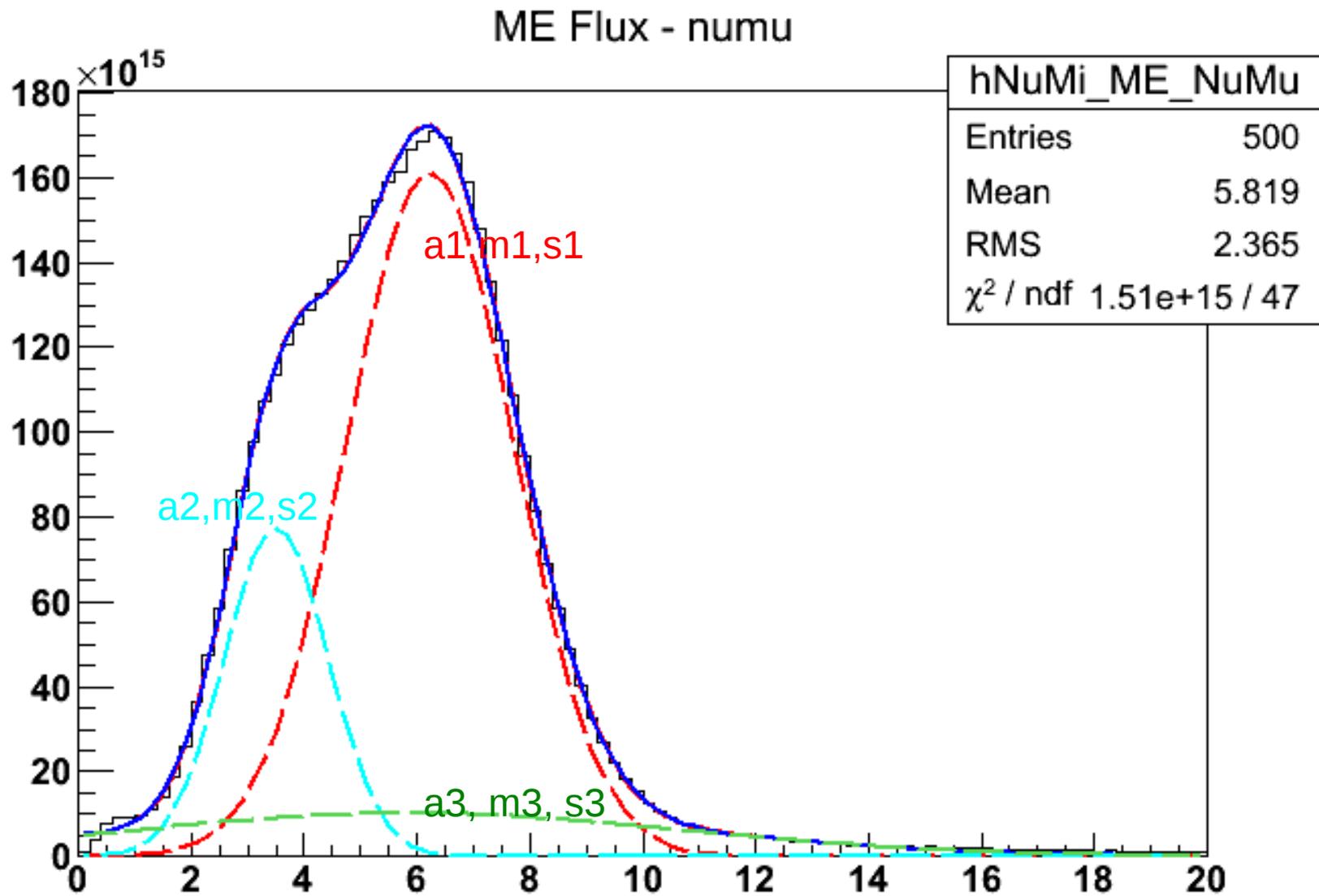


# Constraining The ME Flux

## Fitting Tool Developing Weekly Updates

Wenting Tan  
Hampton University  
31st Oct 2012

# Flux 3 Gaussian Fitting

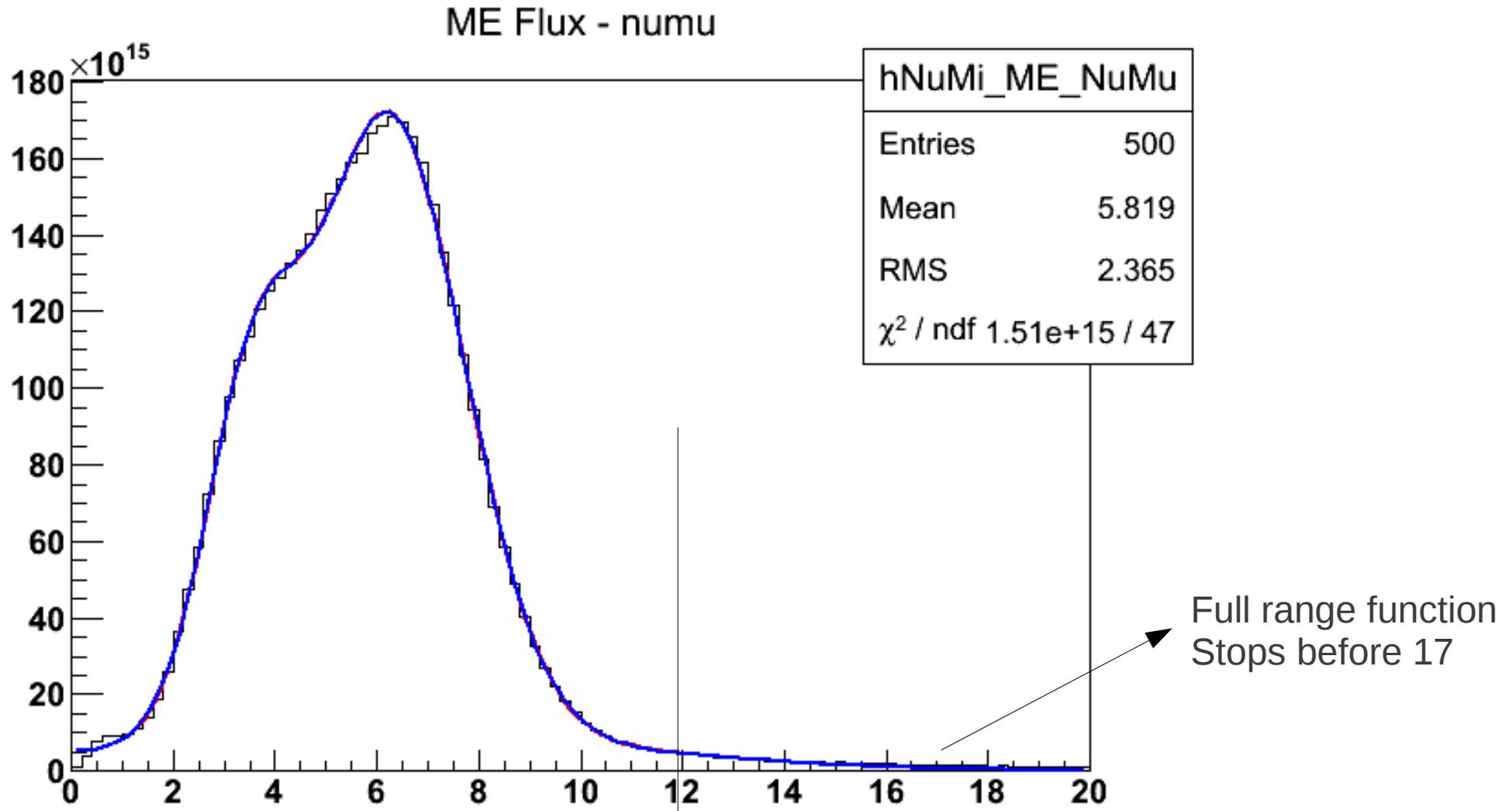


# Fitting Parameters

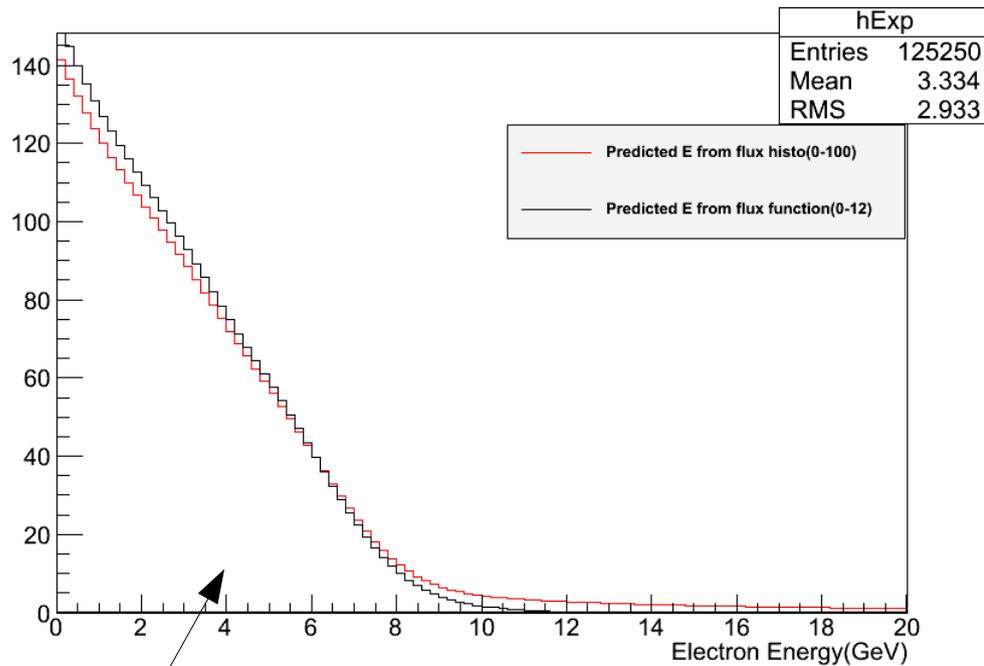
Name	Value	Error
a1	1.61001e+17	3.87427e+08
m1	6.22941e+00	4.65507e-09
s1	1.48879e+00	4.60812e-09
a2	7.73112e+16	4.09640e+08
m2	3.50168e+00	5.50792e-09
s2	9.22362e-01	3.61407e-09
a3	1.02081e+16	3.60496e+08
m3	5.84647e+00	4.33599e-08
s3	4.86736e+00	1.50036e-07

