significance of different fits for PhiEta Invariant Mass (again)
- Box Cut Study of PhiEta Backgrounds
- Go over 6 week schedule

# Qvalue PhiEta, No Fit

$K^+K\gamma\gamma$  Mass :  $Q_{\phi\eta}$  Weighted



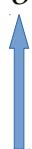
$K^+K\gamma\gamma$  Mass :  $1 - Q_{\phi\eta}$  Weighted

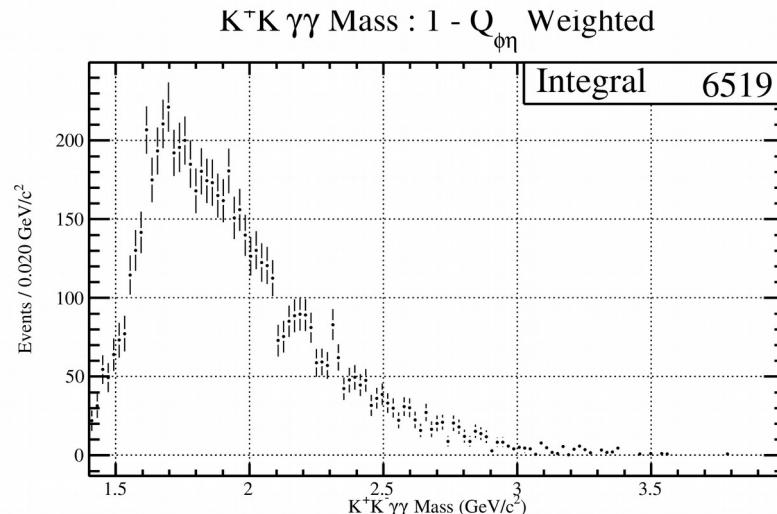
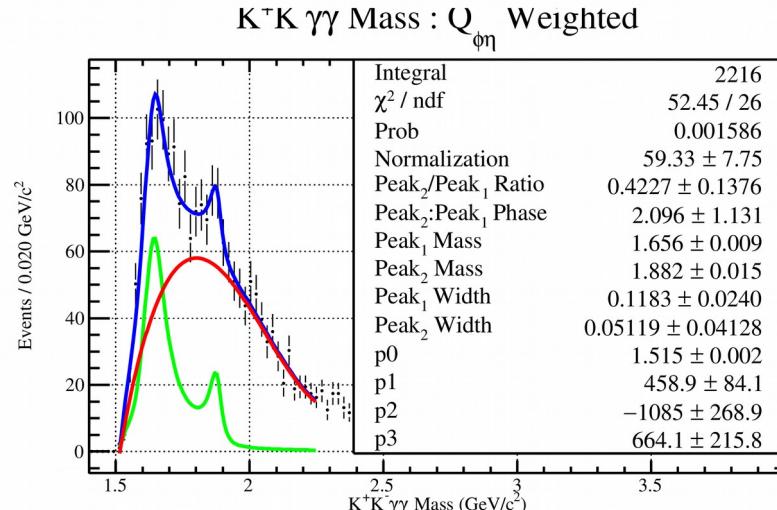


# Qvalue PhiEta: Fit Range Begin: 1.510

\* The fit looks good, but the Chi Squared is high and probability is low

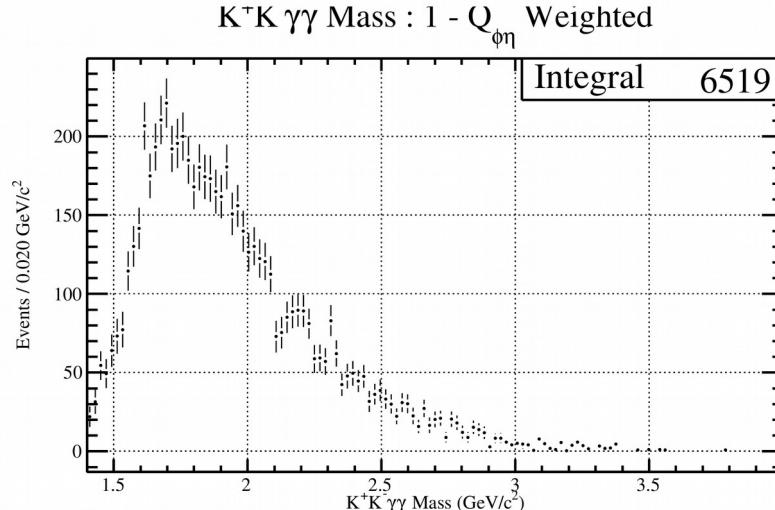
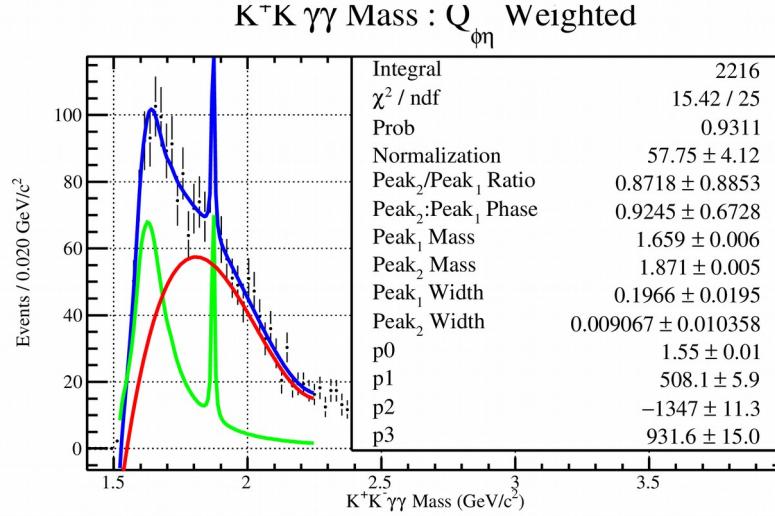
\* Probability is a function of:  
Chi Squared and NDF

