INGRID Work

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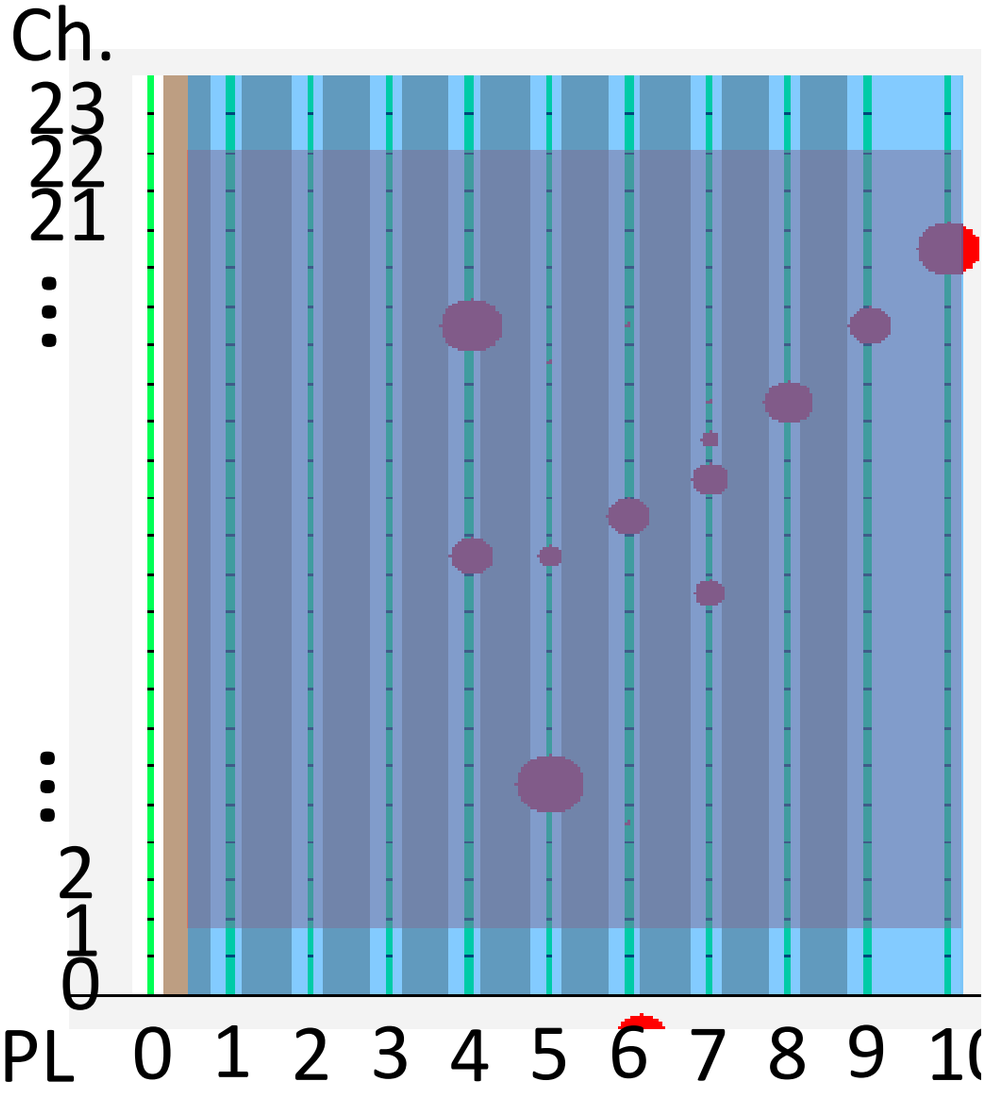