# Compare Electron Spectrum

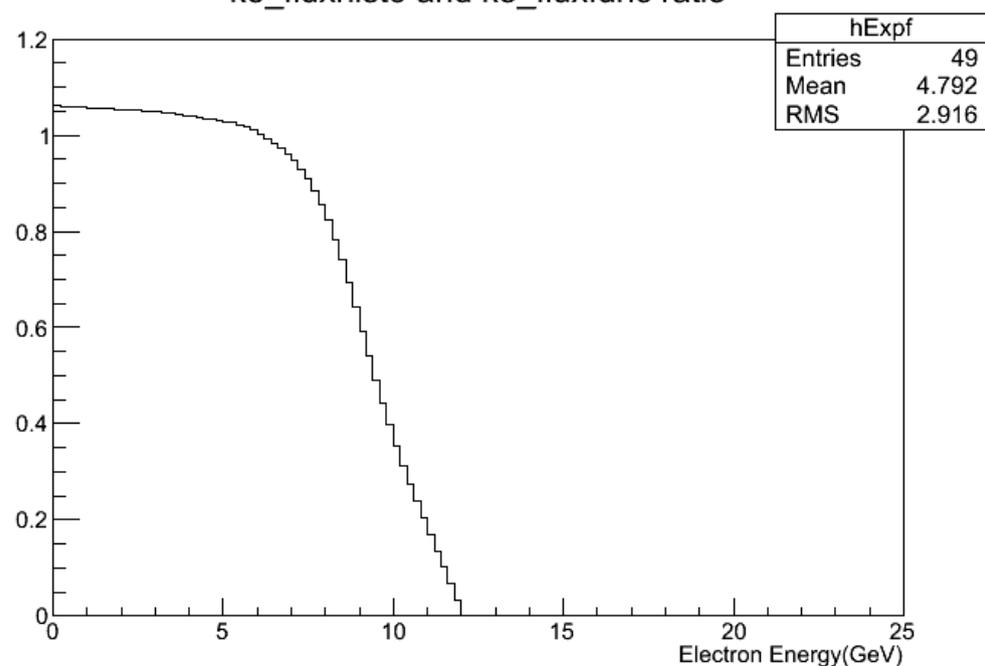
for Flux Histo(0-100 GeV) and Flux Function(0-12 GeV)  
Flux Histo(0-100 GeV) and Flux Function(0-100 GeV)



