Weekly Updates On nu e Meeting

Bin-size Research & Closure Check For The ME Flux Fitting

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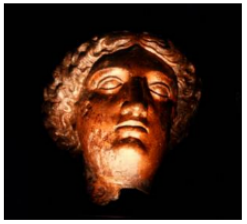
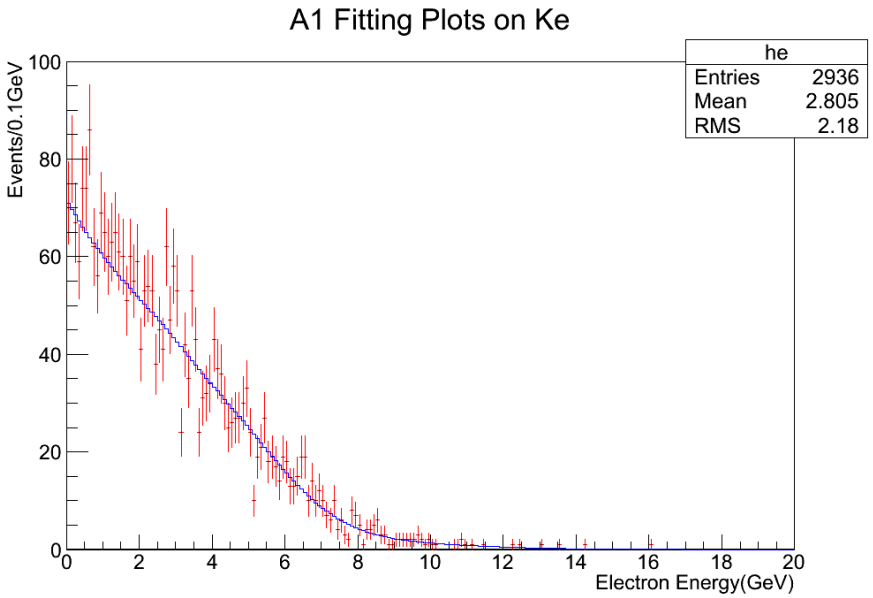
Hampton University