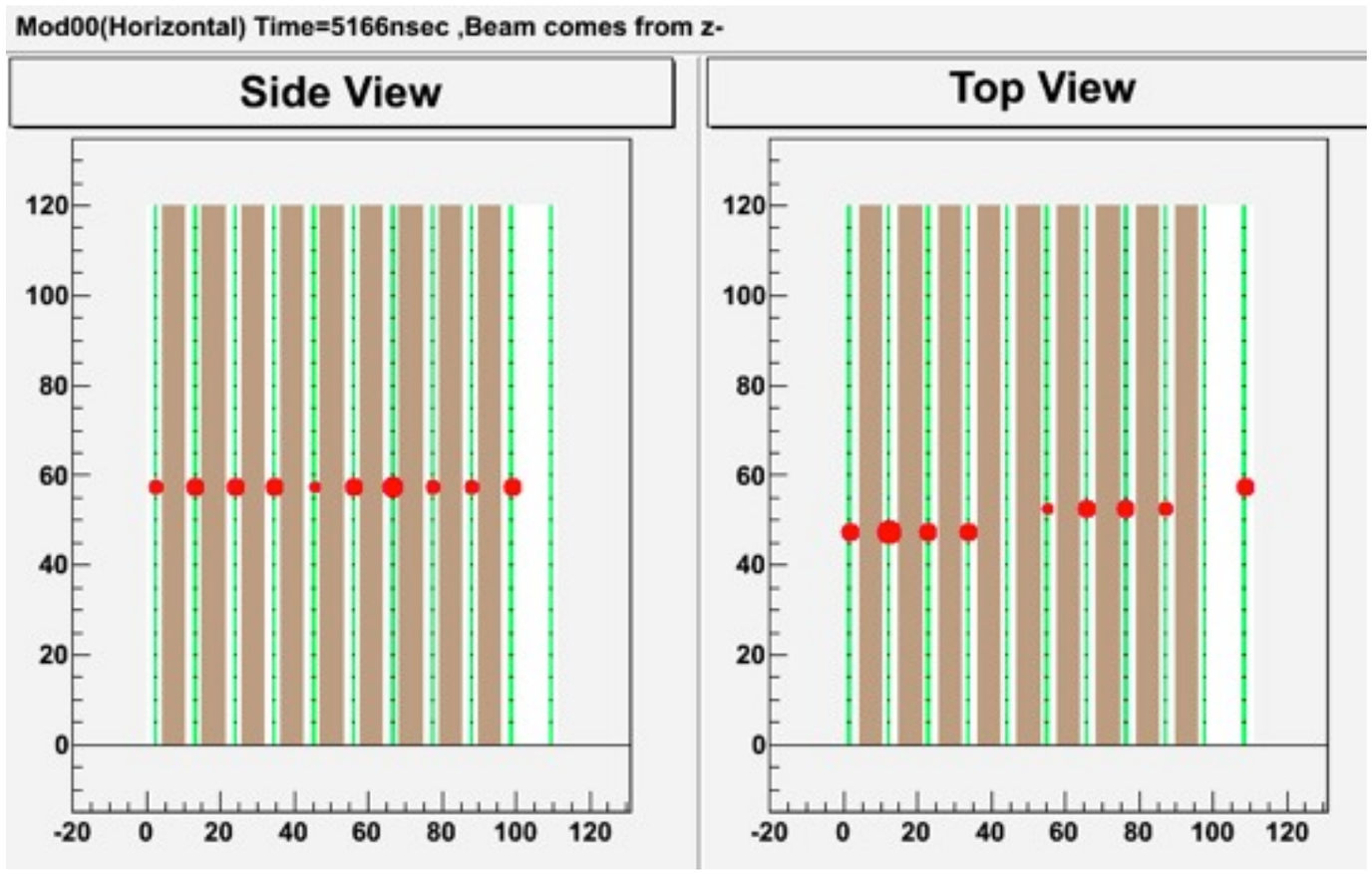
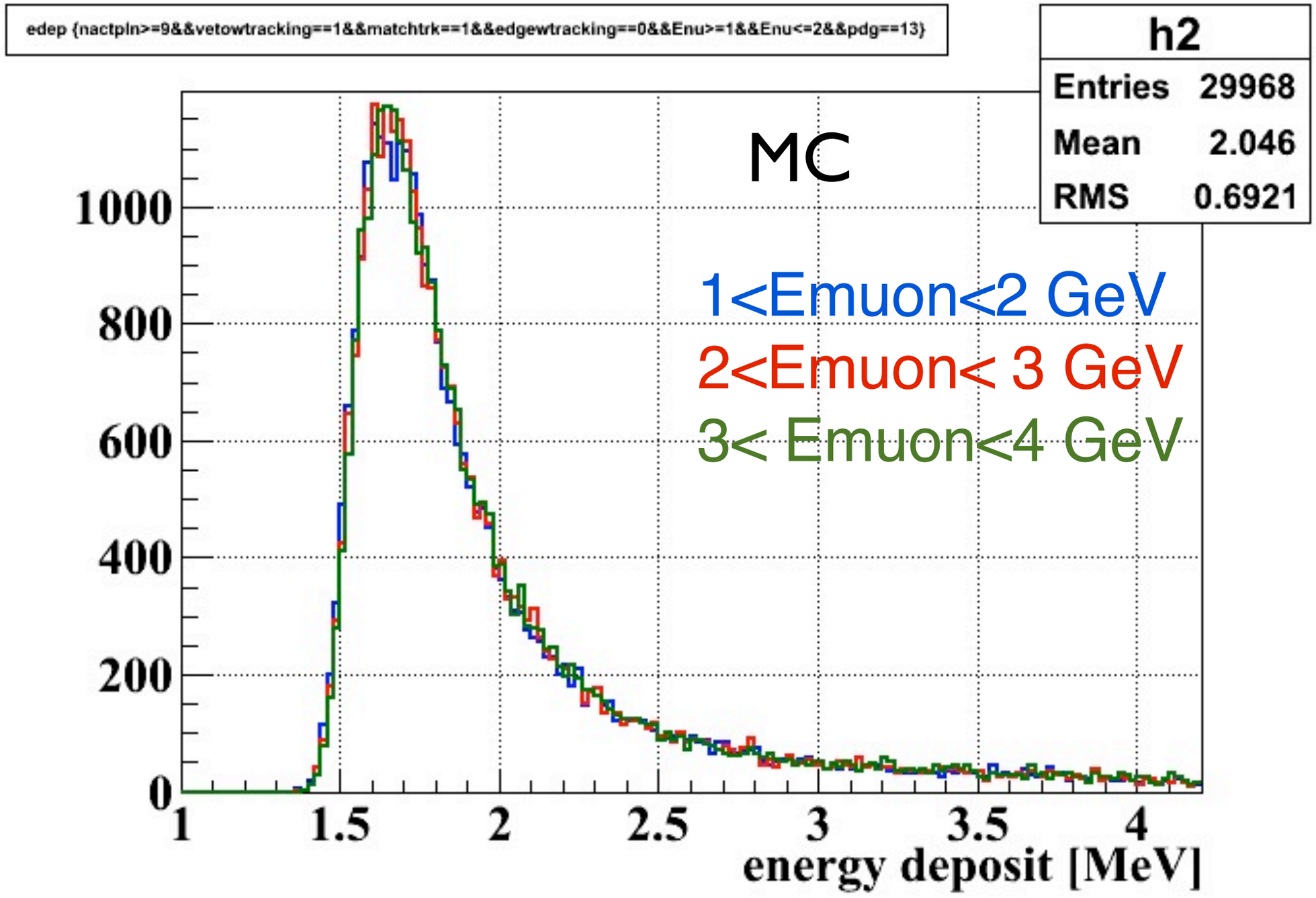
4/27/2010 ND280j-meeting