$$\chi^2 = \frac{\sum_{i=1}^N (y_i - f(x_i))^2}{\sigma_i^2}$$


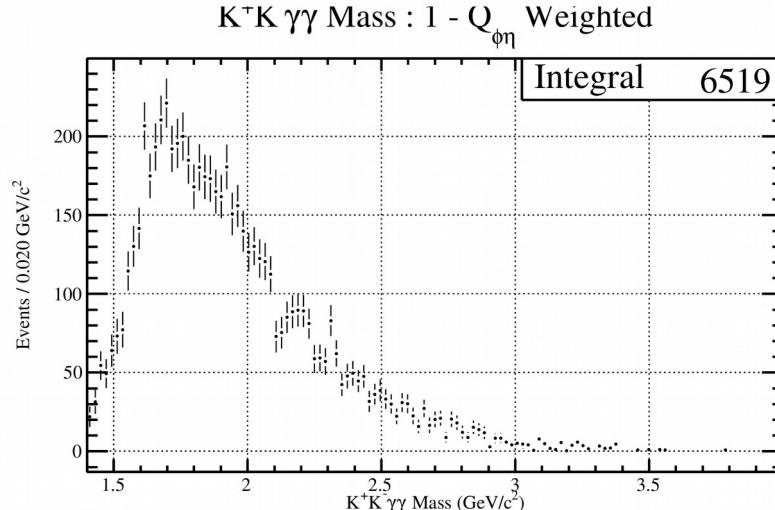
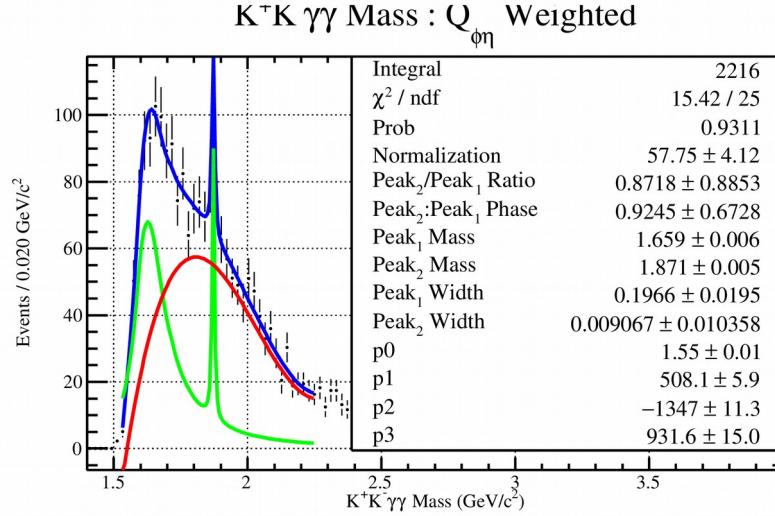


Function of error!