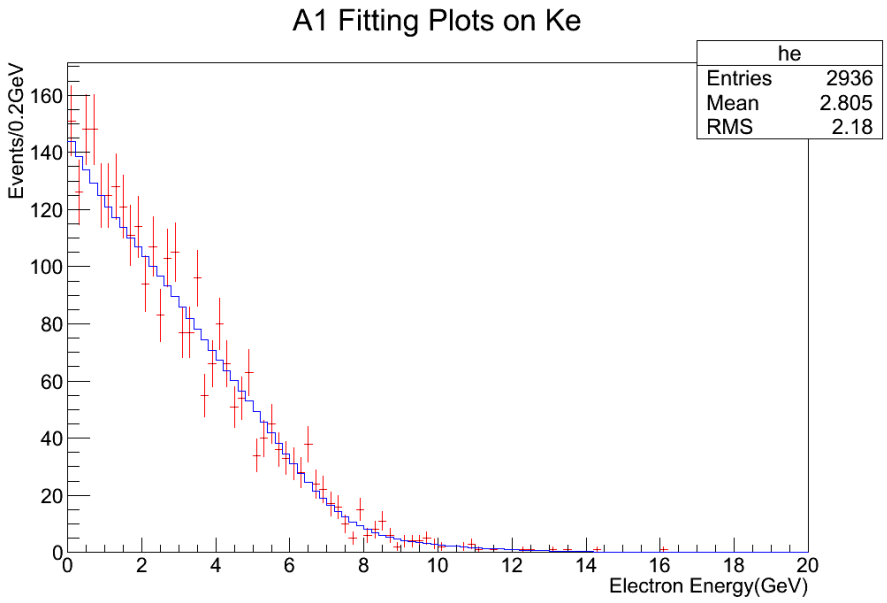
April 3, 2013



Fitting Plots With Different Bin-Size For Parameter a1

20e20 POT sudo data, True a1=1.728e-04

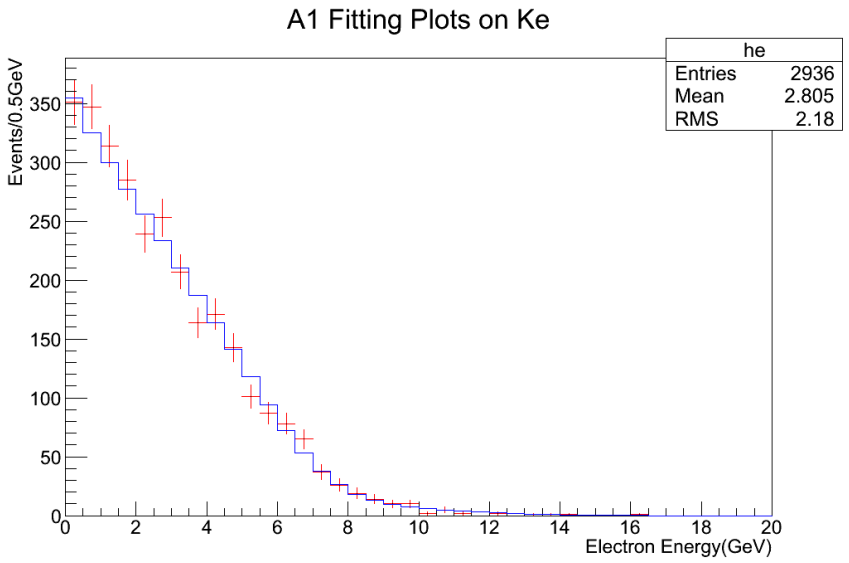


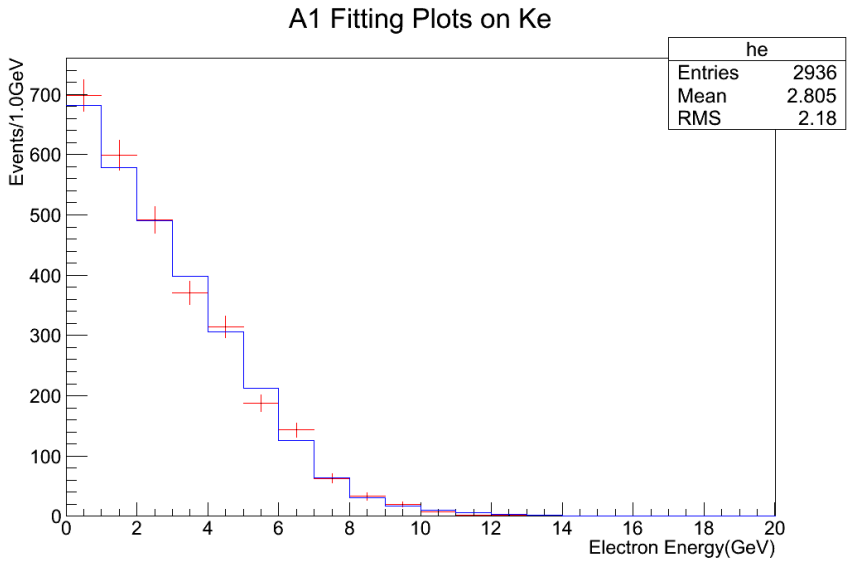


Fitting Plot 0.1GeV bin-size
1.647e-4±0.370e-4
(Fit Range 0-12GeV)

Fitting Plot 0.2GeV bin-size
1.690e-4±0.417e-4
(Fit Range 0-12GeV)

20e20 POT sudo data, True a1=1.728e-04



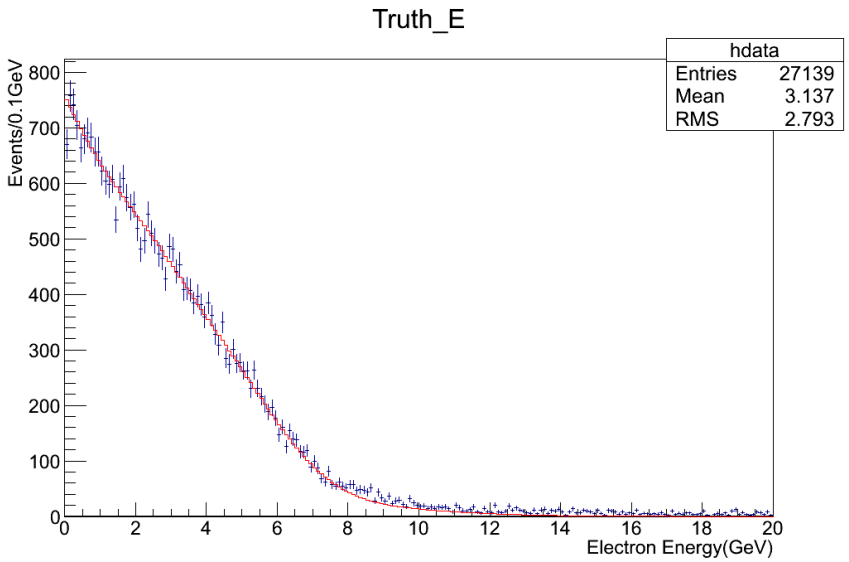


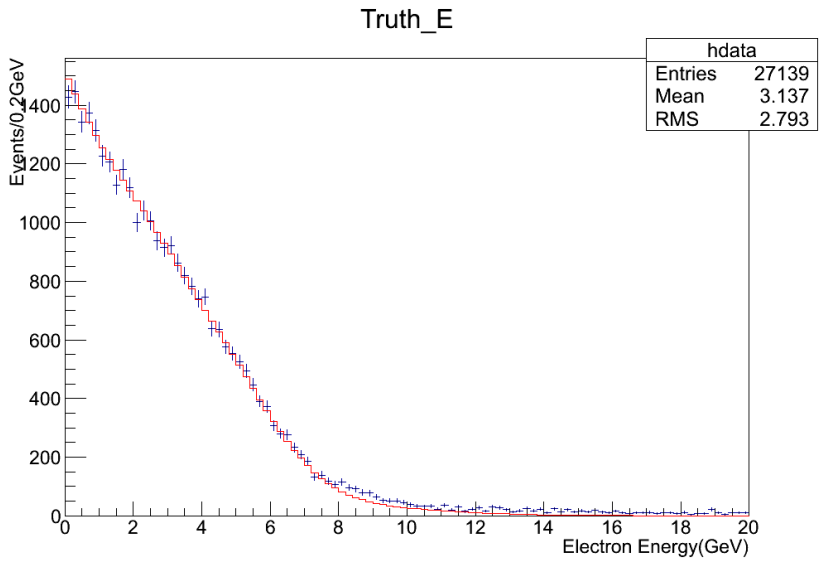
Fitting Plot 0.5GeV bin-size
1.719e-4±0.267e-4
(Fit Range 0-20GeV)

Fitting Plot 1.0GeV bin-size
1.724e-4±0.175e-4
(Fit Range 0-20GeV)

Fitting Genie Sample

200e20 POT, CVW, different bin-size, a1=1.728e-04





Fitting Plot 0.1GeV bin-size

1.765e-4±0.139e-4

(Fit Range 0-12GeV)