Muon single shot

- モジュールを突き抜けるようなイベントのp.e./layerを比べる。
  - # of active plane 9 以上 && upstream veto cut && module 側面にヒットなし。



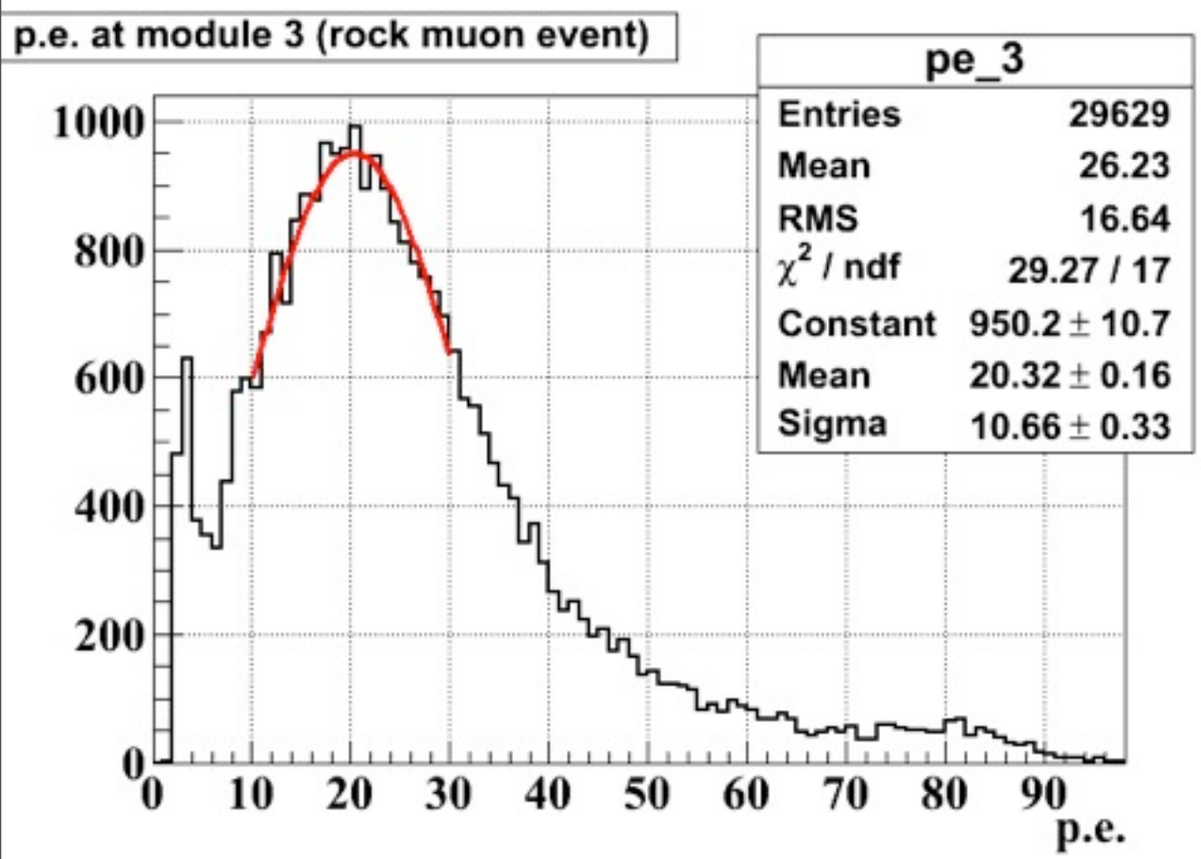