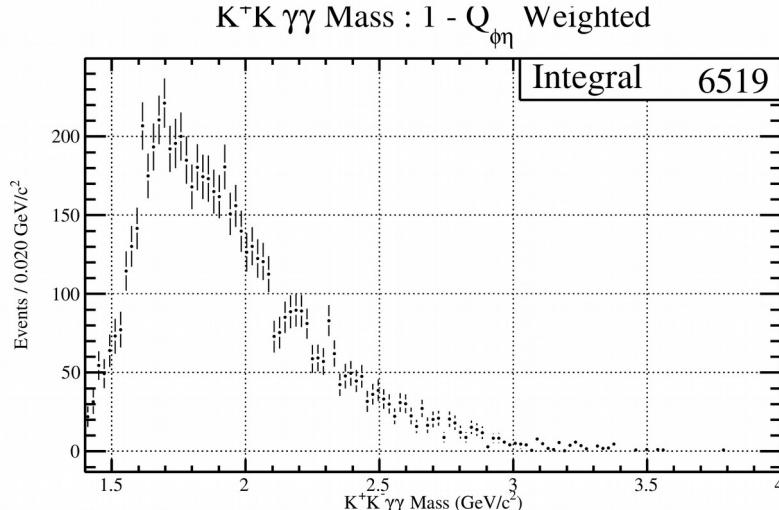
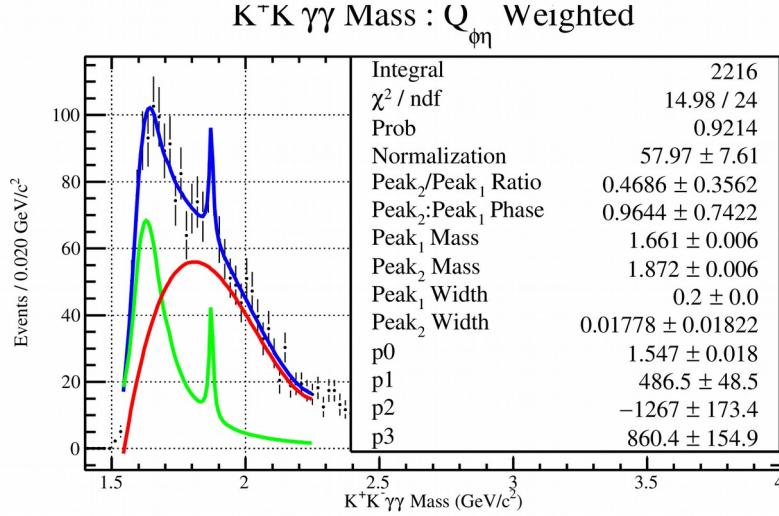
# Qvalue PhiEta: Fit Range Begin: 1.520



# Qvalue PhiEta: Fit Range Begin: 1.530



# Qvalue PhiEta: Fit Range Begin: 1.540



# Calculation of Different Chi Sq's:

- TH1F\_g1g2kpkm\_\_1->SetBinError(0,1.235817e-05);
- TH1F\_g1g2kpkm\_\_1->SetBinError(1,2.212723e-05);
- TH1F\_g1g2kpkm\_\_1->SetBinError(2,0.0003875287);
- TH1F\_g1g2kpkm\_\_1->SetBinError(3,0.002918132);
- TH1F\_g1g2kpkm\_\_1->SetBinError(4,0.0403104);
- TH1F\_g1g2kpkm\_\_1->SetBinError(5,0.1303371); 
- TH1F\_g1g2kpkm\_\_1->SetBinError(6,1.052766);
- TH1F\_g1g2kpkm\_\_1->SetBinError(7,1.847023);