ke

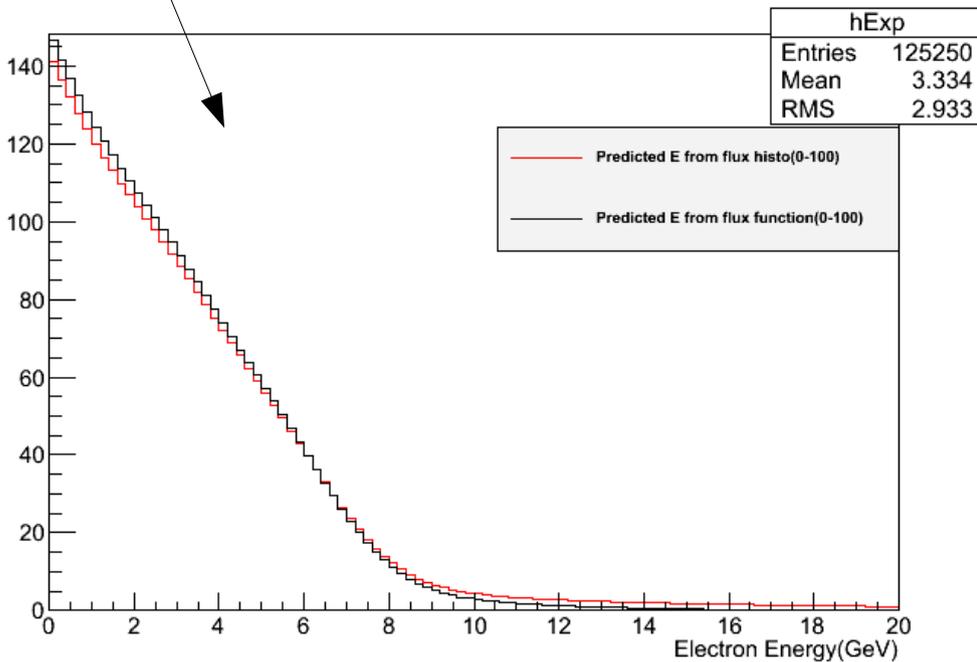


ke\_fluxhisto and ke\_fluxfunc ratio

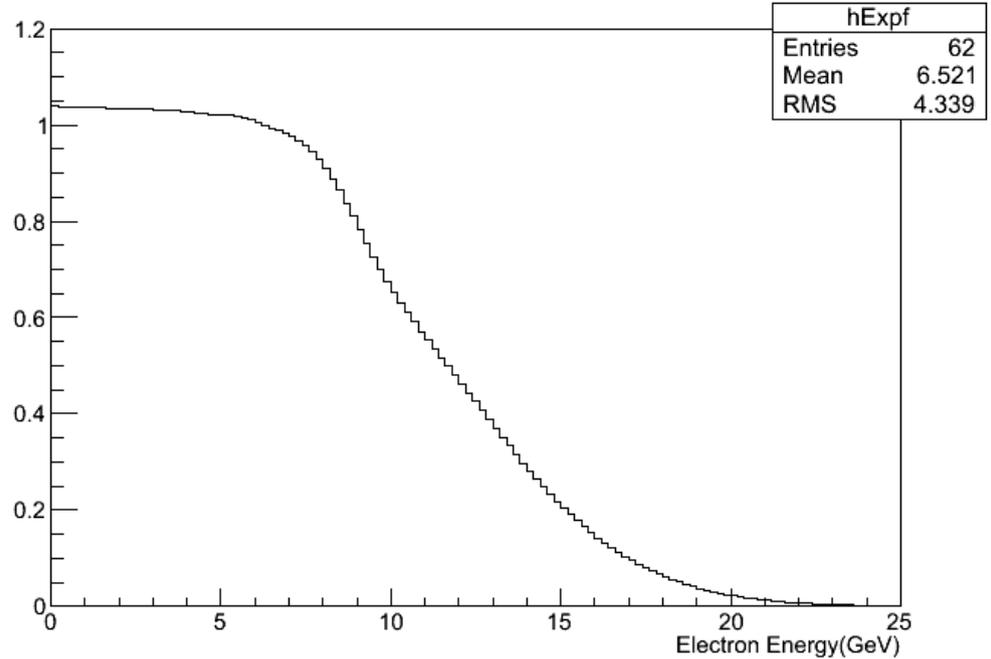


Area Normalized

ke

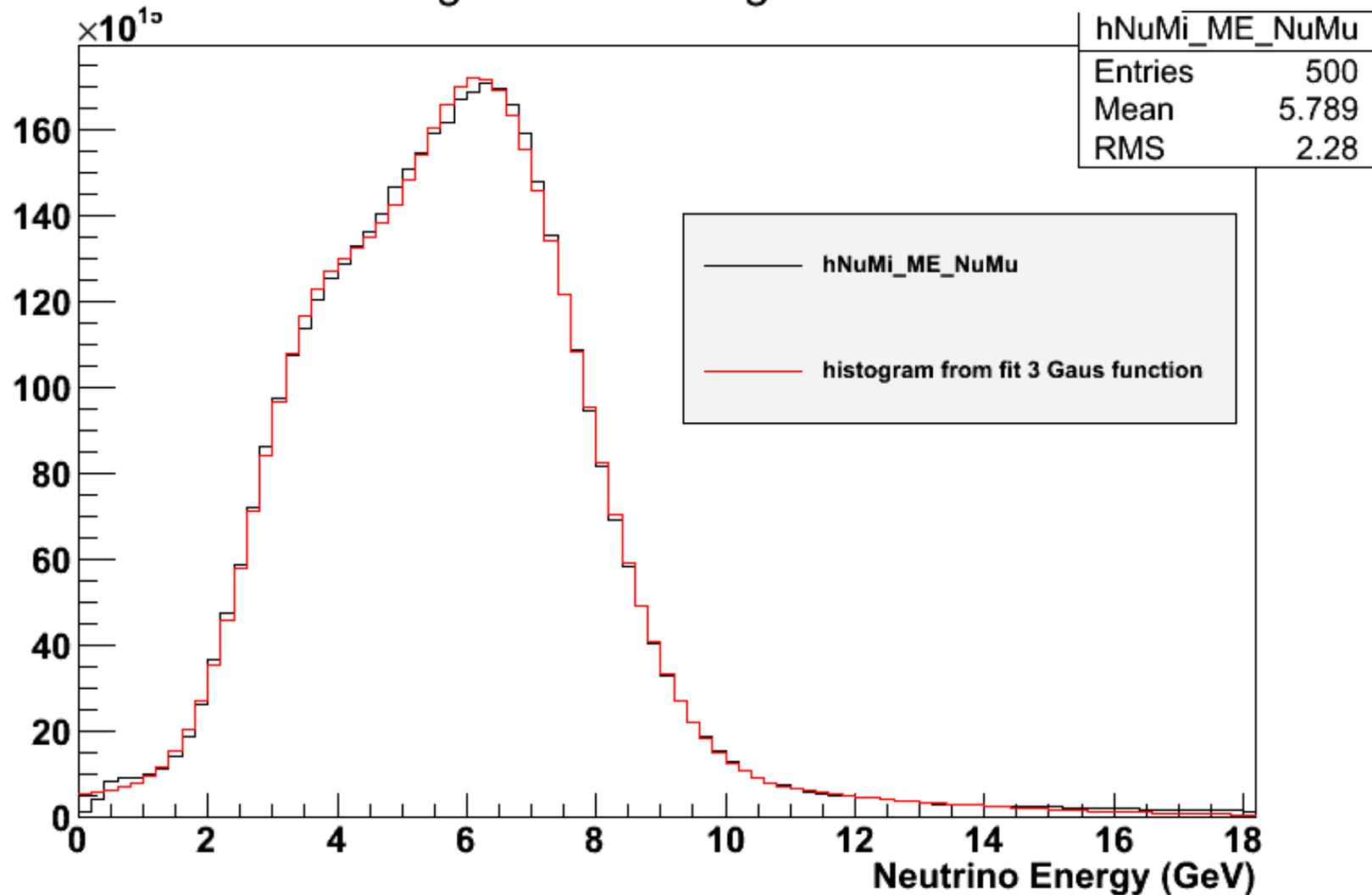


ke\_fluxhisto and ke\_fluxfunc ratio



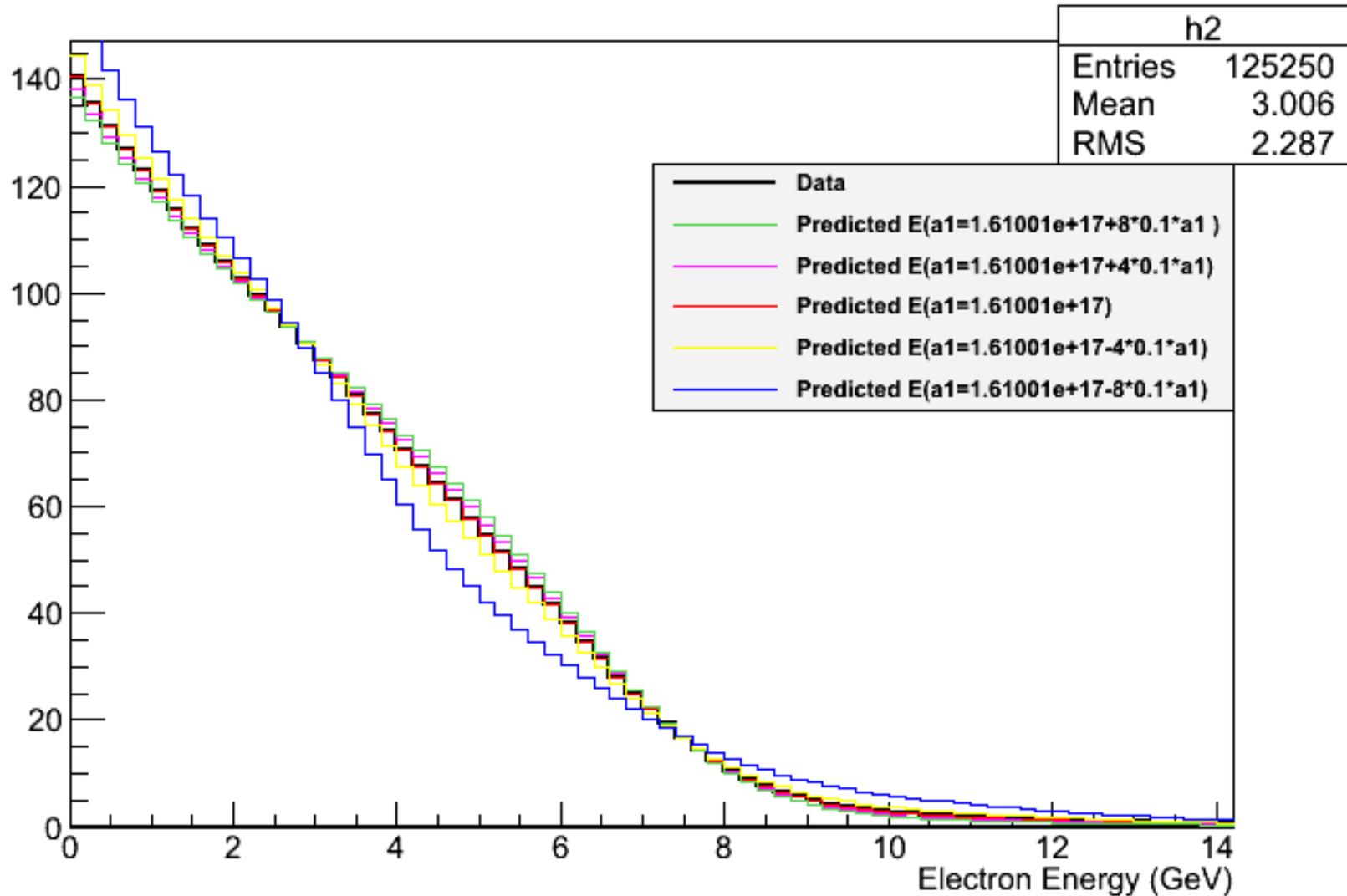
# 3 Gaussian Flux

Flux Histogram and histogram Fit Function



# A1

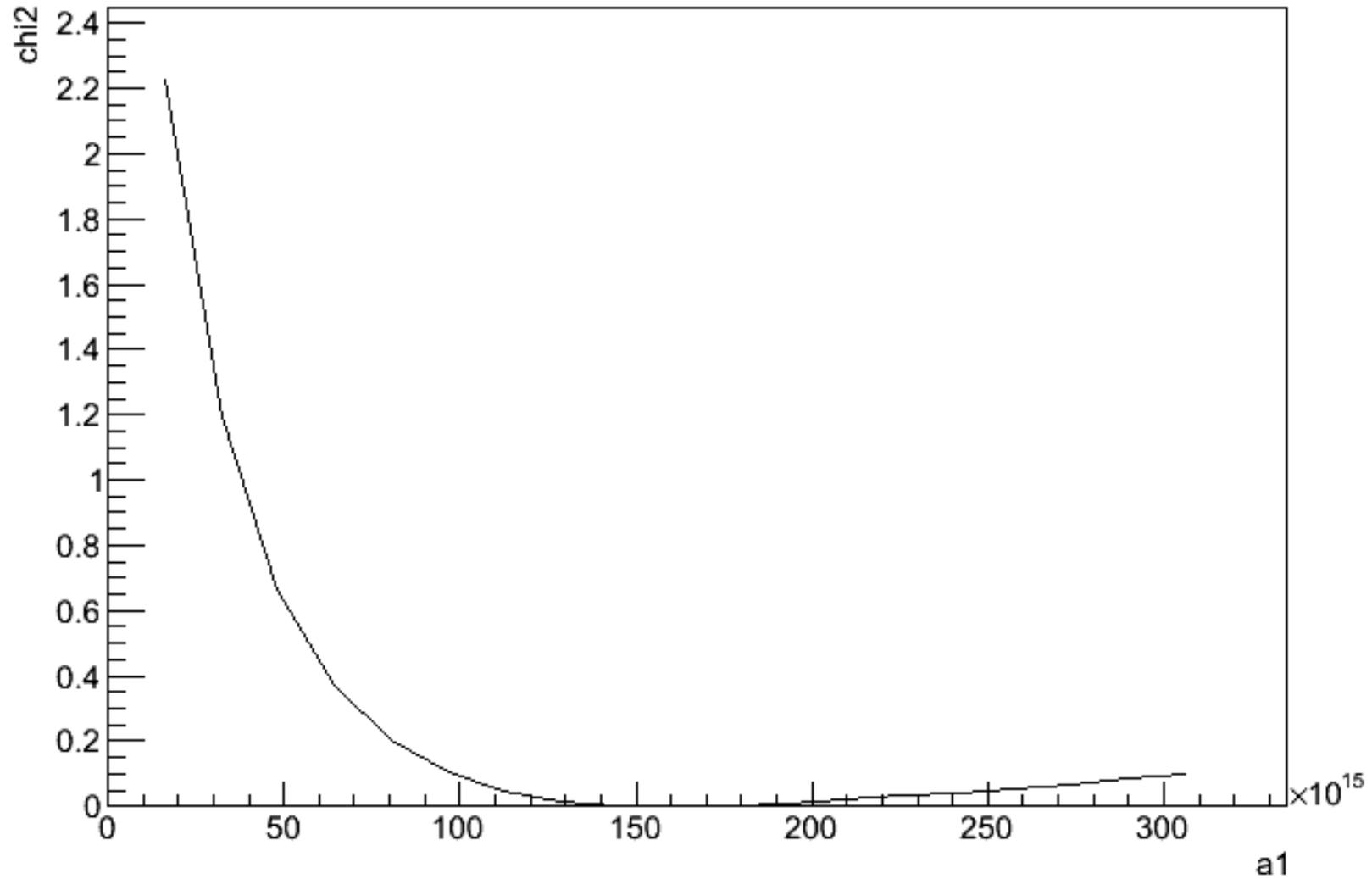
## Data and Predicts



# A1

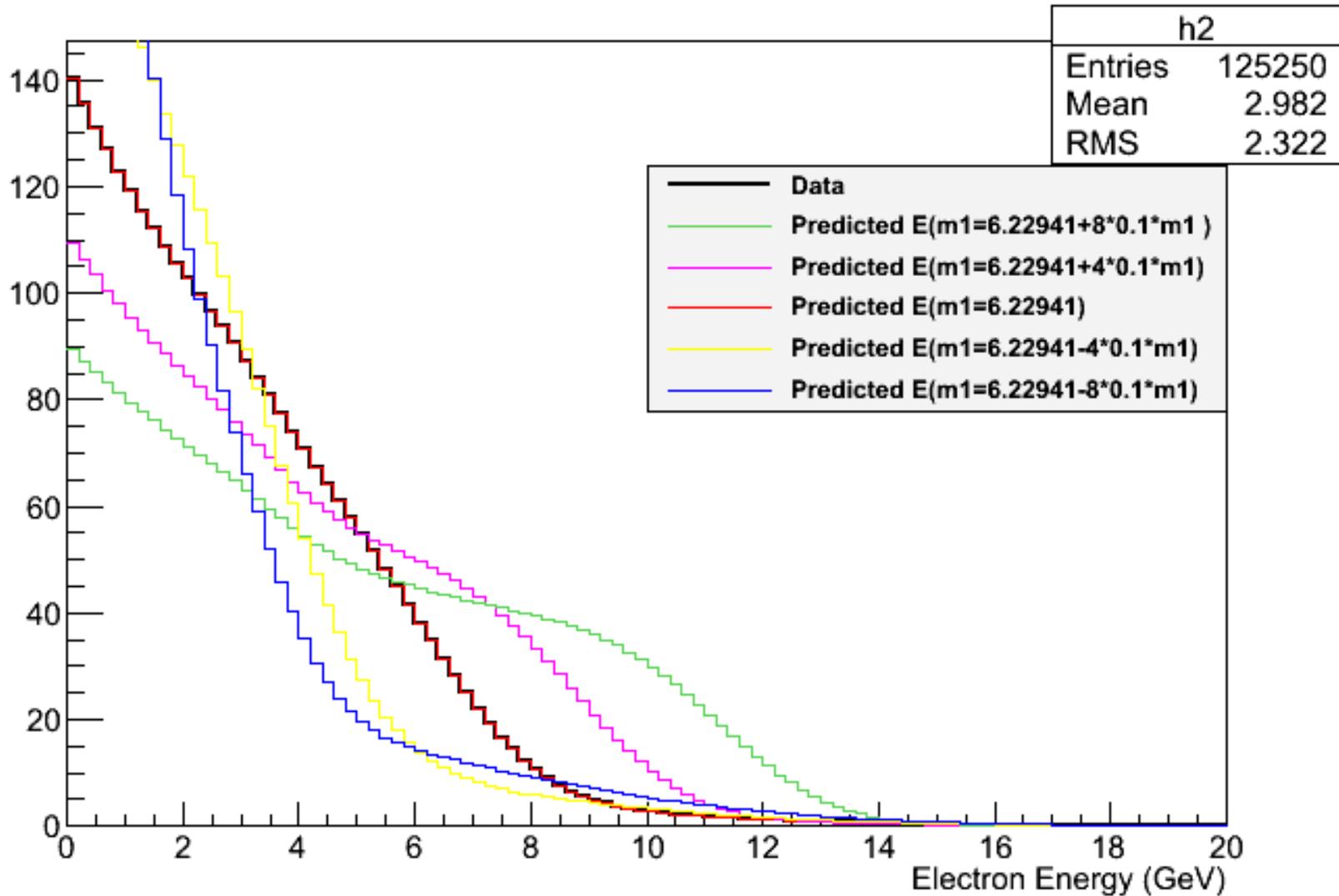
a1 variation: -90% to 90%  
Step-size: 0.1\*a1