Peak 付近でのエネルギー損失量はほぼ同じ

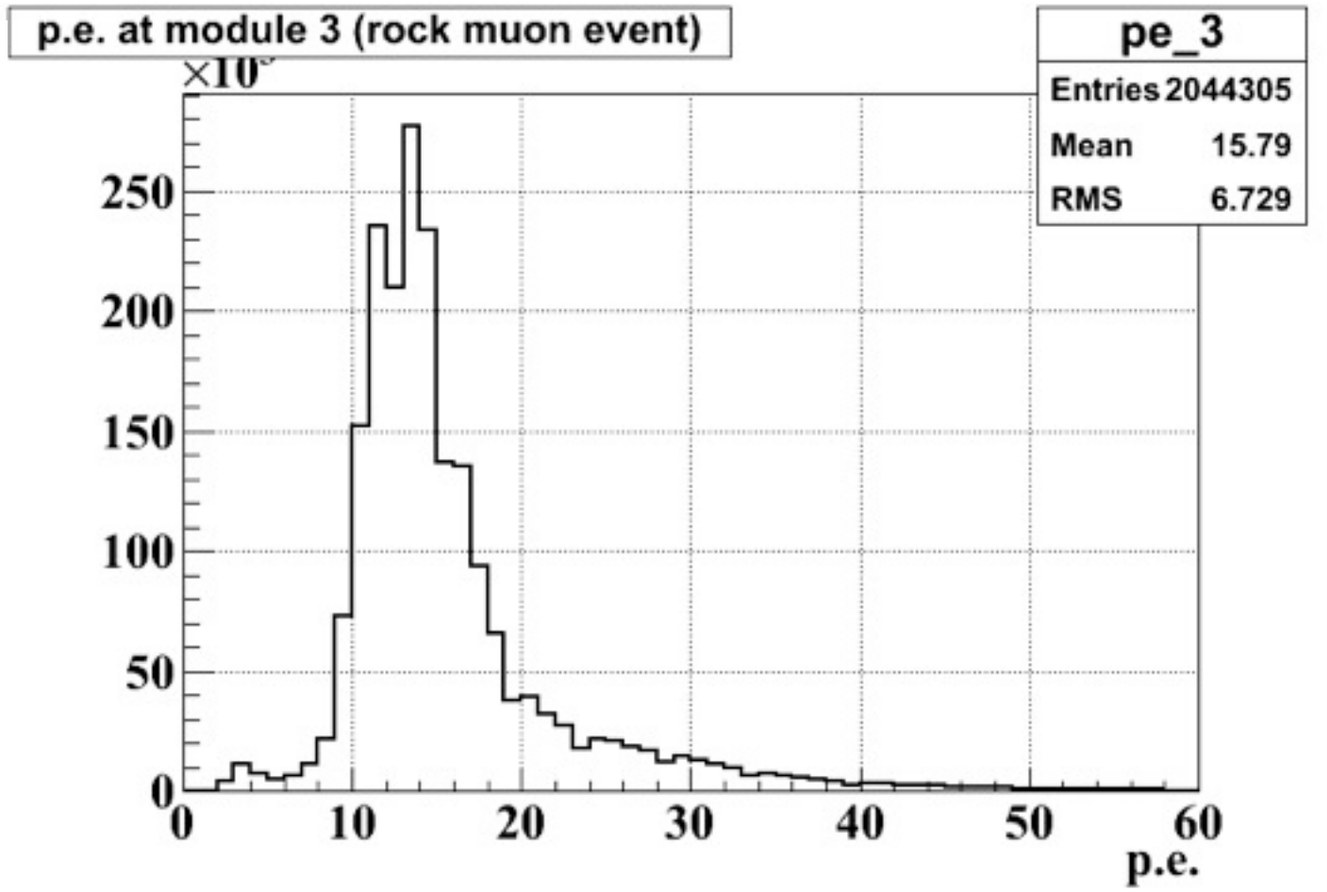
→ Emuonに対するカットはなし

run 31



peak ~ 20p.e.

MC

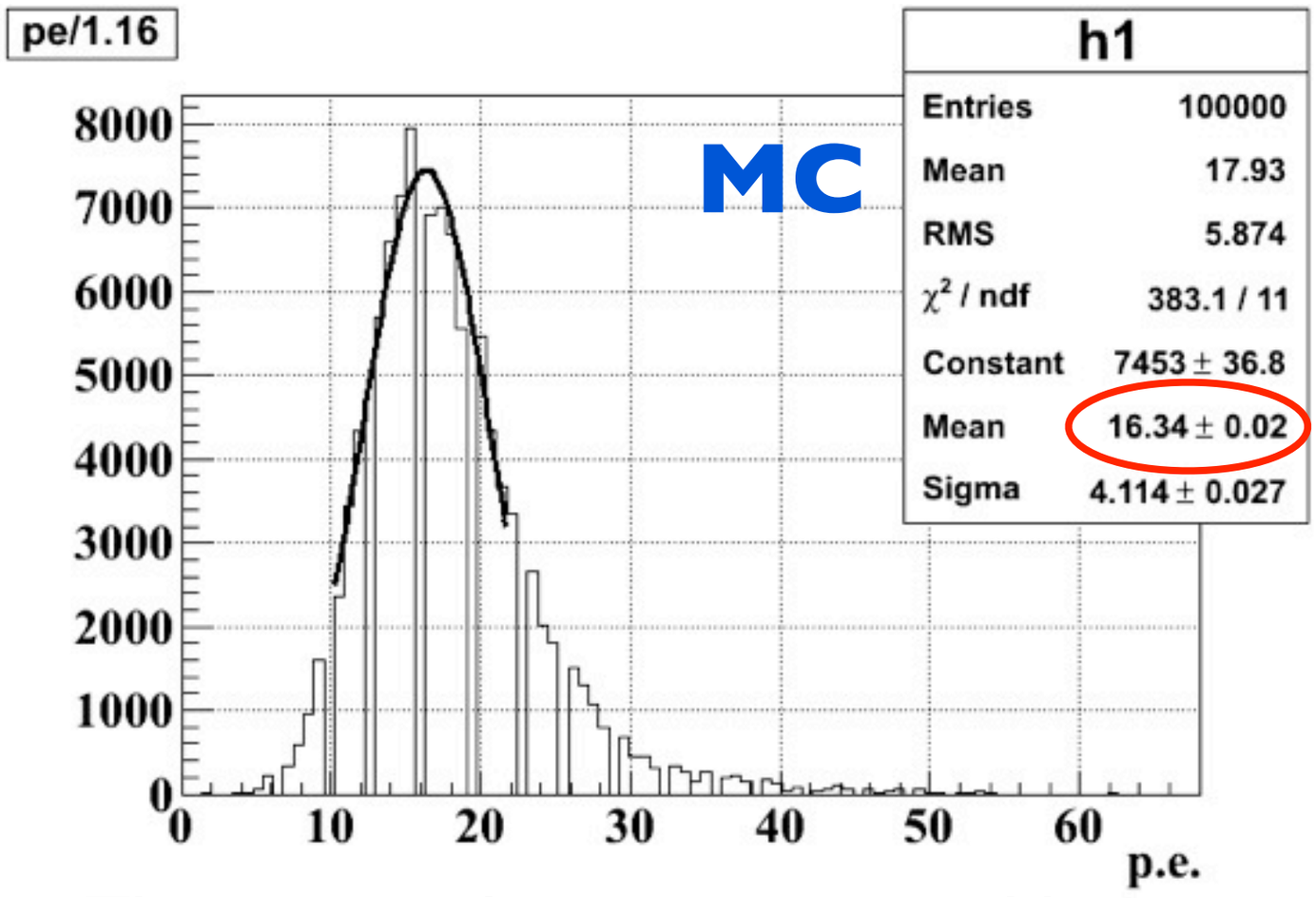


peak ~ 13p.e.