$$X^2 = \frac{\sum_{i=1}^N (y_i - f(x_i))^2}{\sigma_i^2}$$

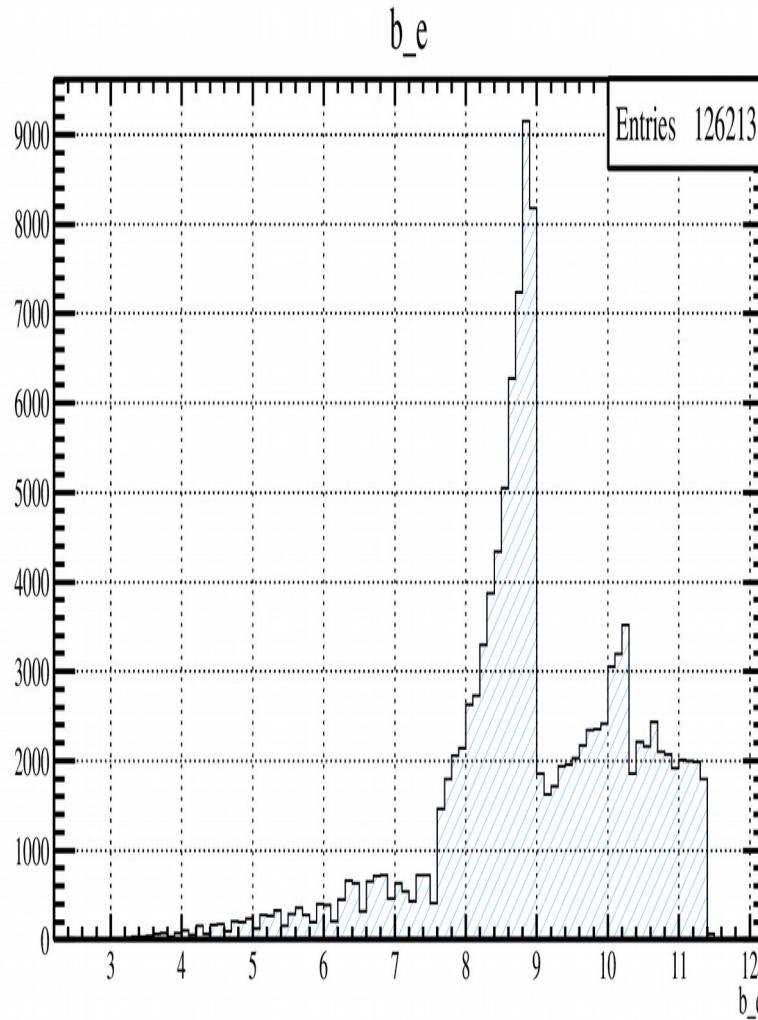
$$X^2 = \frac{\sum_{i=5}^N (y_i - f(x_i))^2}{\sigma_i^2} = \frac{\sum_{i=6}^N (y_i - f(x_i))^2}{\sigma_i^2} + \frac{(y_5 - f(x_5))^2}{\sigma_5^2}$$

$$X^2 = 52.45 \quad \frac{\sum_{i=6}^N (y_i - f(x_i))^2}{\sigma_i^2} = 15.42$$

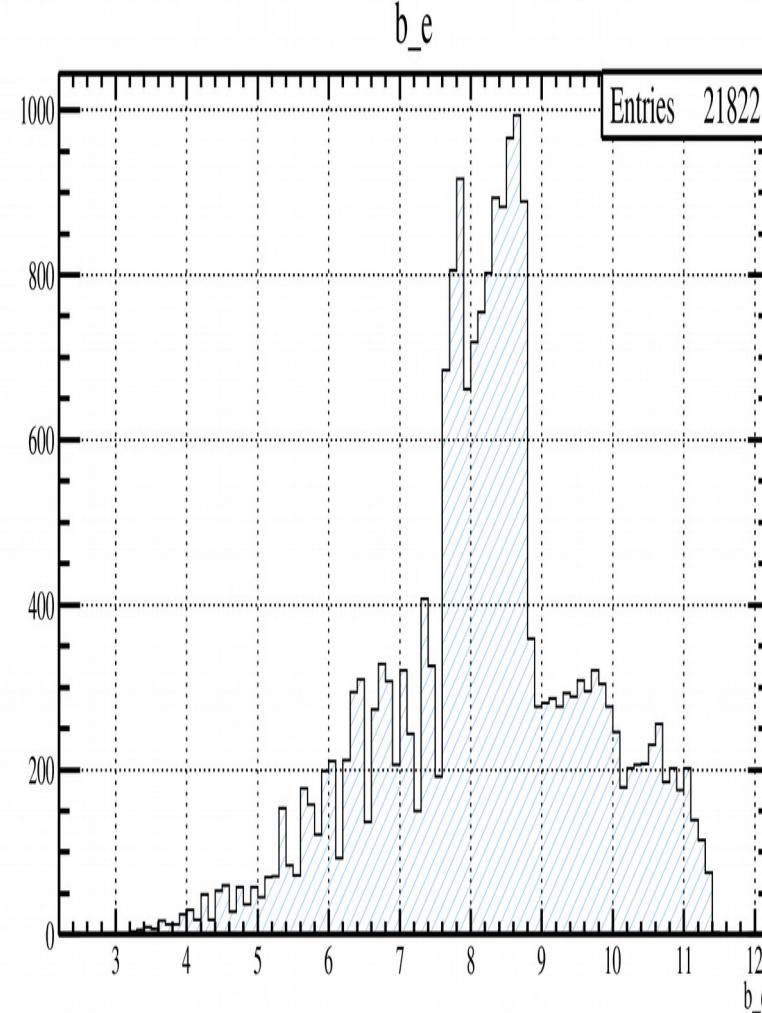
$$\frac{(y_5 - f(x_5))^2}{\sigma_5^2} = 37.03$$