chi2 graph



# M1

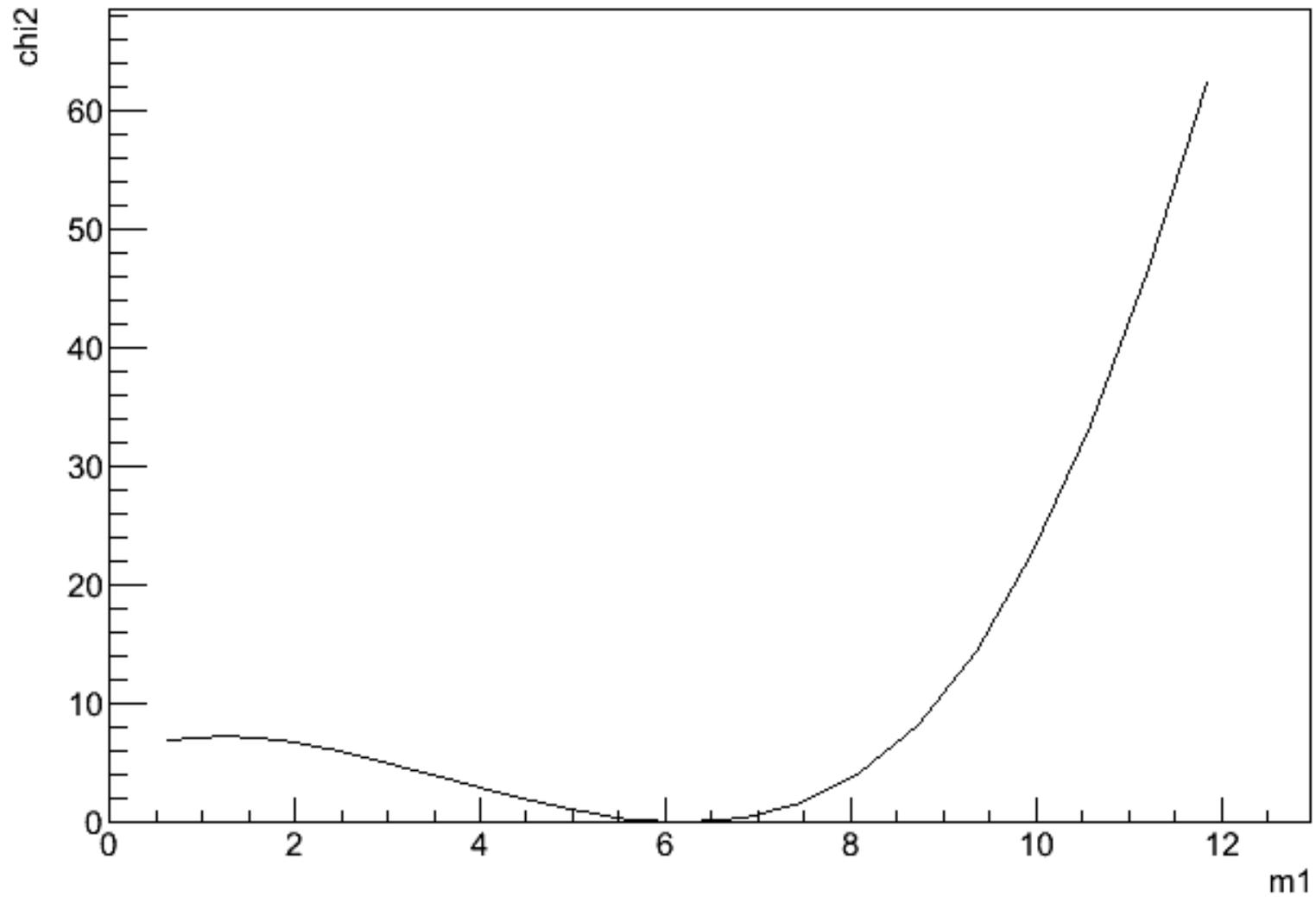
## Data and Predictions



# M1

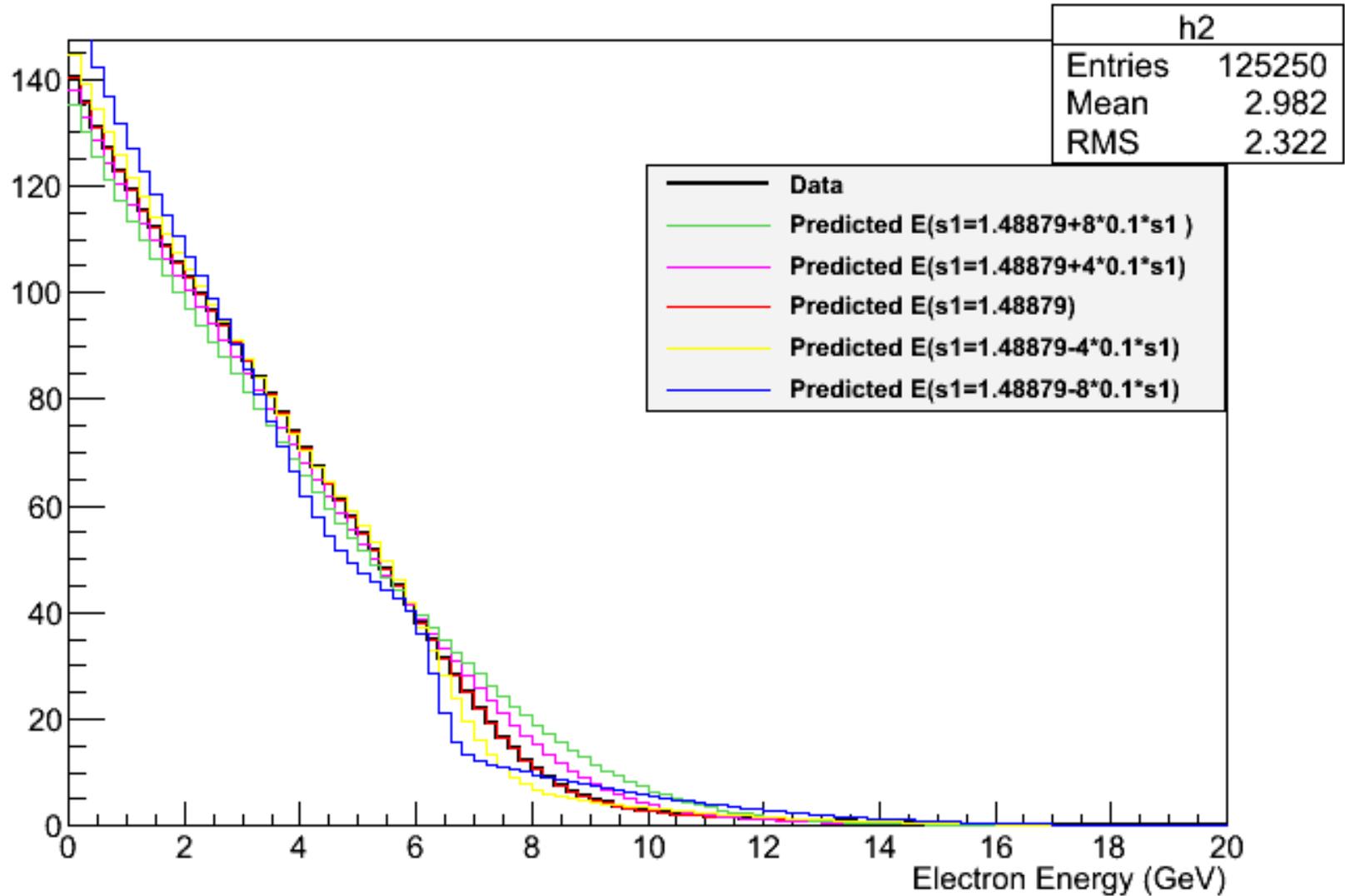
m1 variation: -90% to 90%  
Step-size: 0.1\*m1

chi2 graph



# S1

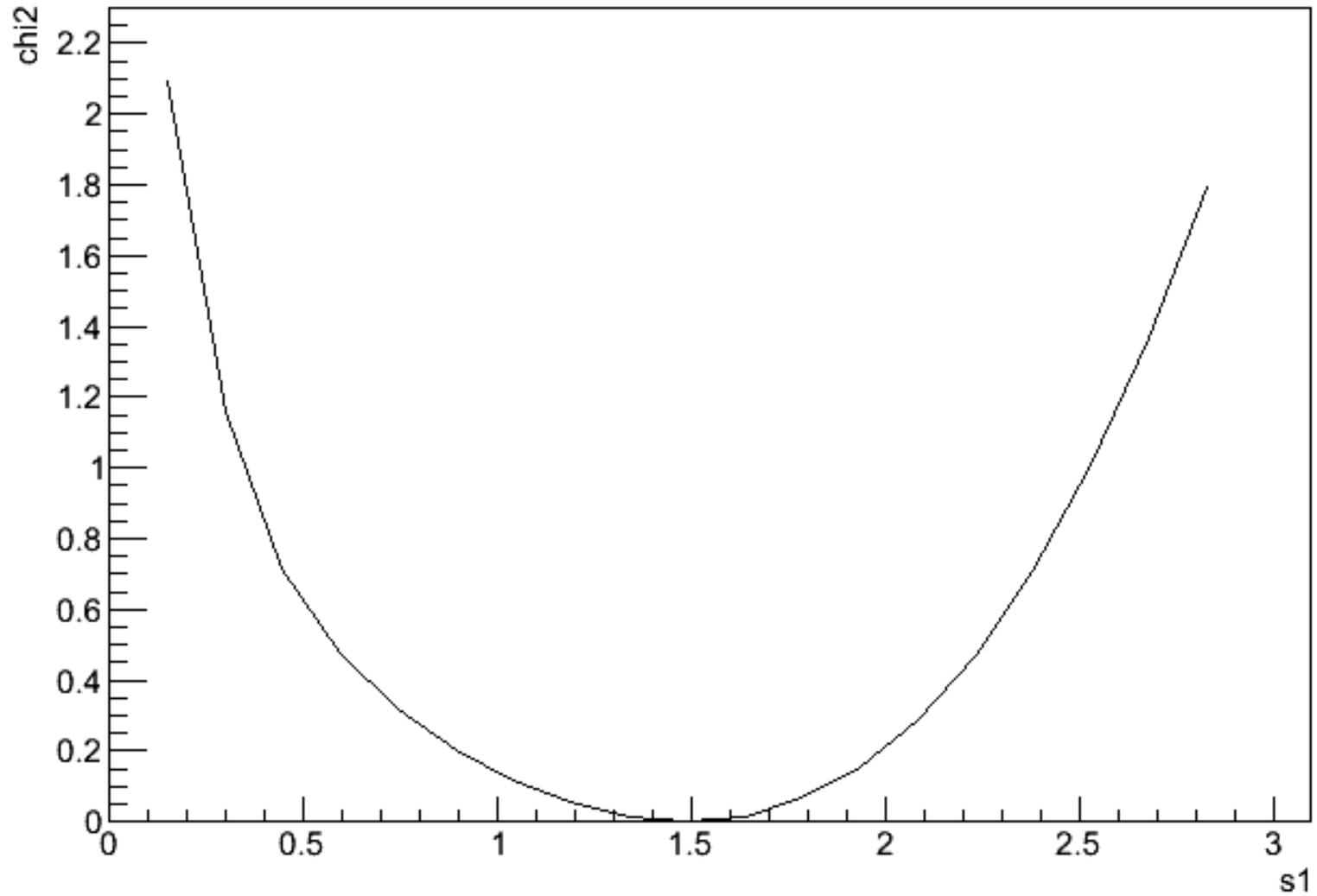
## Data and Predicts



# S1

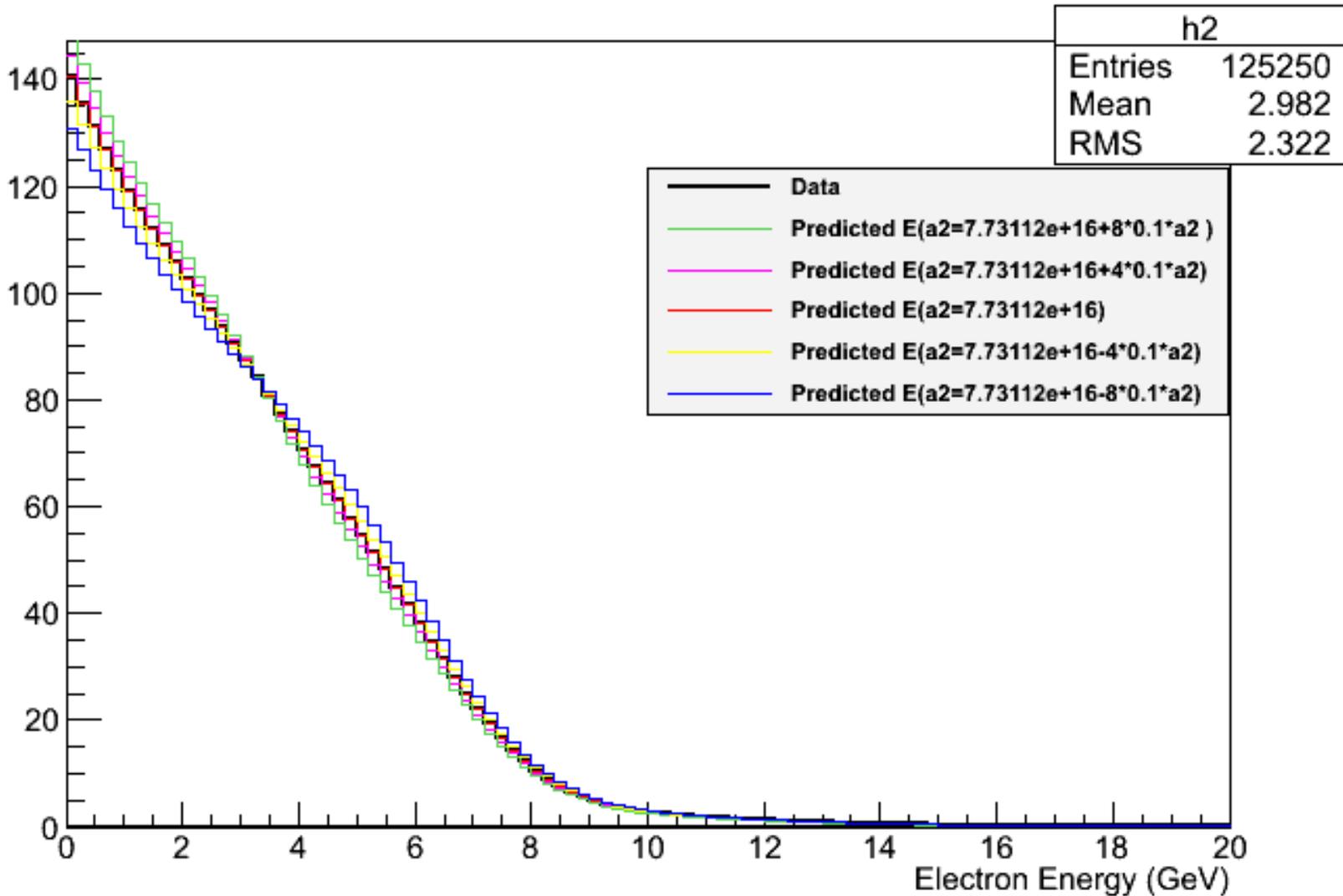
s1 variation: -90% to +90%  
Step-size: 0.1\*s1