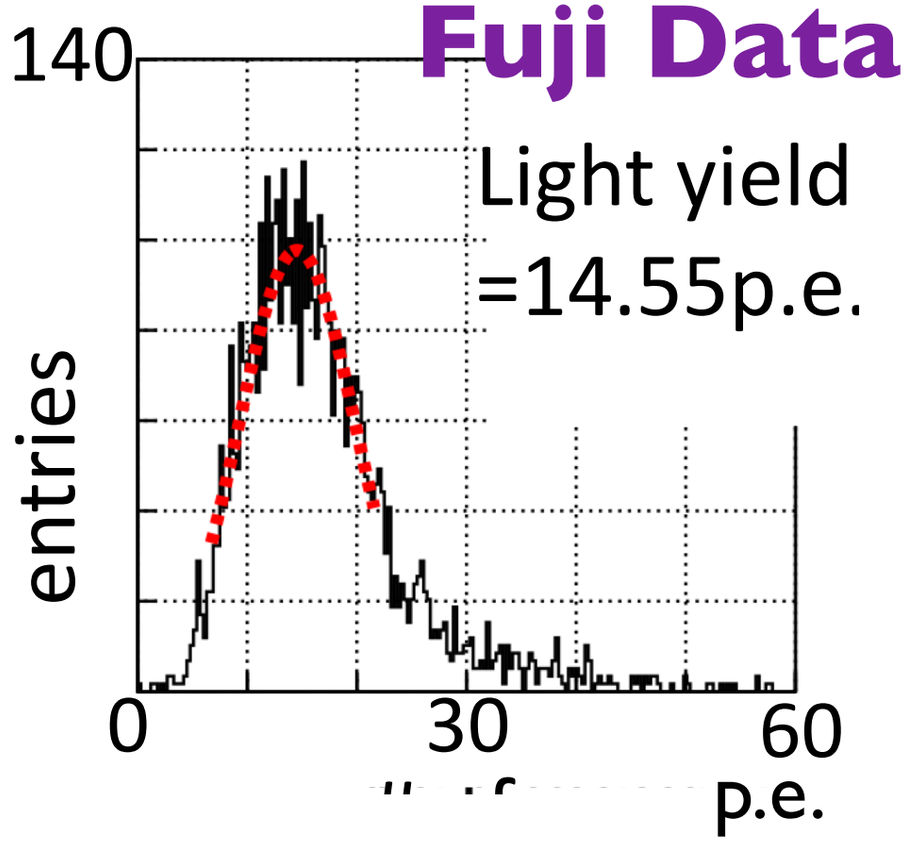
→ more study & tuning

Comparison with Fuji data (1ch)