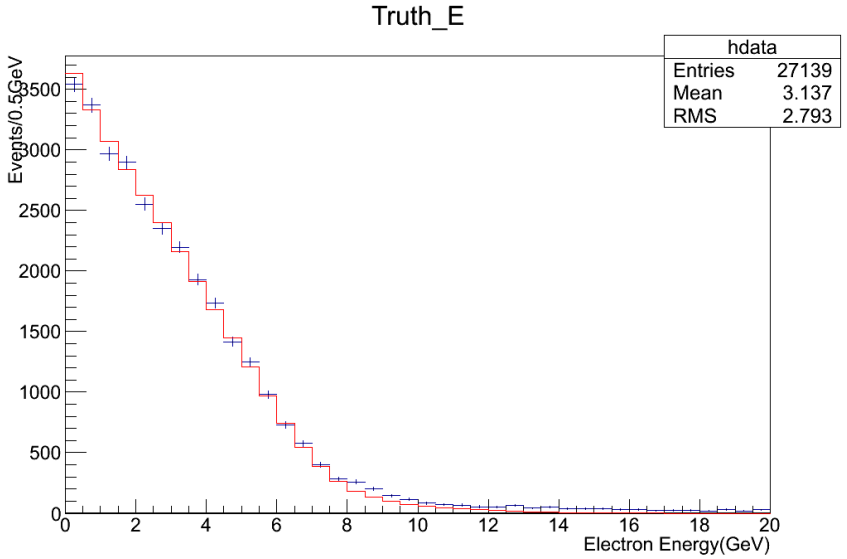
Fitting Plot 0.2GeV bin-size

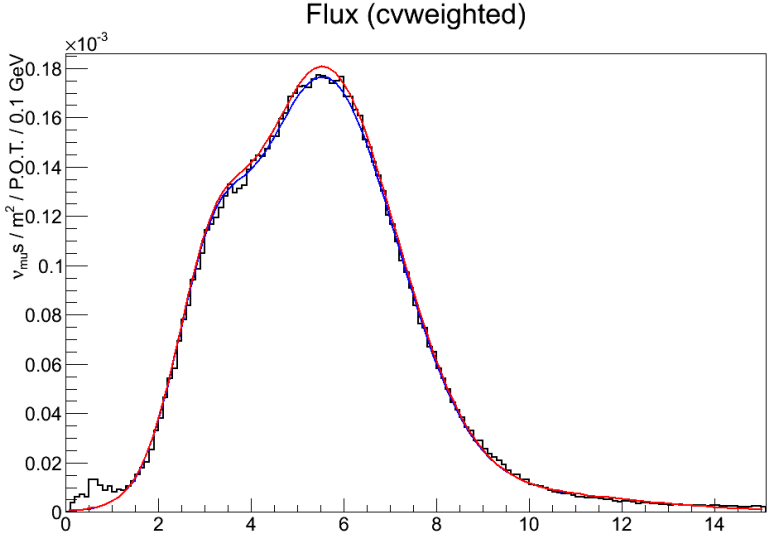
1.769e-4±0.100e-4

(Fit Range 0-12GeV)

Fitting Genie Sample

200e20 POT, CVW, different bin-size, a1=1.728e-04





Fitting Plot 0.5GeV bin-size

1.770e-4±0.079e-4

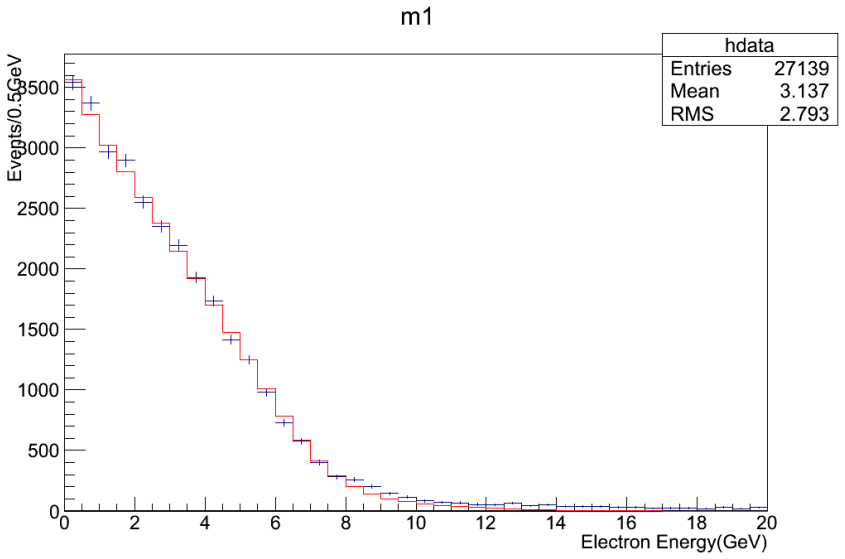
(Fit Range 0-20GeV)

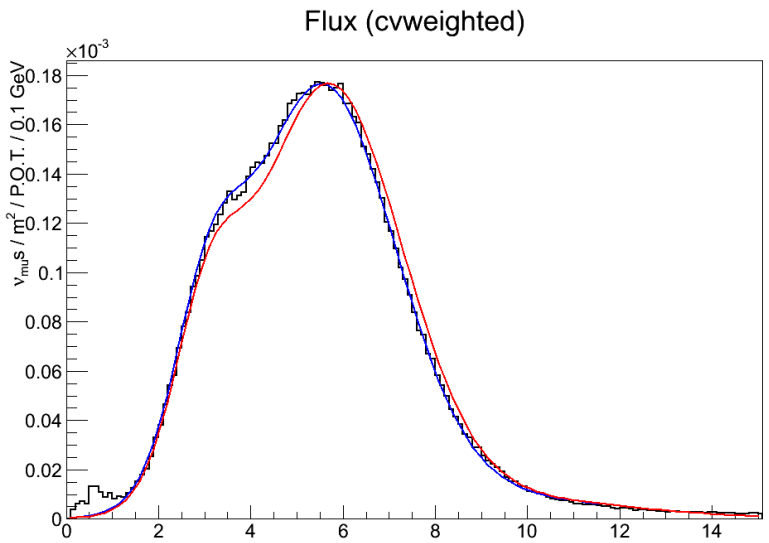
Updated 9 Pars Independent Fitting On Genie Sample