chi2 graph



# A2

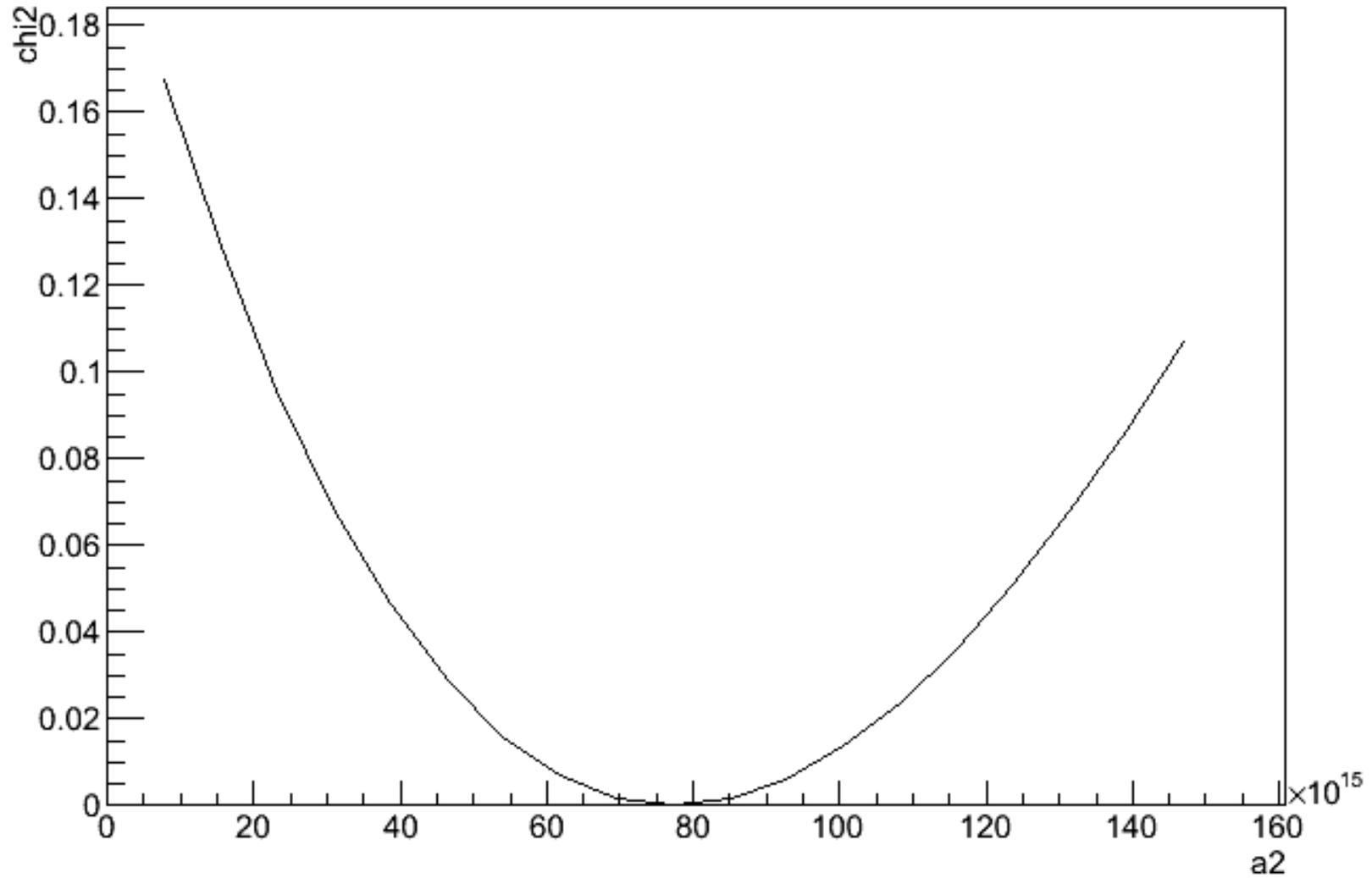
## Data and Predicts



# A2

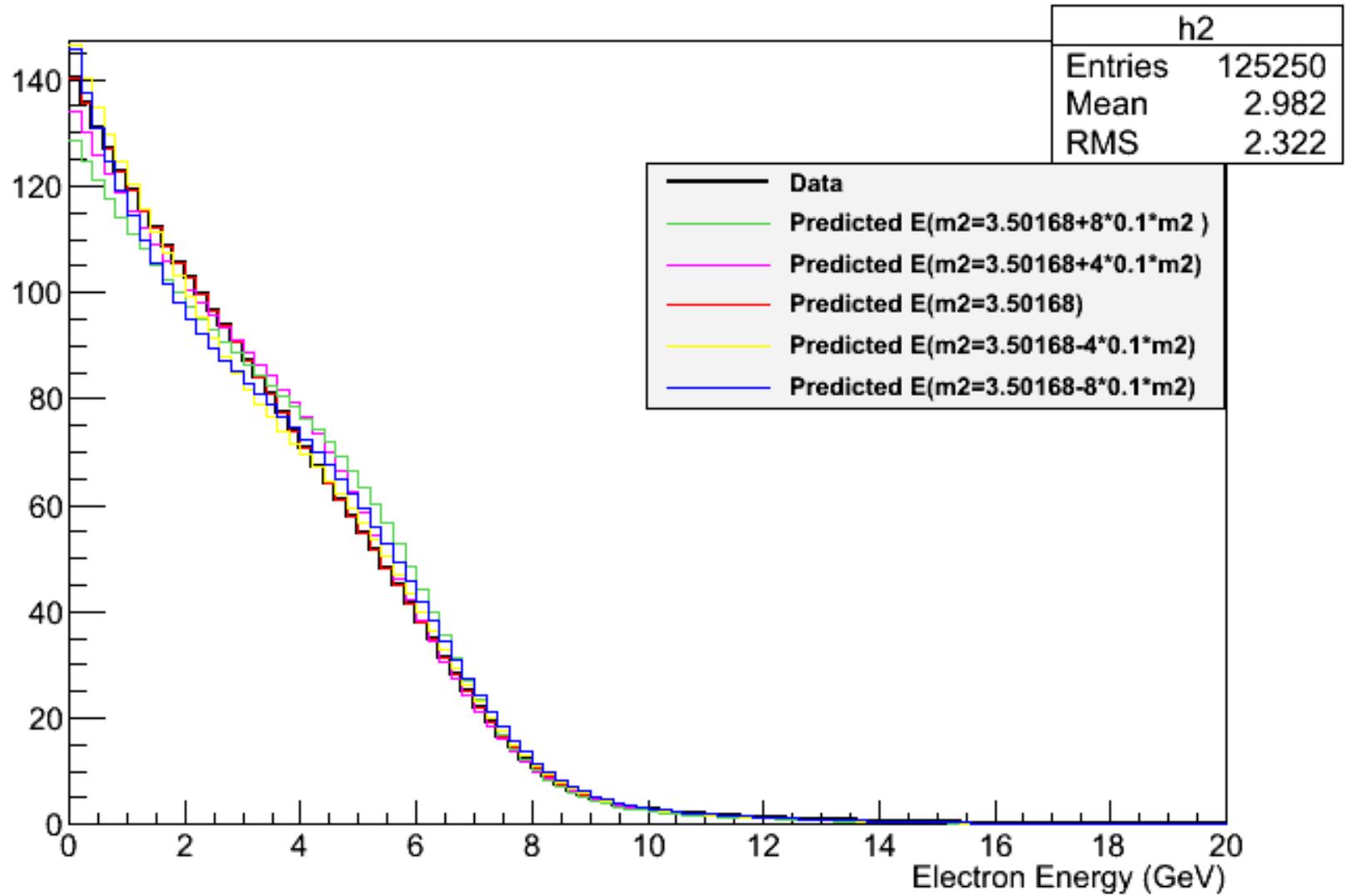
a2 variation: -90% to 90%  
Step-size: 0.1\*a2