Take into detector response,
again MC simulate

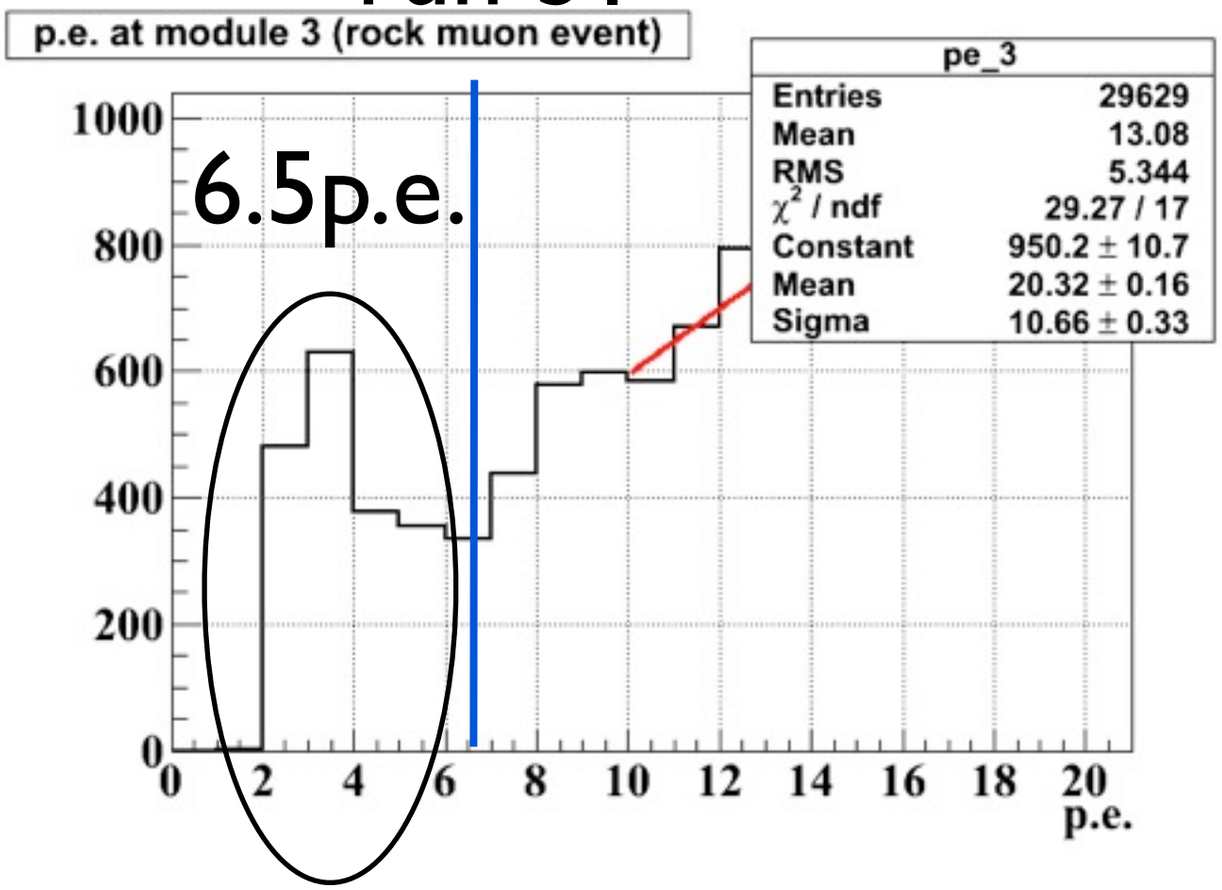


These p.e. value are corrected by cross-talk & after pulse effect.