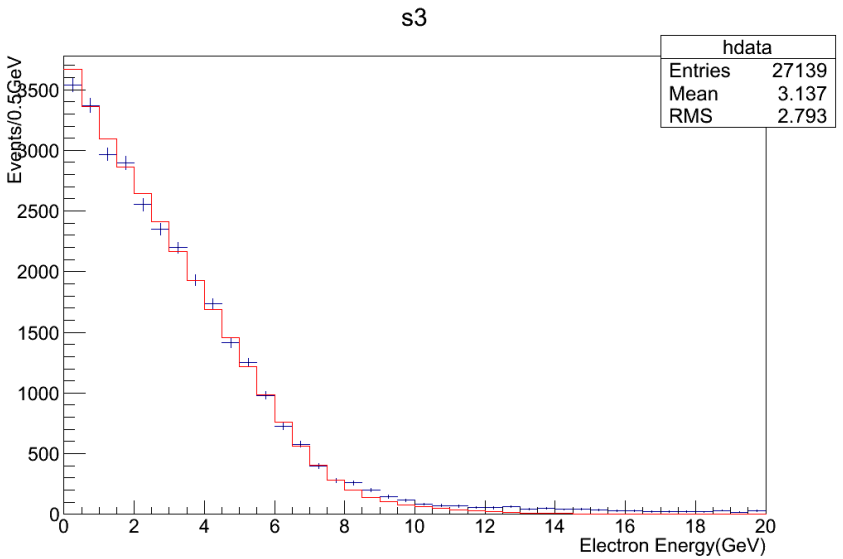
0.5GeV bin-size; Fit range 0-20GeV; 200e20 POT; CV_Weighted; Fit one at one time, fix others

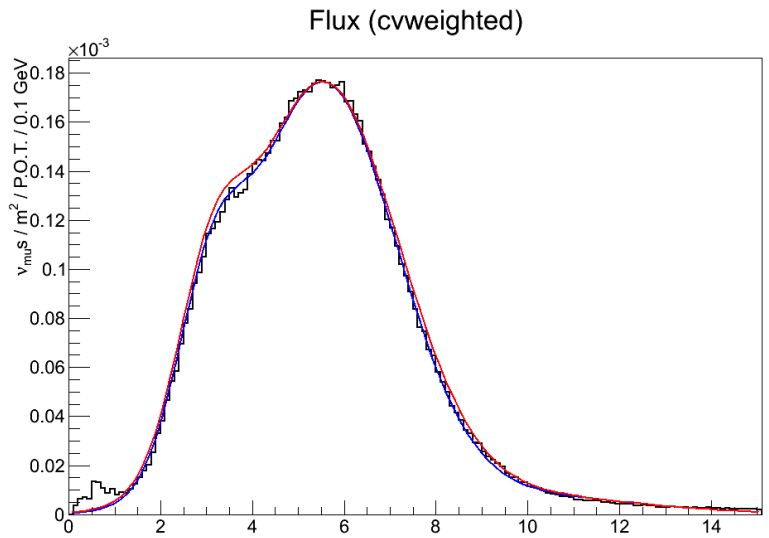
200e20POT	a1	m1	s1	a2	m2	s2	a3	m3	s3
FluxFunc	1.728e-4	5.518	1.601	6.177e-5	3.061	0.738	8.656e-6	9.232	2.814
TMinuitFit	1.770e-4	5.662	1.661	6.740e-5	3.563	0.832	12.632e-6	11.814	4.555
FittingError	0.079e-4	0.160	0.083	2.155e-5	1.165	0.390	0.034e-6	1.414	0.110

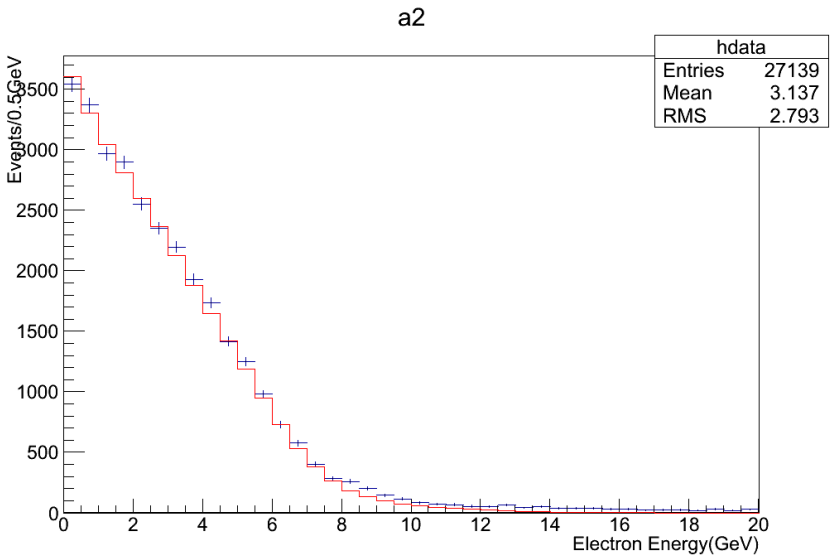
Fitting Ke Plots & Flux Fit Result for Each Par