$$\sigma_5 \approx \frac{1}{\sqrt{37}} = 0.16$$

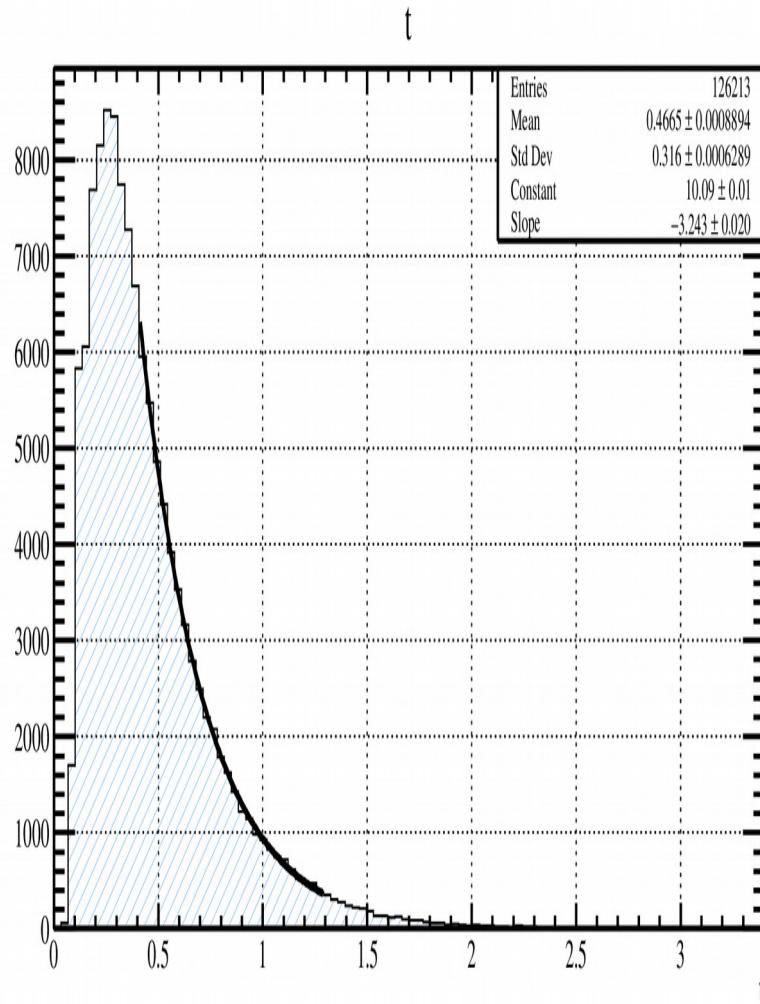
# Accepted MC