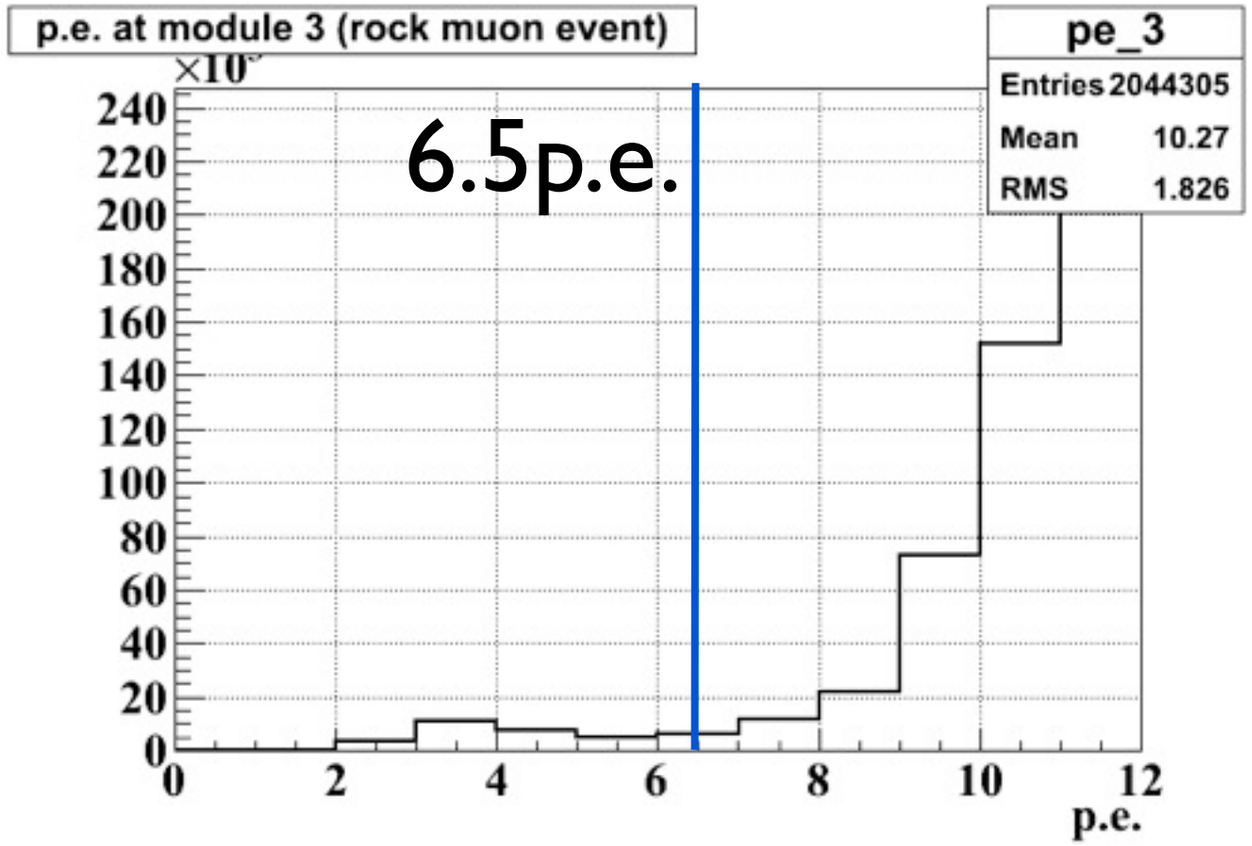


Mean p.e. peak of Fuji beam test is 15p.e.
→ roughly 10% difference

run 31



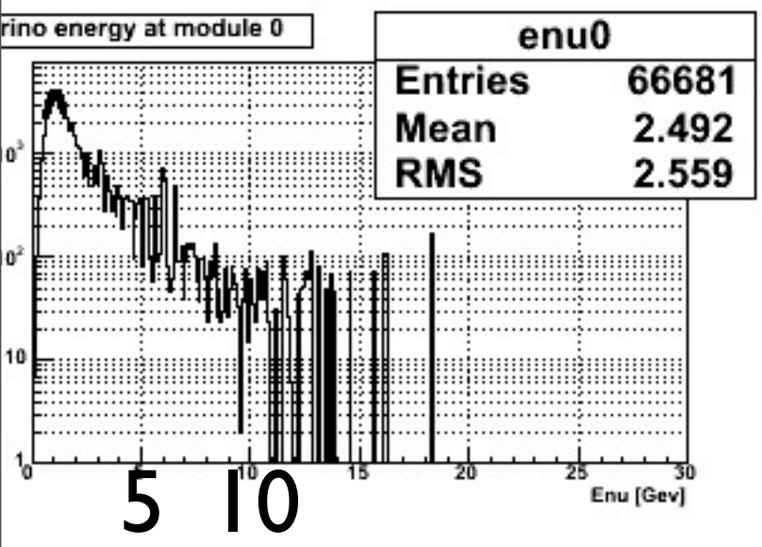
MC

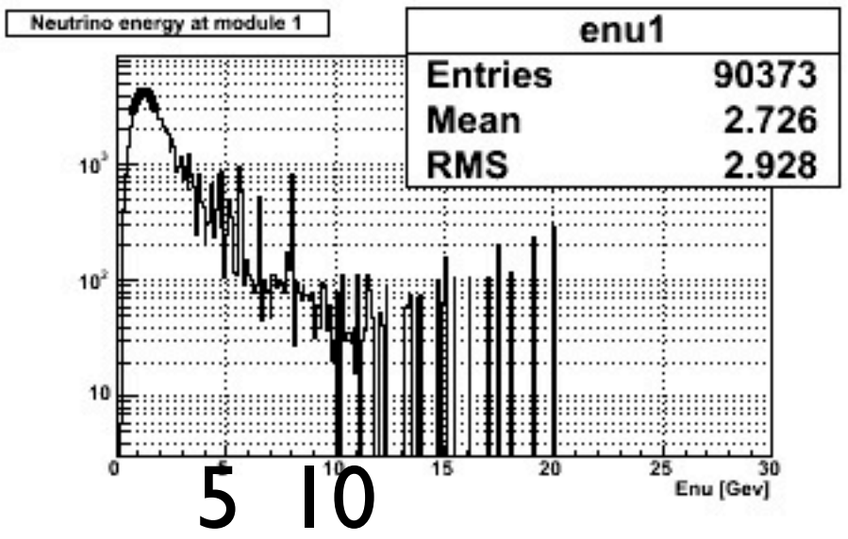


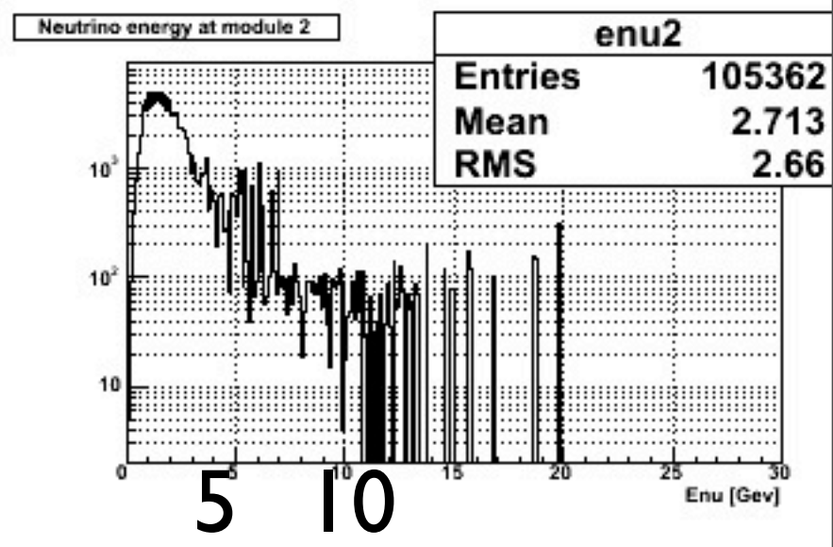
→ MPPC noise

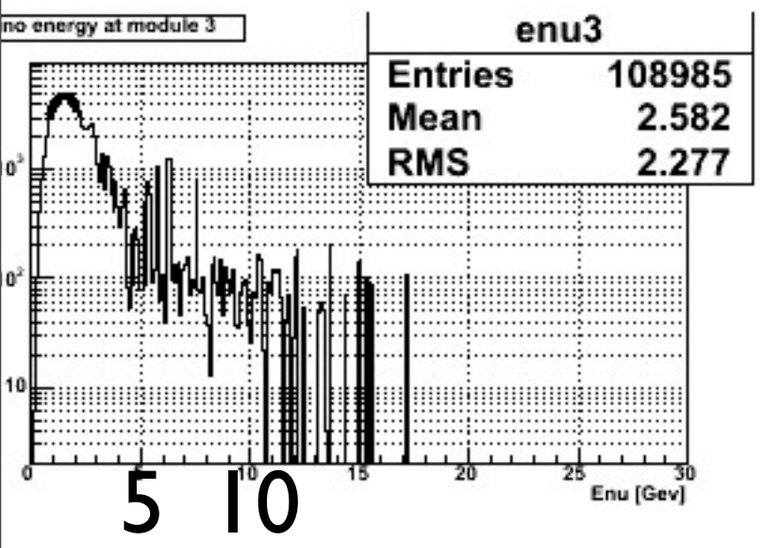
MC tuning item

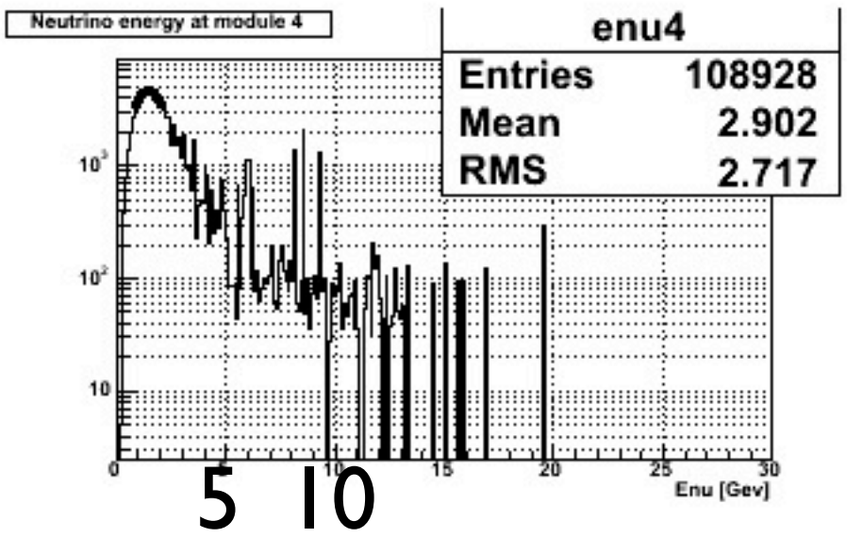
- Fiber attenuation → added to MC
- Scintillator quenching → added to MC
- MPPC response → added to MC
- MPPC dirk current noise → not yet