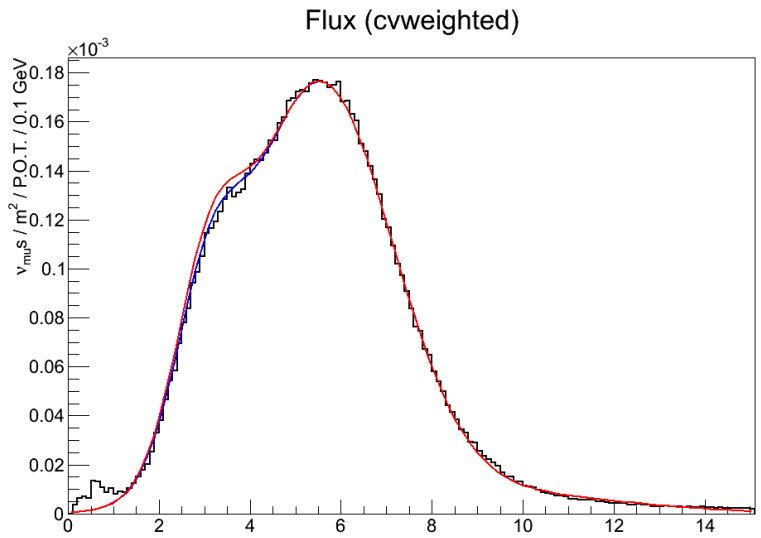


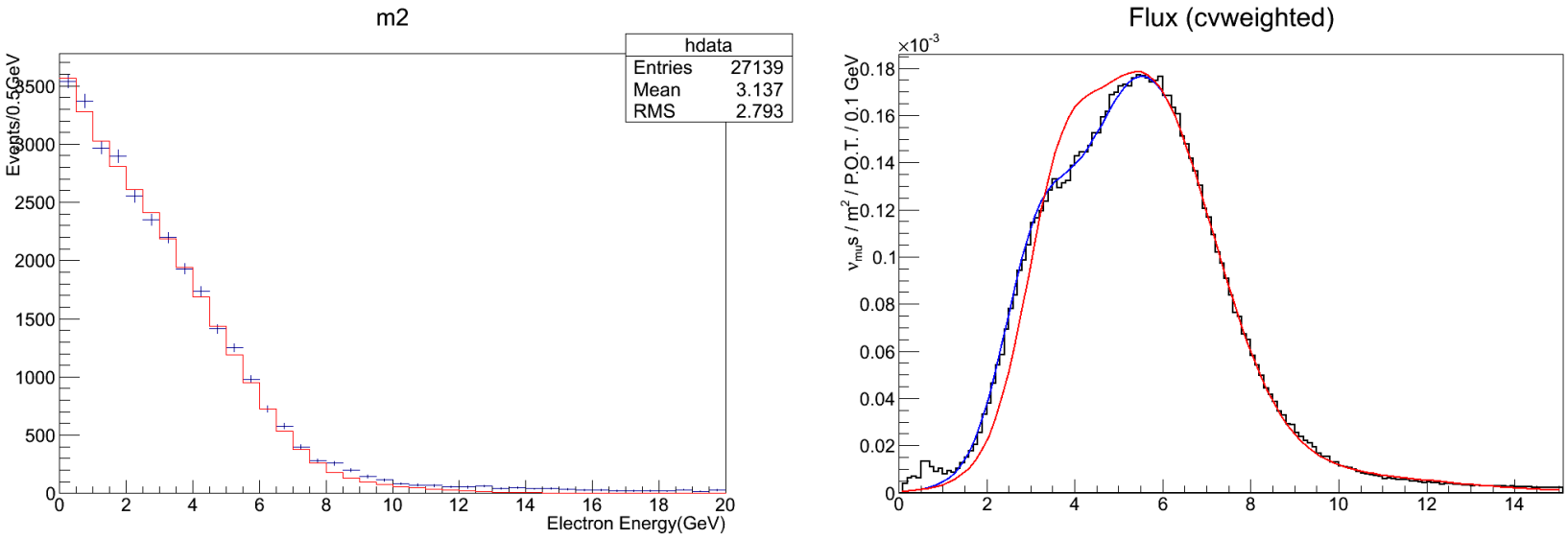


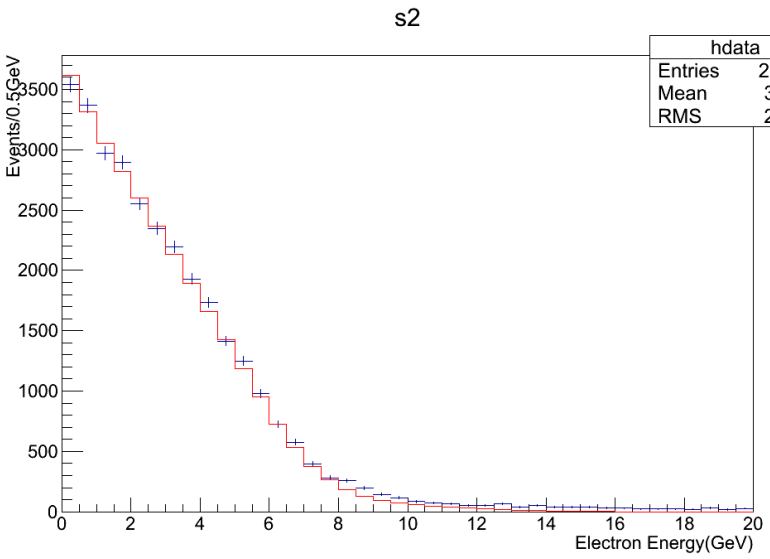

s3
hdata
Entries 27139
Mean 3.137
RMS 2.793
Events/0.5GeV
Electron Energy(GeV)

