Weekly Updates On nu e Meeting

Flux Parameters Fitting & Flux High Energy Tail Fitting

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July 3, 2013

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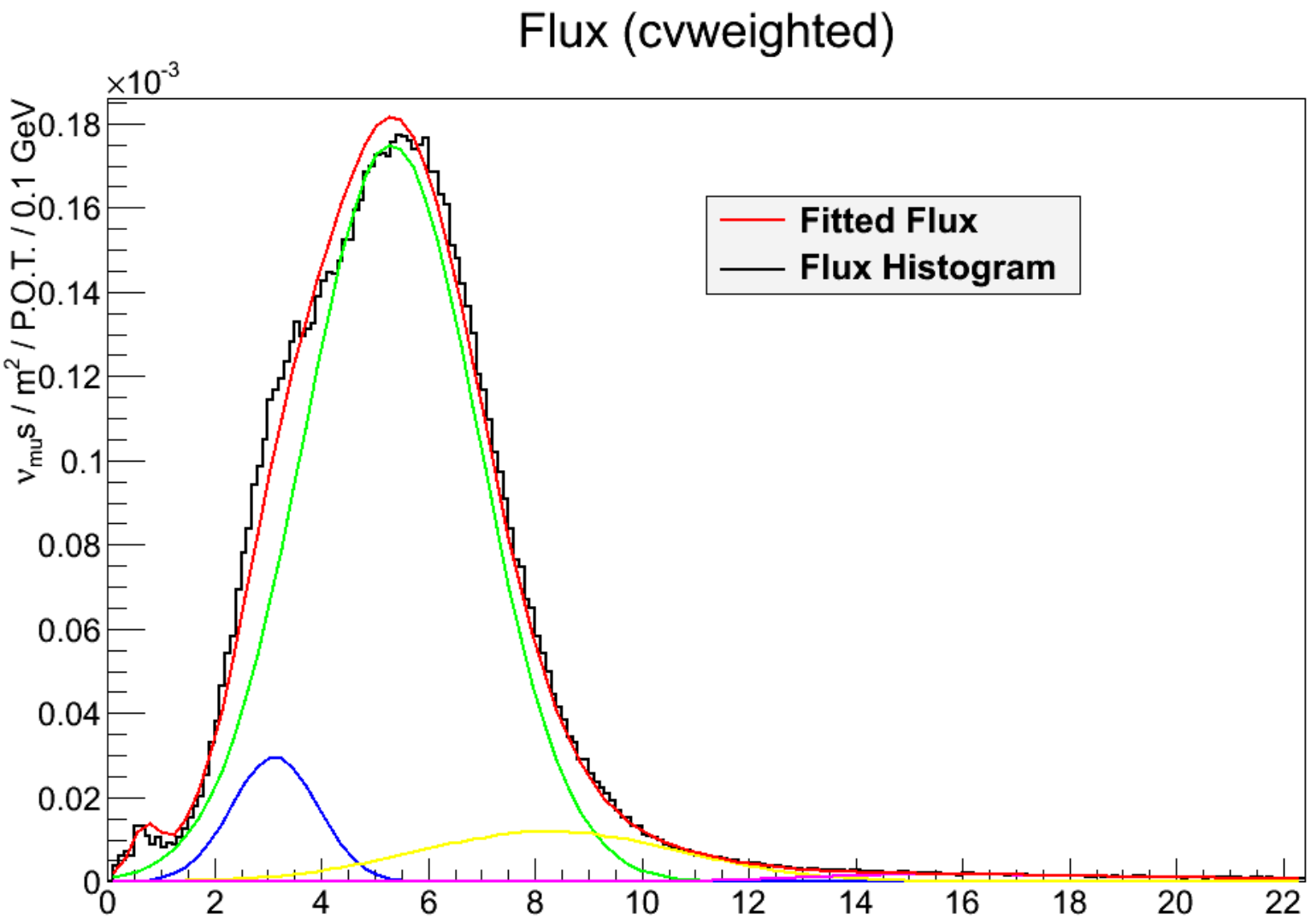
5 Pars Fitting

Par	p0(a1)	p1(m1)	p2(s1)	p3(a2)
True	1.70e-04	5.53672e+00	1.58104e+00	5.84246e-05
Fitted	1.751e-04	5.303	1.631	2.961e-05
Error	0.876e-04	0.722	0.645	7.109e-05
Par	p4(m2)	p5(s2)	p6(a3)	p7(m3)
True	3.11705e+00	7.28272e-01	1.20244e-05	8.25820e+00
Fitted	fixed	8.087e-01	fixed	fixed
Error	–	6.679e-01	–	–
Par	p8(s3)	p9(L1)	p10(L2)	p11(L3)
True	2.46943e+00	9.70000e-06	1.60000e+01	2.18393e+00
Fitted	fixed	fixed	fixed	fixed
Error	–	–	–	–