chi2 graph



# M2

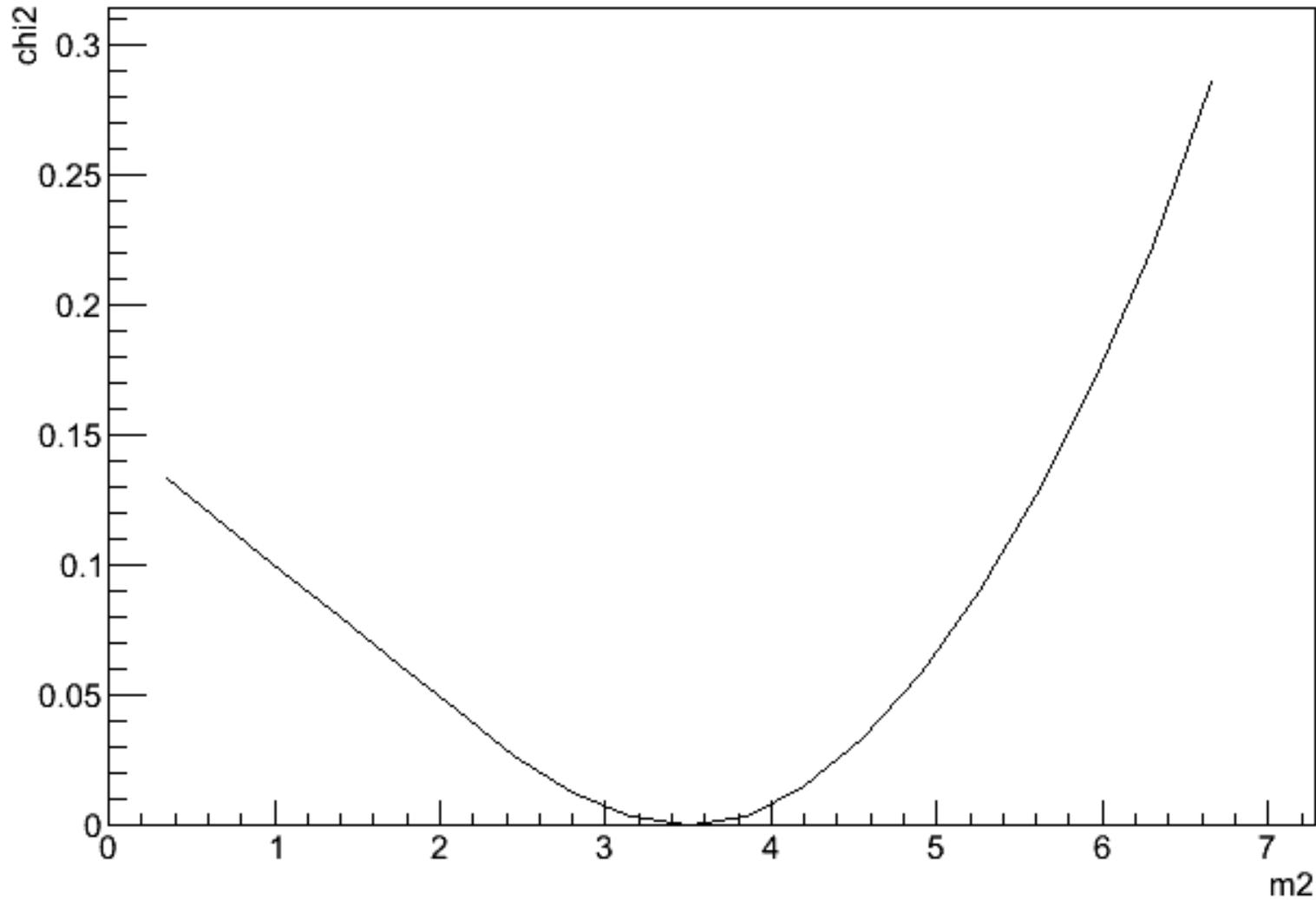
## Data and Predicts



# M2

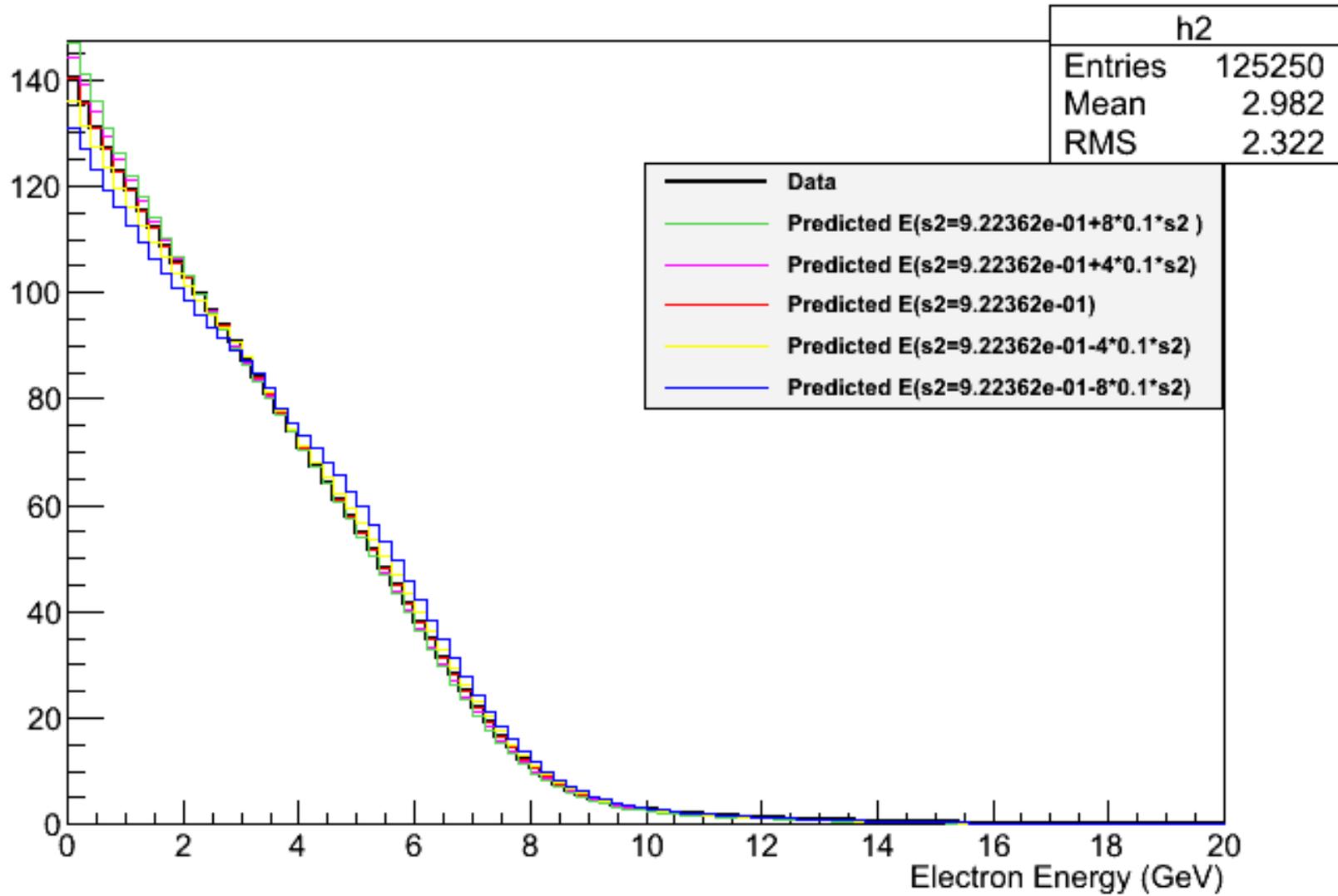
m2 variation: -90% to 90%  
Step-size: 0.1\*m2