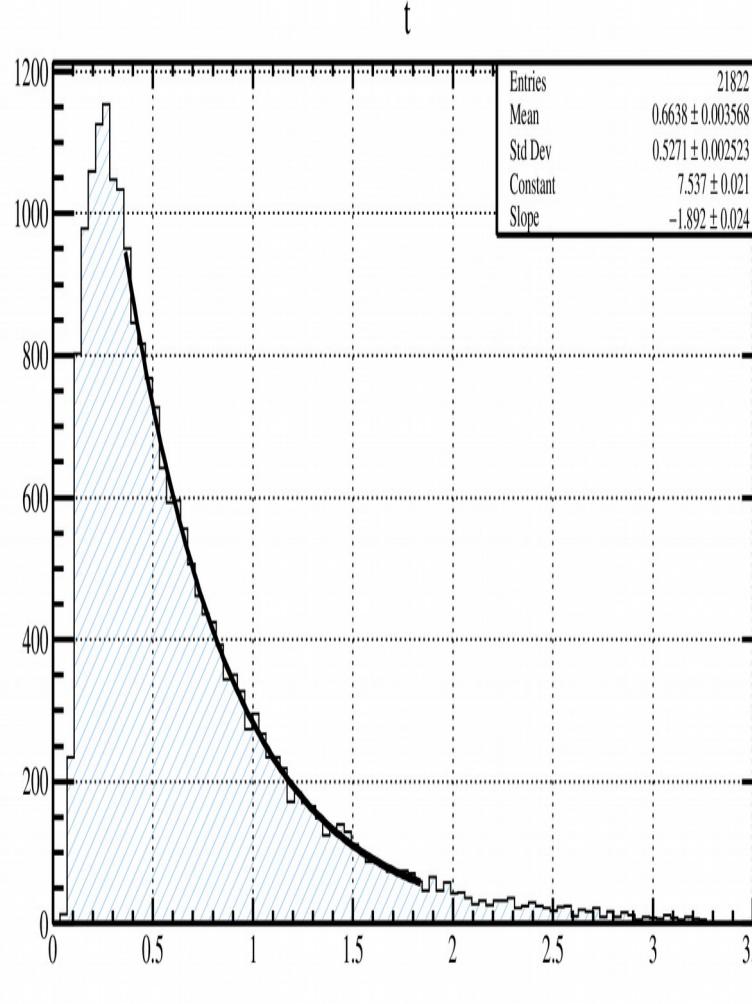
# Data



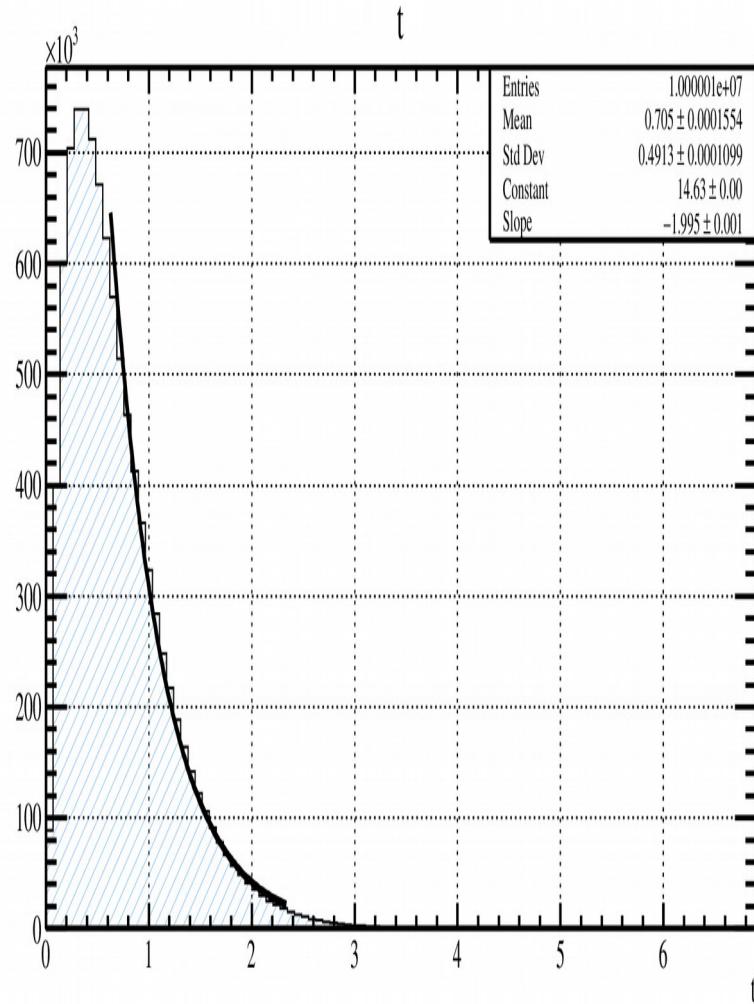
# Accepted MC



# Data

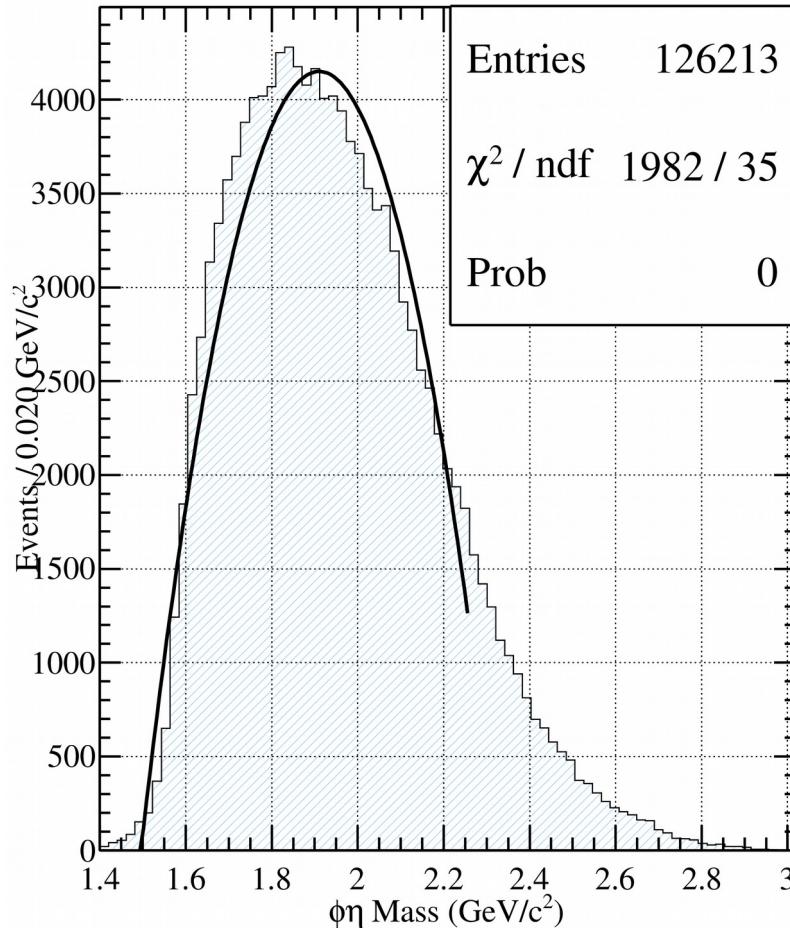