red numbers – parameters need to be fitted

blue numbers – fixed parameters

Flux Result Plot with Components



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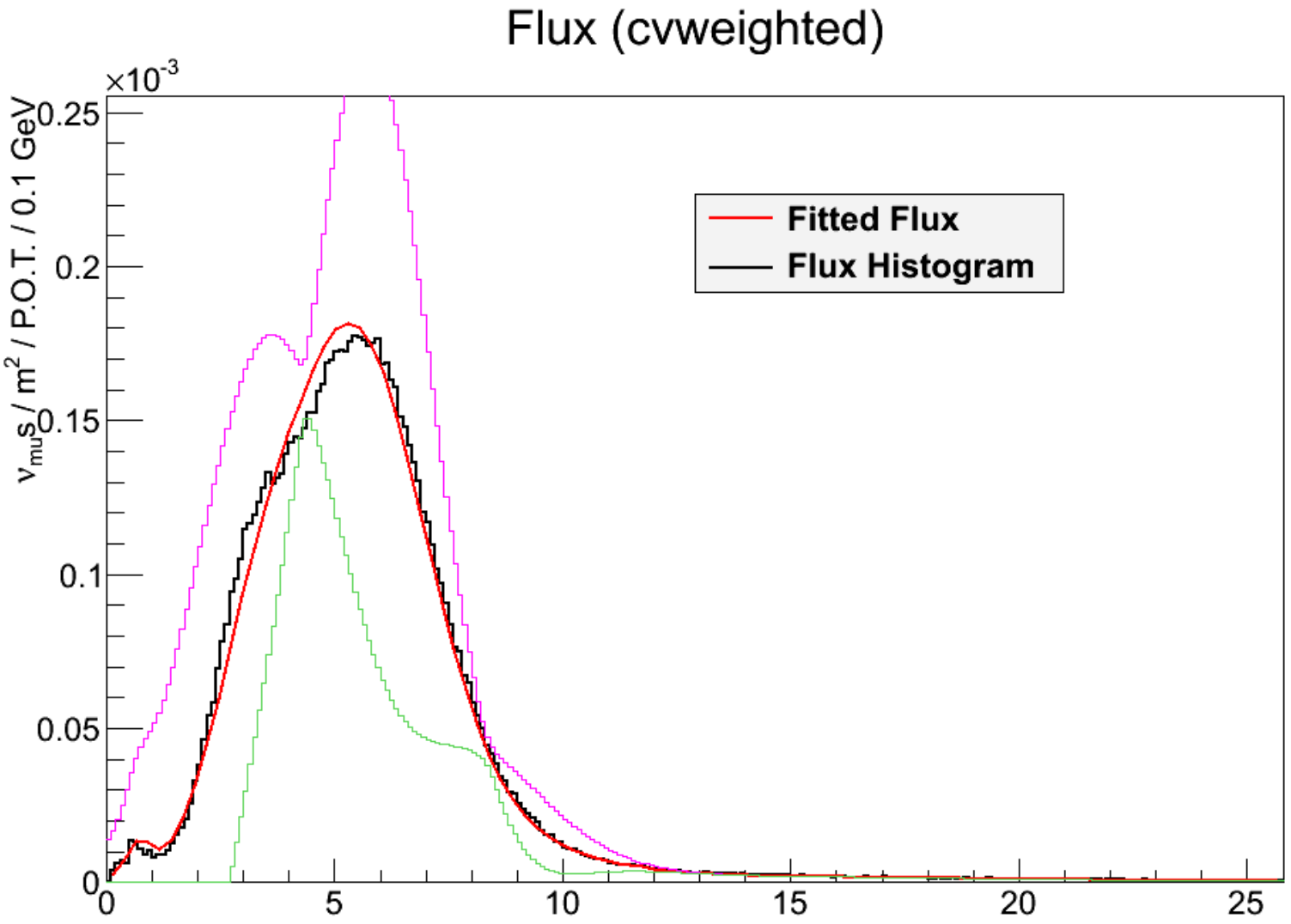
Flux Result Error Band



with error band "up" and "down"

High Energy Tail Normalization

Use the tail(20-50 GeV) of the electron energy data to constrain the flux high energy tail(20-50 GeV).

In the prediction(flux histogram):
take the ratio flux->Integral(20,50)/Ke data -> Integral(20,50)

$$R = \frac{FluxHistoIntegral(20-50GeV)}{KePredictionIntegral(20-50GeV)} = \frac{8.015e-5}{336}$$

In the ke fitting code, 20-50 tail integral of the ke data should be equal to the fitted ke:

$$R = \frac{FluxFunctionIntegral(20-50GeV)}{KeDataIntegral(20-50GeV)} = \frac{FluxFunctionIntegral(20-50GeV)}{322}$$

FluxFunctionIntegral(20-50GeV) is 10 times bigger than FluxHistoIntegral(20-50GeV)...

Error Matrix

5 Pars Fitting Covirence Matrix

$1.00992e-08$	$7.18844e-05$	$-6.96928e-05$	$-2.00943e-09$
$7.18844e-05$	0.528028	-0.49856	$-1.41153e-05$
$-6.96928e-05$	-0.49856	0.482952	$1.37774e-05$
$-2.00943e-09$	$-1.41153e-05$	$1.37774e-05$	$5.43974e-10$
$-9.78735e-05$	-0.692114	0.673905	$1.88464e-05$