chi2 graph



# S2

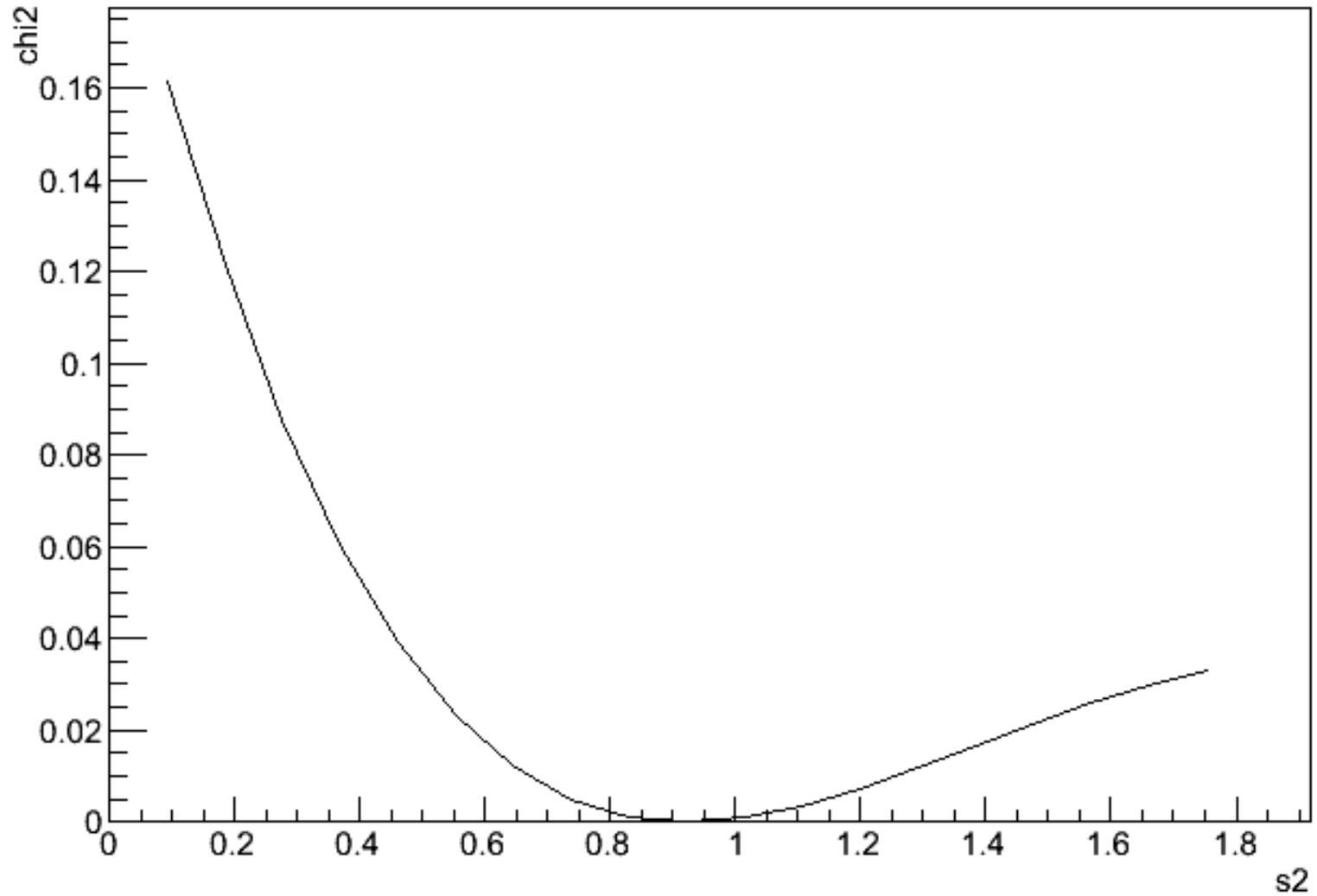
## Data and Predictions



# S2

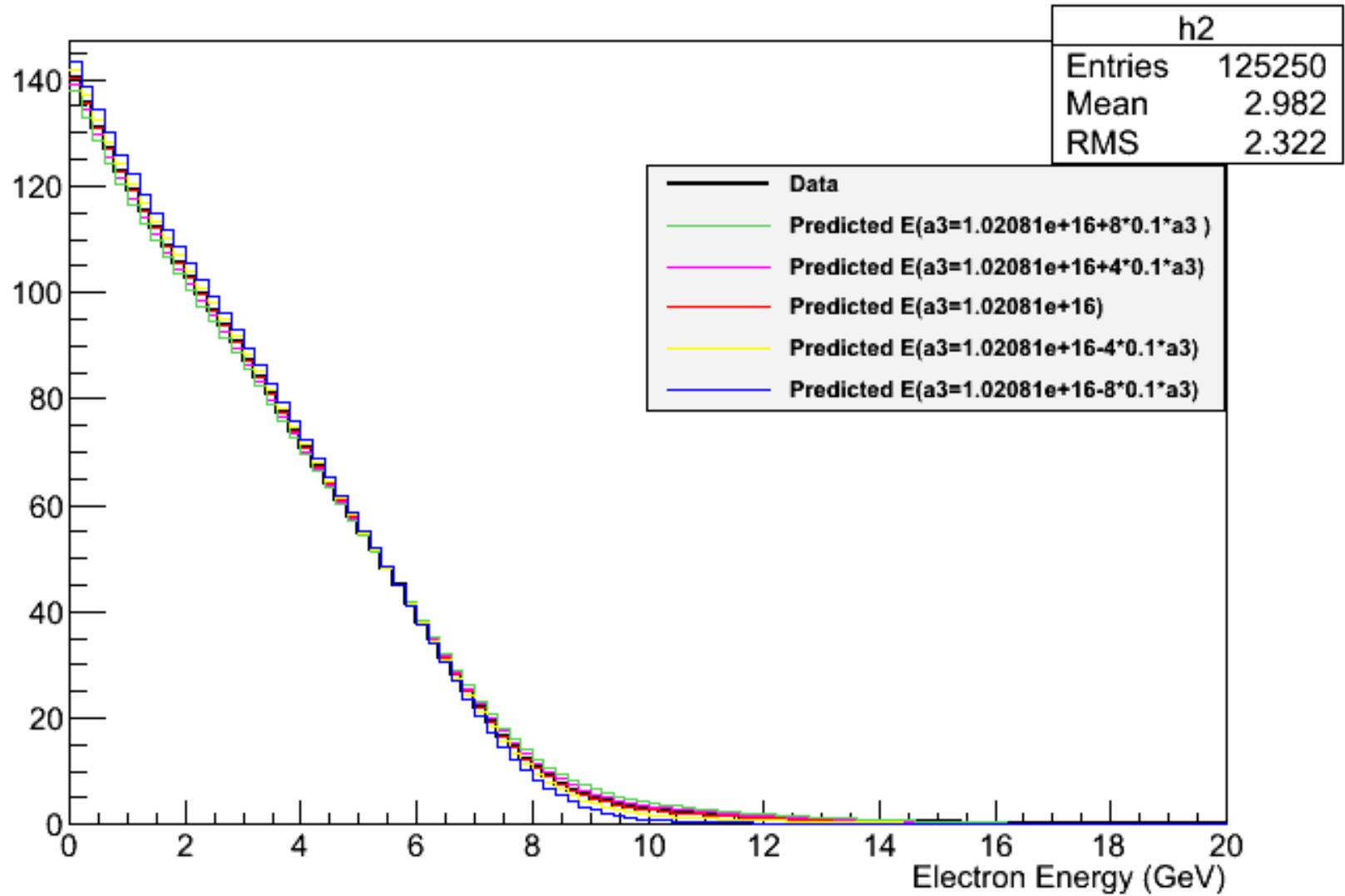
s2 variation: -90% to 90%  
Step-size: 0.1\*s2

chi2 graph



# A3

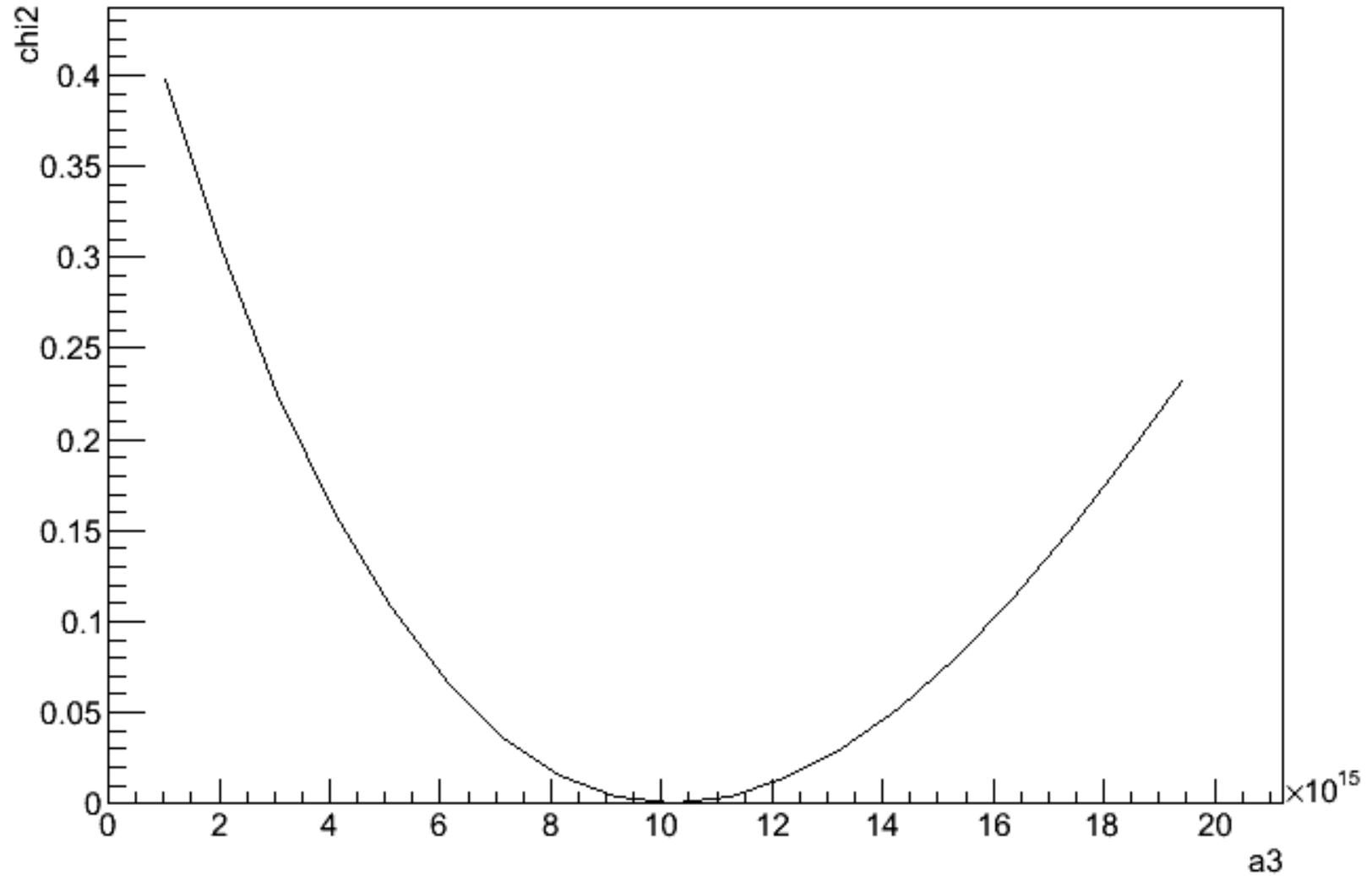
## Data and Predicts



# A3

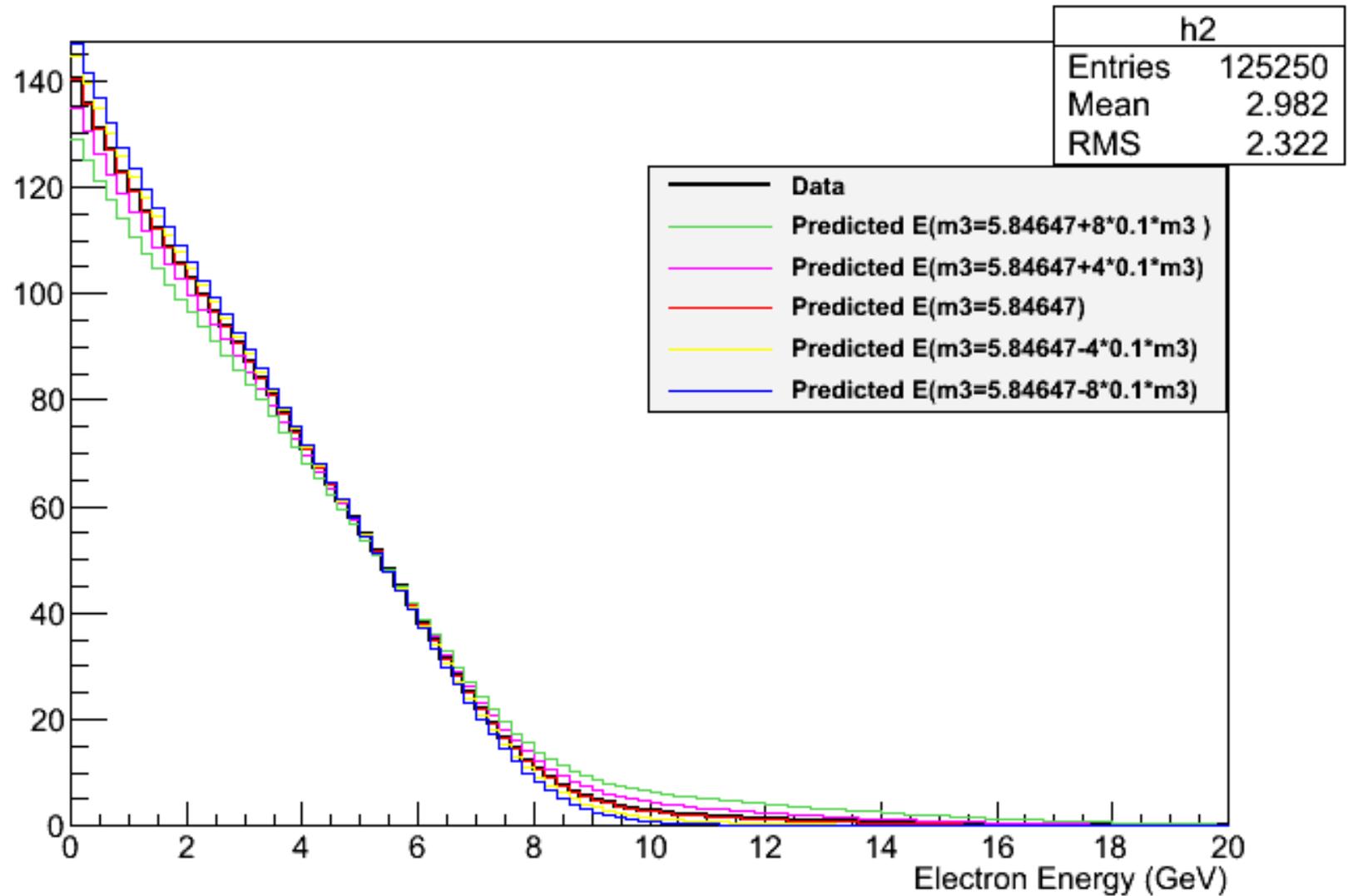
a3 variation: -90% to 90%  
Step-size: 0.1\*a3