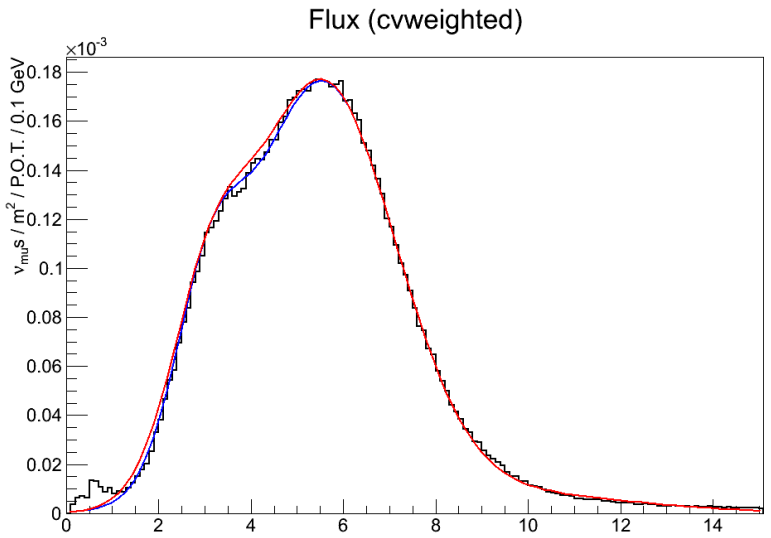

Flux (cvweighted)
×10^-3
ν_mu s / m^2 / P.O.T. / 0.1 GeV

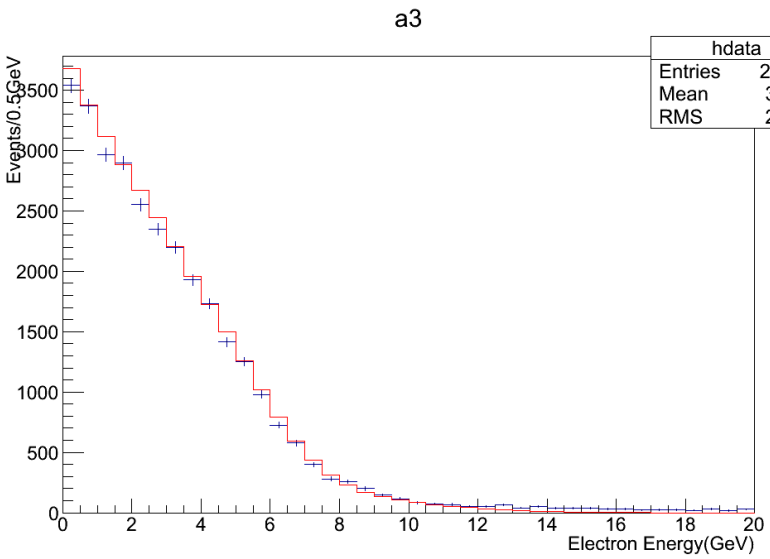

a2
hdata
Entries 27139
Mean 3.137
RMS 2.793
Events/0.5GeV
Electron Energy(GeV)

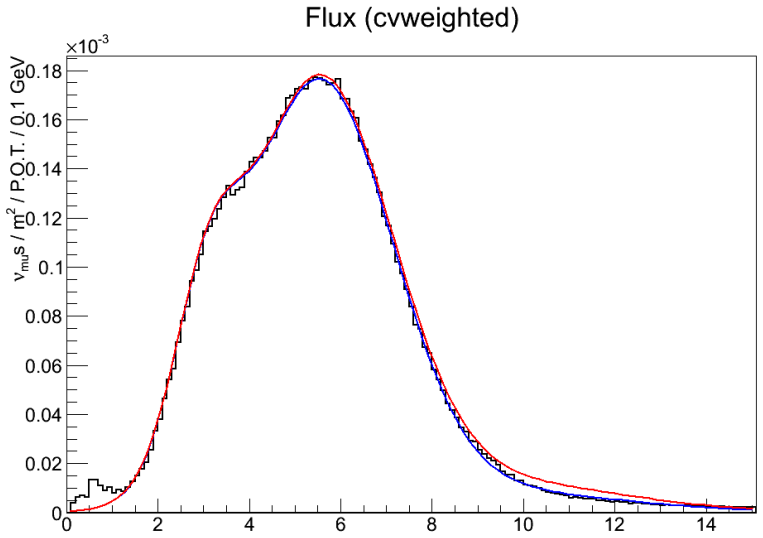

Flux (cvweighted)
×10^-3
ν_mu s / m^2 / P.O.T. / 0.1 GeV

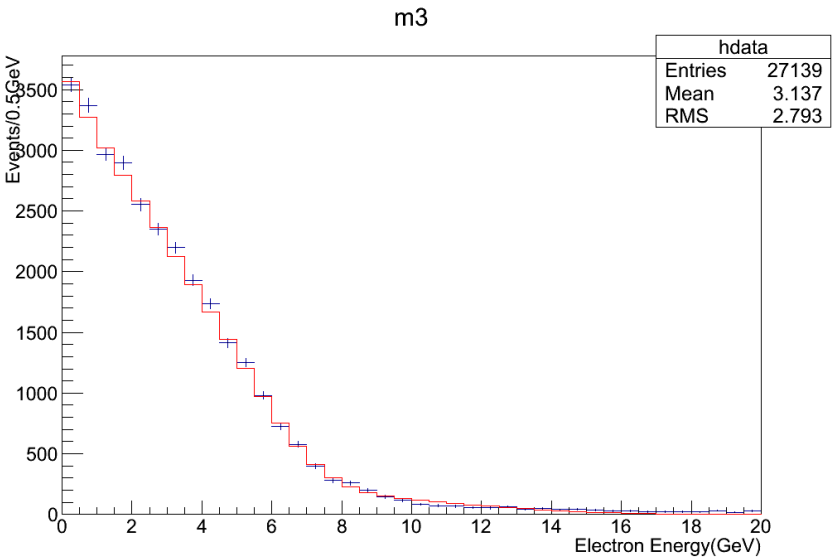

m2
hdata
Entries 27139
Mean 3.137
RMS 2.793
Events/0.5GeV
Electron Energy(GeV)
Flux (cvweighted)
×10^-3
$\nu_{mu}s$ / m^2 / P.O.T. / 0.1 GeV