# Generated MC



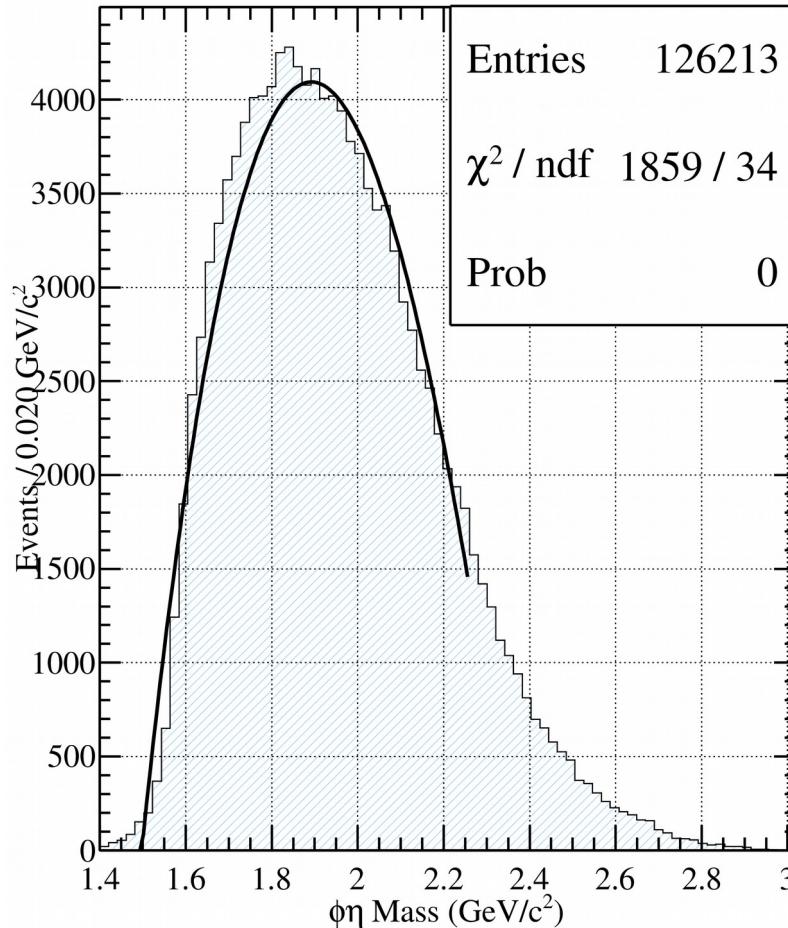
# Accepted PhiEta Phase Space: Poly 2 Fit