chi2 graph



# M3

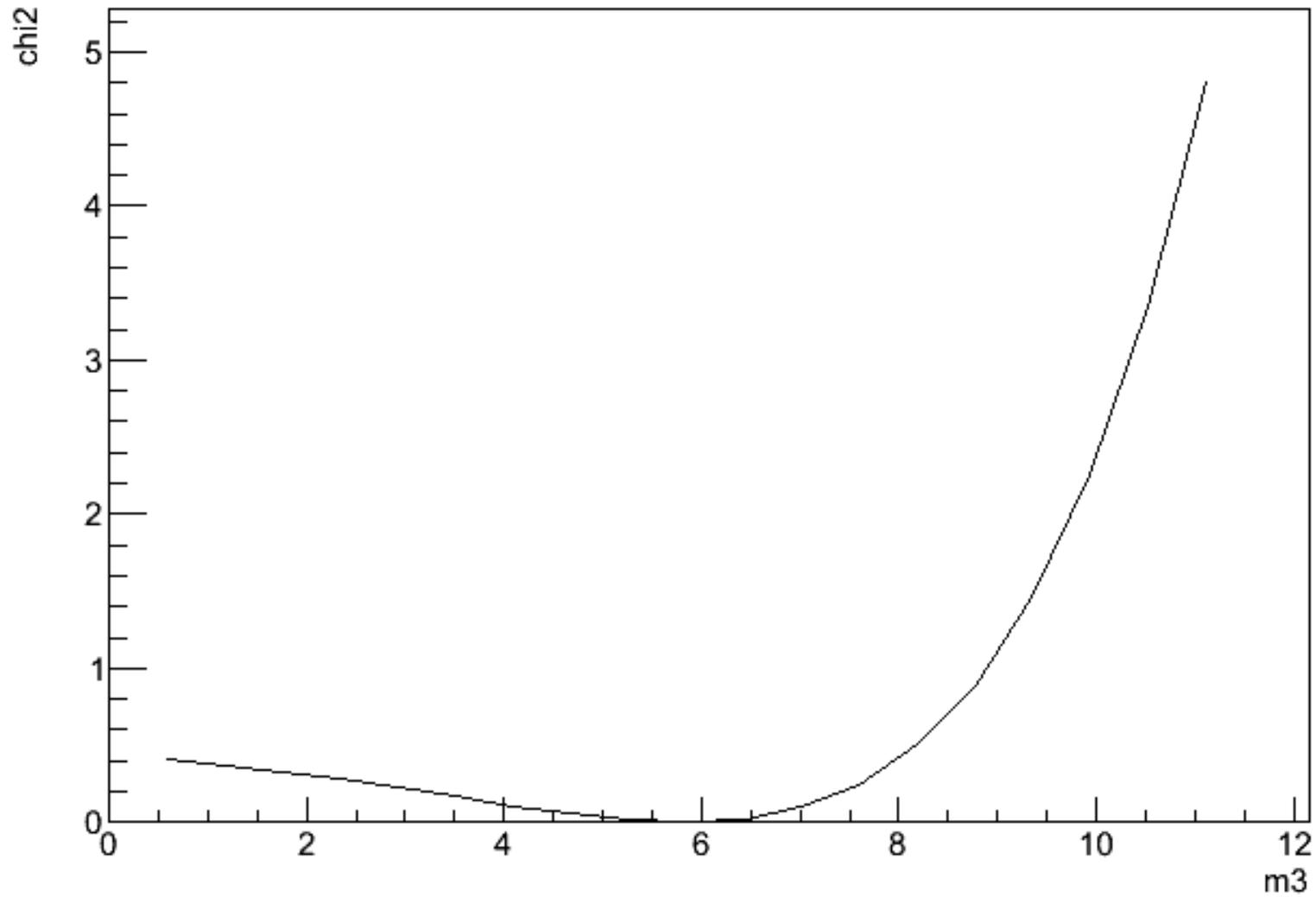
## Data and Predictions



# M3

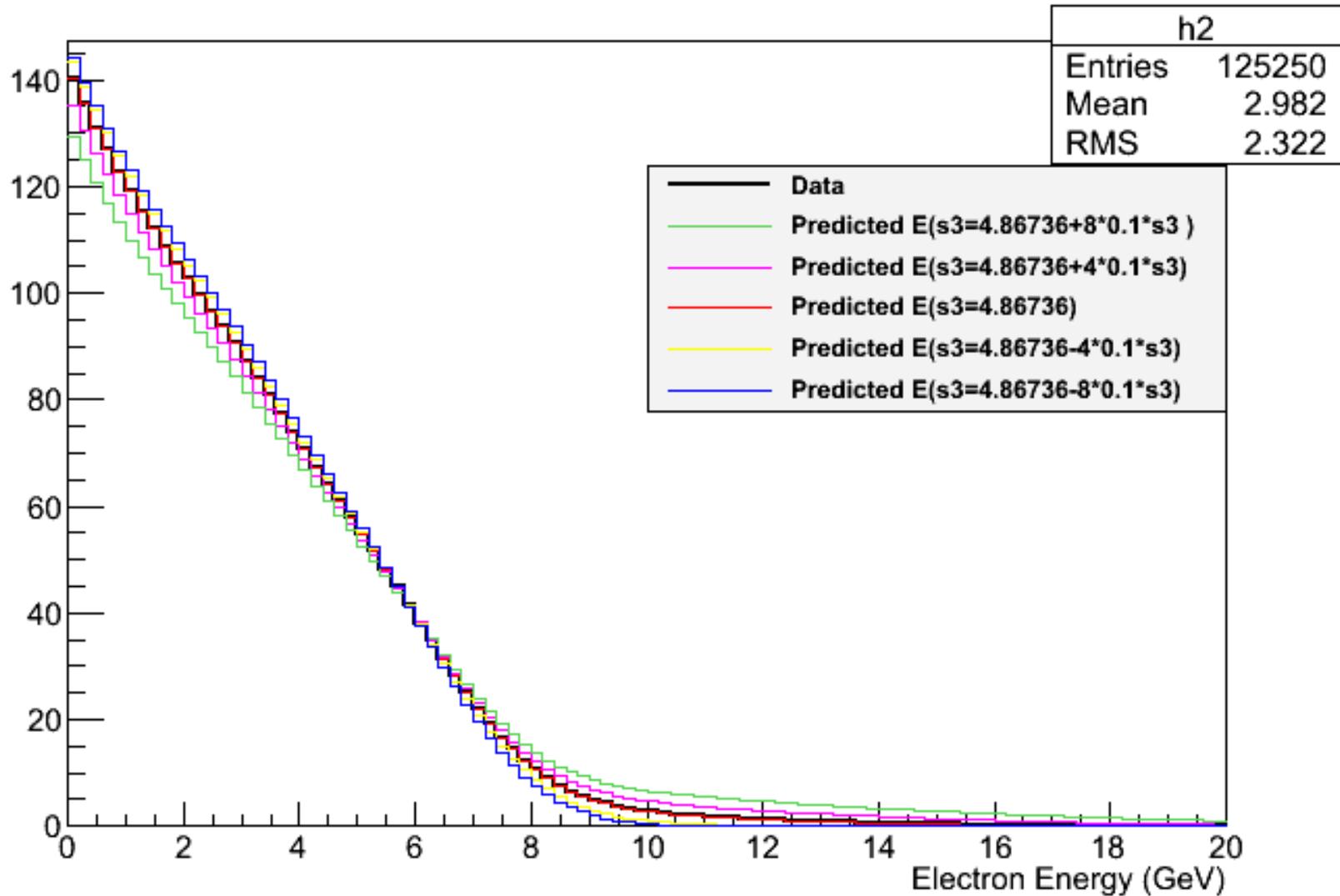
m3 variation: -90% to 90%  
Step-size: 0.1\*m3

chi2 graph



# S3

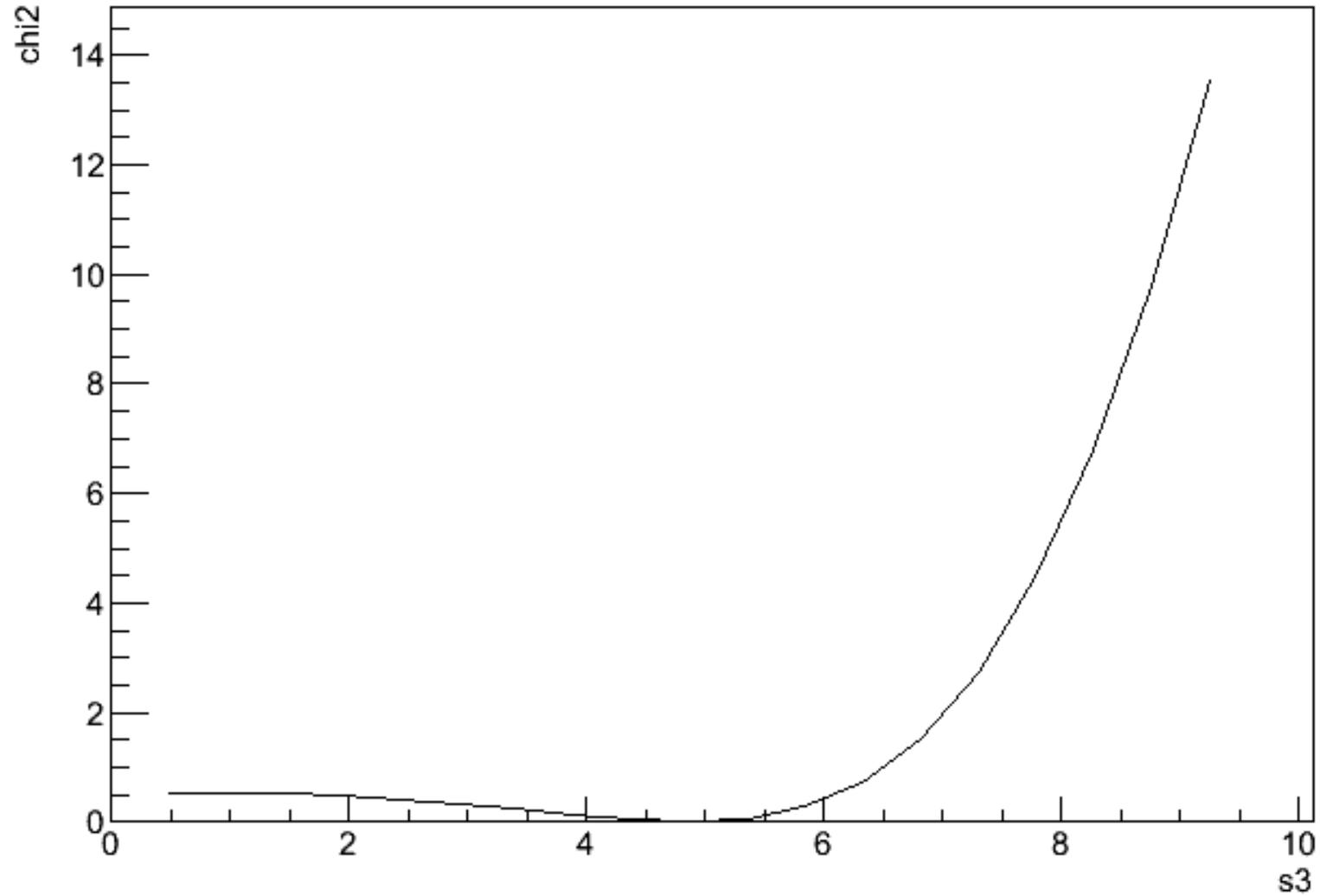
## Data and Predicts



# S3

s3 variation: -90% to 90%  
Step-size: 0.1\*s3

chi2 graph



# Tminuit chi2 Minimization (single Gaussian flux example)

Input Flux: Single Gaussian

A: 17.4797e16

M: 5.6

S: 1.5

—▶ helectE(electron energy spectrum histogram)



data

# Fit 1 Parameter

TruthSigma (Fixed m=5.6; a=17.4797 e16)	1.0	1.1	1.2	1.3	1.4	1.5
FitSigma	1.02168e+00	1.10076e+00	1.20018e+00	1.30912e+00	1.40583e+00	1.50071e+00
Error	4.40724e-01	4.73636e-01	4.87226e-01	5.09233e-01	5.28518e-01	5.52643e-01

TruthMean (Fixed s=1.5; a=17.4797e 16)	5.6	5.7	5.8	5.9	6.0	6.1
FitMean	5.60023e+00	5.70024e+00	5.80029e+00	5.90033e+00	6.00035e+00	6.10040e+00
Error	7.21879e-01	7.25598e-01	7.29576e-01	7.33545e-01	7.37840e-01	7.42240e-01

# Fit 2 Parameters

Truth Mean (Fixed a=17.4797e16)	1.0/5.6	1.1/5.6	1.2/5.6	1.3/5.6	1.4/5.6
Fit Mean	9.48342e-01/5.62708e+00	1.10018e+00/5.60067e+00	1.19999e+00/5.60004e+00	1.30029e+00/5.60259e+00	1.40161e+00/5.60025e+00
Error Mean	6.61146e-01/7.68602e-01	6.48843e-01/8.07271e-01	6.84910e-01/8.61621e-01	7.13995e-01/9.07111e-01	7.60351e-01/9.81839e-01