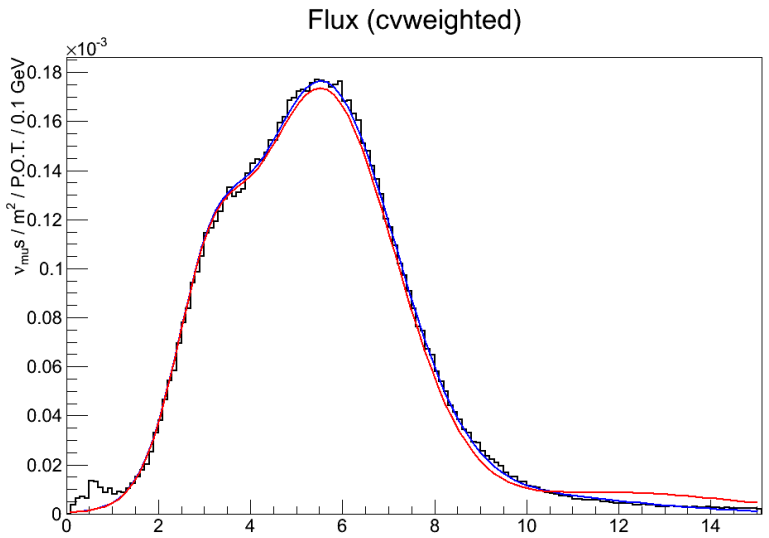

s2
hdata
Entries 27139
Mean 3.137
RMS 2.793
Events/0.5GeV
Electron Energy(GeV)

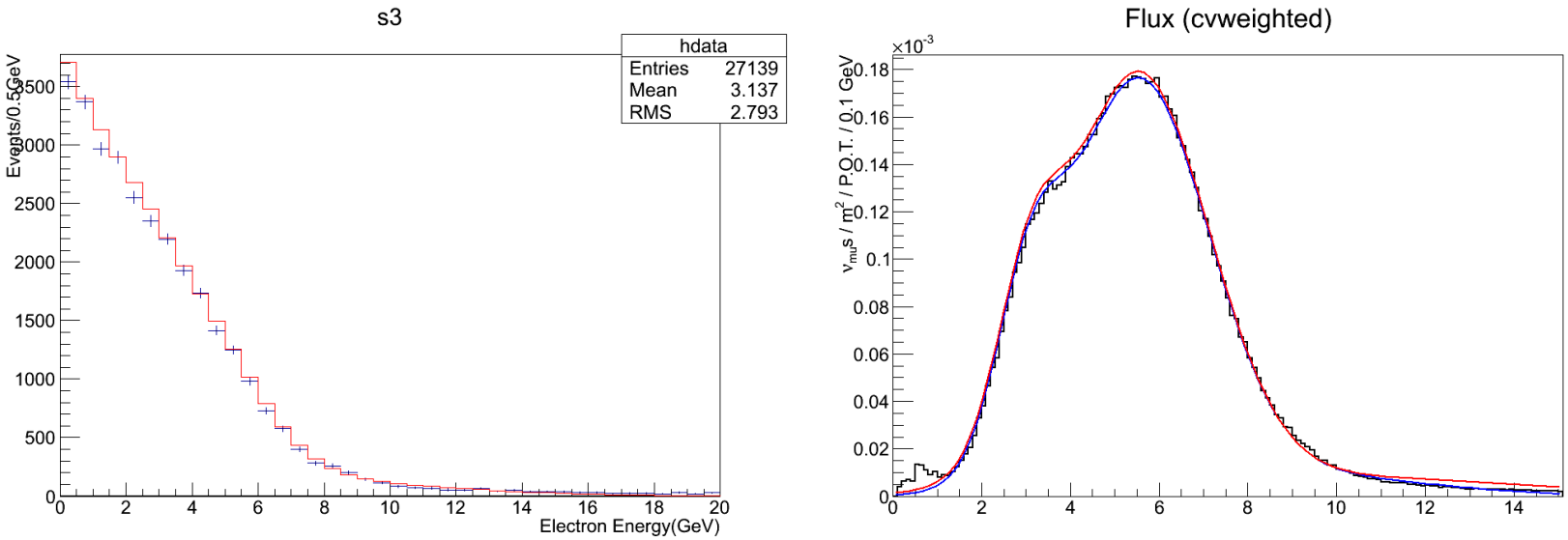

Flux (cvweighted)
×10^-3
ν_mu s / m^2 / P.O.T. / 0.1 GeV


a3
hdata
Entries 27139
Mean 3.137
RMS 2.793
Events/0.5GeV
Electron Energy(GeV)


Flux (cvweighted)
×10^-3
ν_mu s / m^2 / P.O.T. / 0.1 GeV

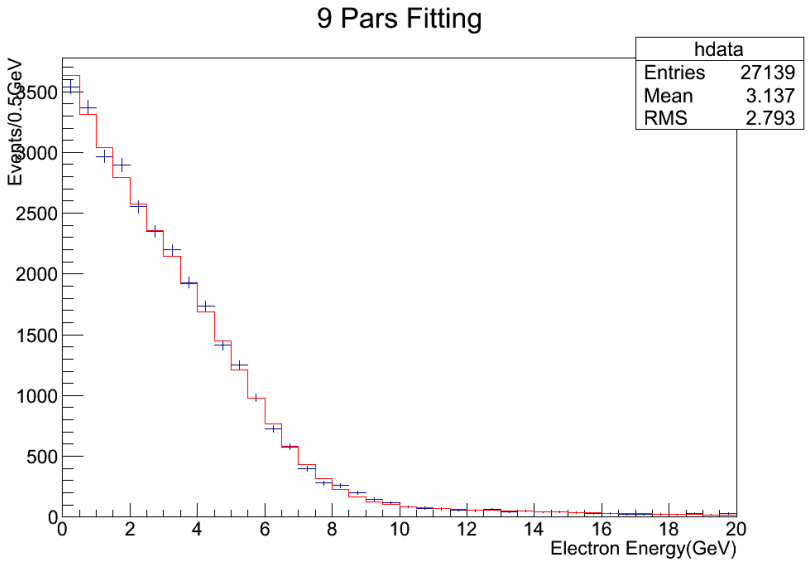

m3
hdata
Entries 27139
Mean 3.137
RMS 2.793
Events/0.5GeV
Electron Energy(GeV)