$\phi\eta$  Mass : Accepted Monte Carlo

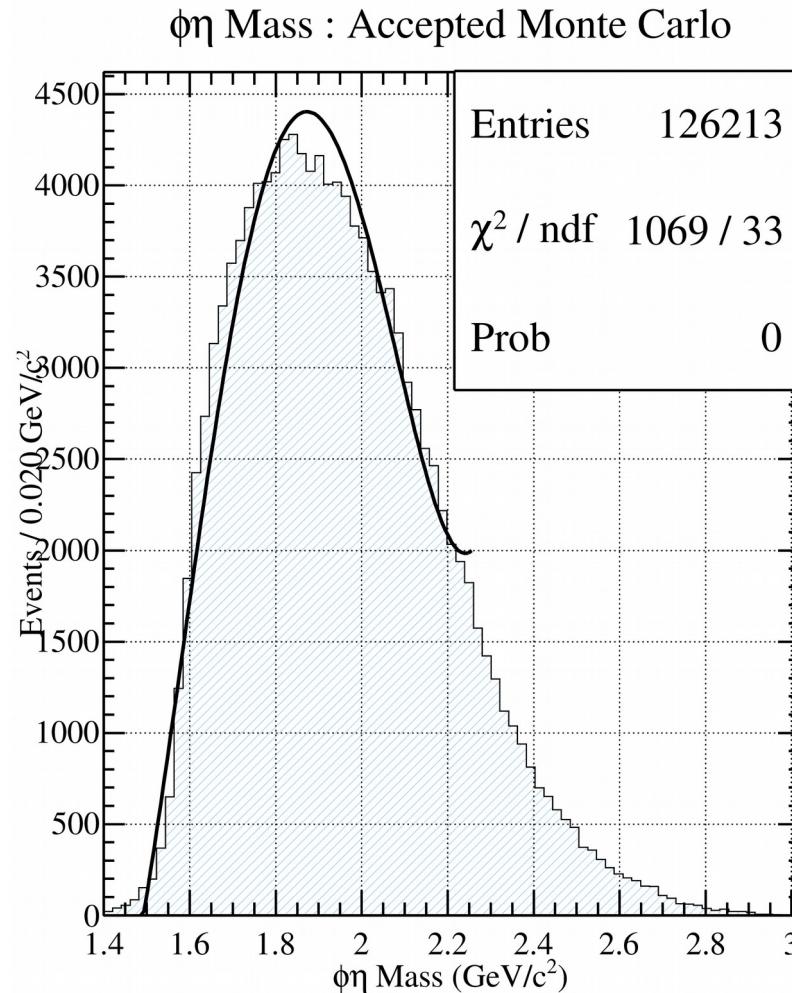


# Accepted PhiEta Phase Space: Poly 3 Fit

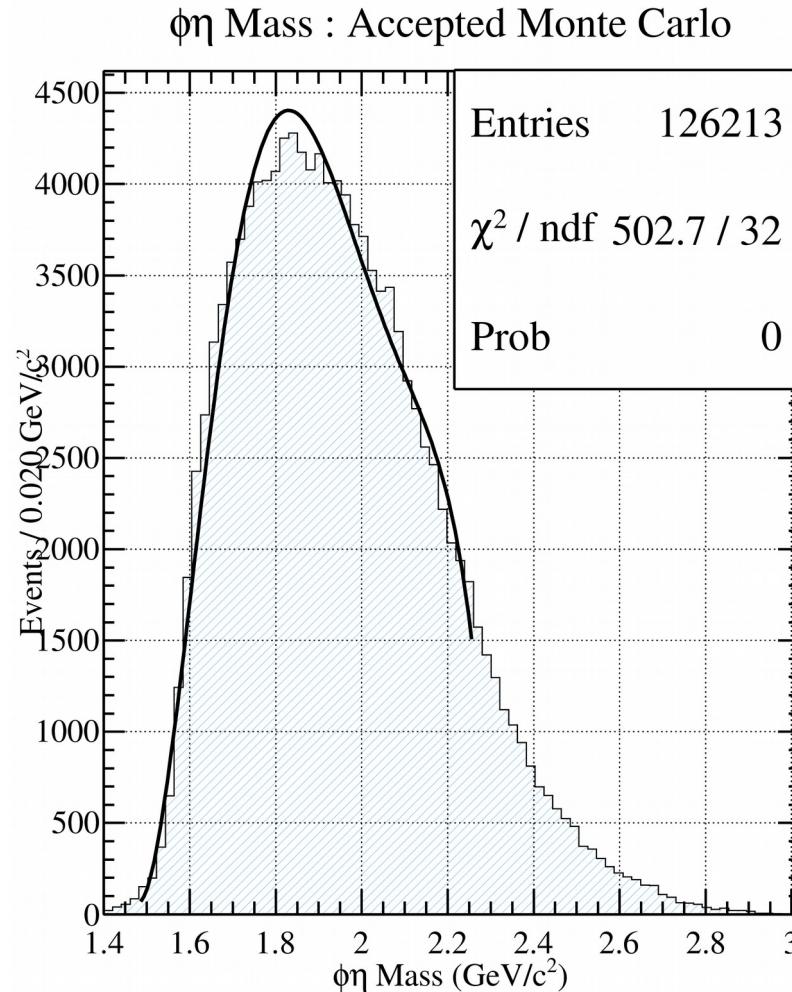
$\phi\eta$  Mass : Accepted Monte Carlo



# Accepted PhiEta Phase Space: Poly 4 Fit



# Accepted PhiEta Phase Space: Poly 5 Fit



# Schedule In The Next 6 Weeks:

MARCH 2019						
SUN	MON	TUE	WED	THU	FRI	SAT
					1	2
3	4	5	6	7	8	9
			Today			
10	11	12	13	14	15	16
					Send to P & S	
17	18	19	20	21	22	23
			Edit Thesis			
24	25	26	27	28	29	30
	90% Deadline		Edit Thesis		Send to committee	
31						

# Schedule In The Next 6 Weeks:

APRIL 2019						
SUN	MON	TUE	WED	THU	FRI	SAT
	1	2	3	4	5	6
			Make/ Practice Talk			
7	8	9	10	11	12	13
			Make/ Practice Talk		Defense	
14	15	16	17	18	19	20
			Make Corrections			
21	22	23	24	25	26	27
	Thesis Due					
28	29	30				