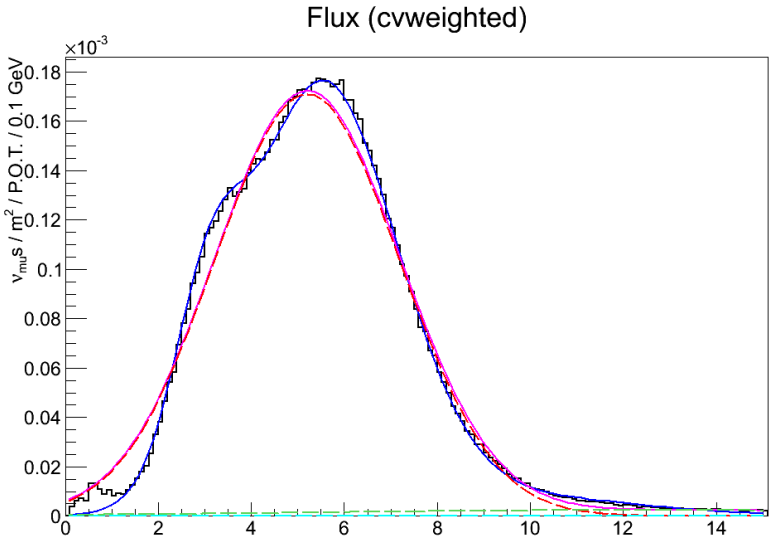

Flux (cvweighted)
×10^-3
ν_mu s / m^2 / P.O.T. / 0.1 GeV


s3
hdata
Entries 27139
Mean 3.137
RMS 2.793
Events/0.5GeV
Electron Energy(GeV)
Flux (cvweighted)
×10^-3
ν_mu s / m^2 / P.O.T. / 0.1 GeV

Fitting 9 Pars Simultaneously

200e20POT	a1	m1	s1	a2	m2	s2	a3	m3	s3
FluxFunc	1.728e-4	5.518	1.601	6.177e-5	3.061	0.738	8.656e-6	9.232	2.814
TMinuitFit	1.710e-4	5.200	1.989	6.715e-5	-18.583	-1.902	2.434e-6	12.396	6.962
FittingError	0.010e-4	0.163	0.003	0.001e-5	1.414	1.414	0.014e-6	0.046	0.032





–black histogram: Flux File

–blue curve: Flux Function

–purple curve: Fitted Flux from Ke

  –red: 1st Gaussian

  –light blue: 2nd Gaussian

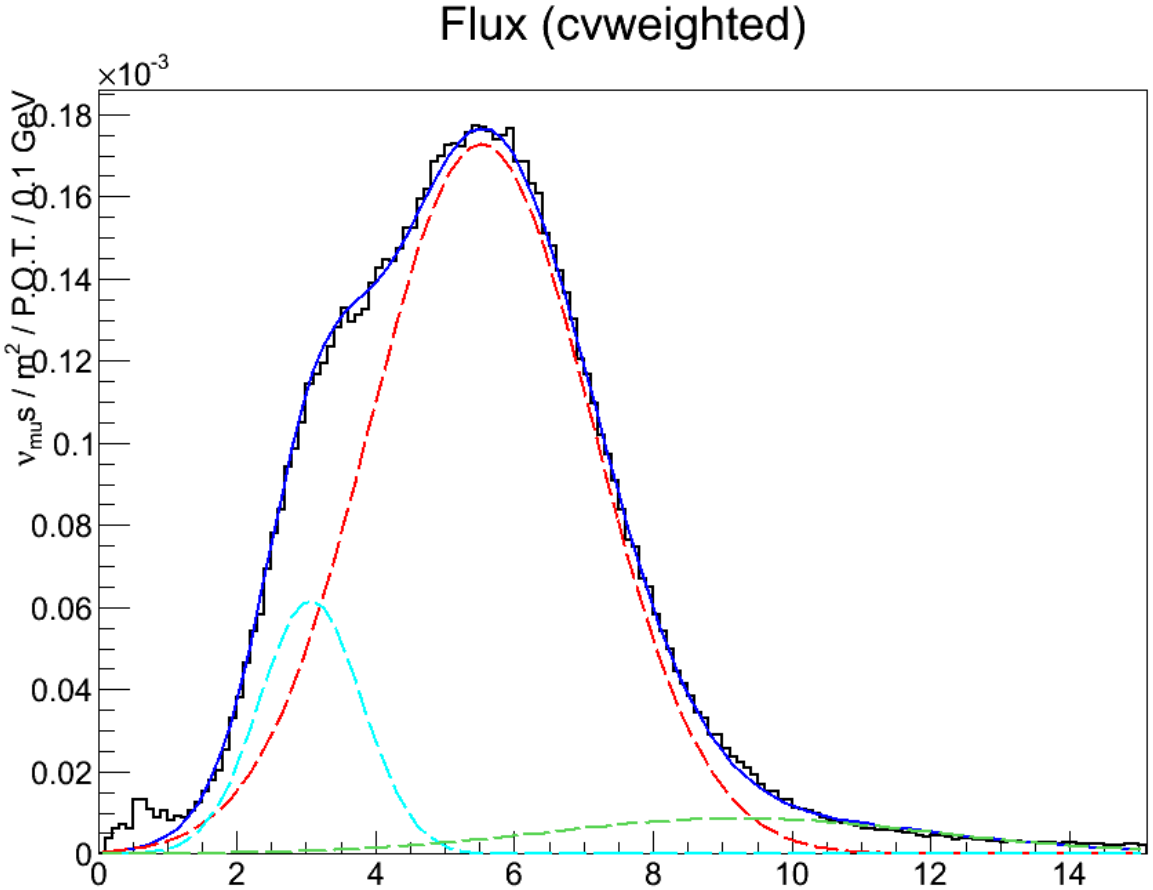
  –green: 3rd flat Gaussian

Present Flux Error Band Next Time

Backups

Parameterize New Flux Histogram

3 Gaussian, 9 parameters



par	value
a1	1.728e-04
m1	5.518
s1	1.601
a2	6.177e-05
m2	3.061
s2	0.738
a3	8.656e-06
m3	9.232
s3	2.814