- MPPC - Fiber coupling constant → not yet
- Hit efficiency for each channel → not yet
- Hit time → not yet
- Electric response (p.e. > ADC, time > TDC, logical delay) → not yet

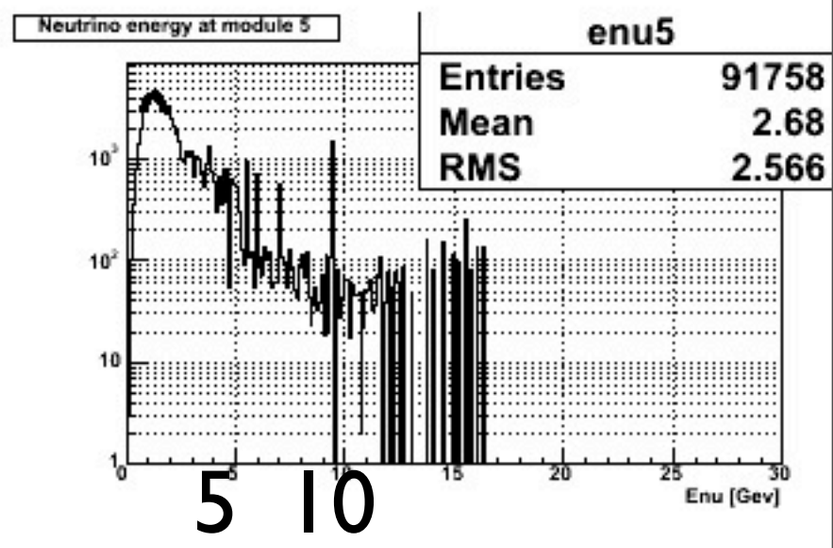

rino energy at module 0
enu0
Entries 66681
Mean 2.492
RMS 2.559
Enu [Gev]

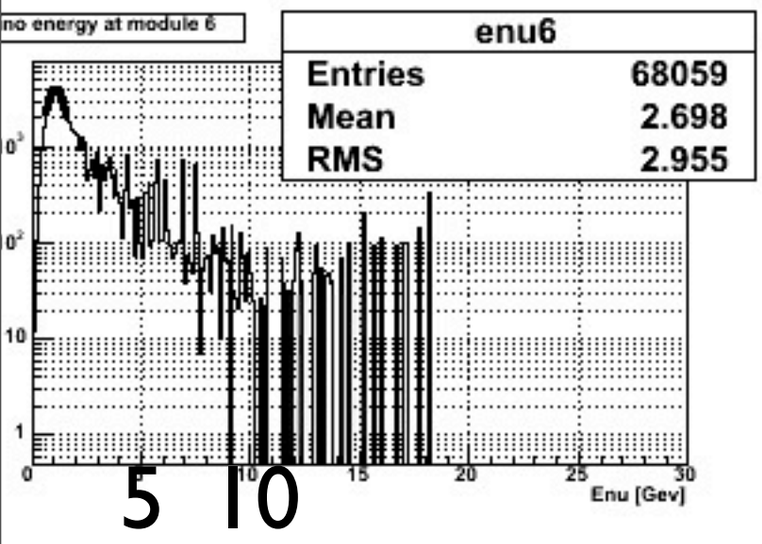

Neutrino energy at module 1
enu1
Entries 90373
Mean 2.726
RMS 2.928
Enu [Gev]

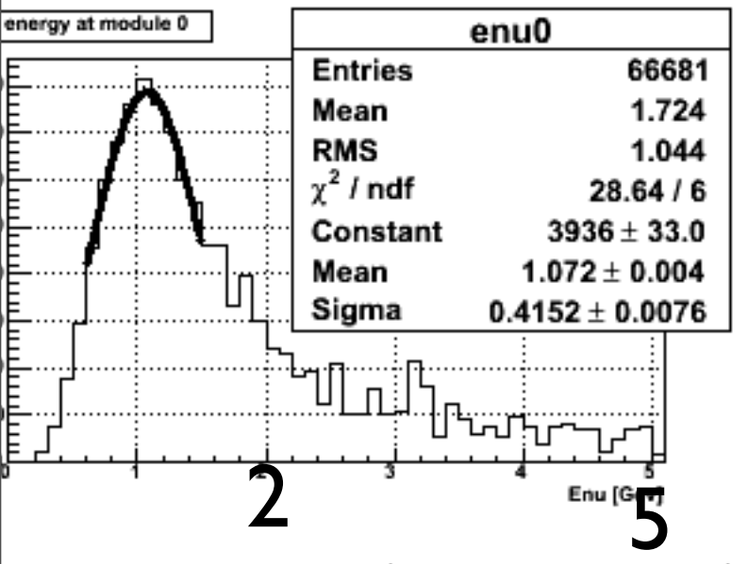

Neutrino energy at module 2
enu2
Entries 105362
Mean 2.713
RMS 2.66
Enu [Gev]

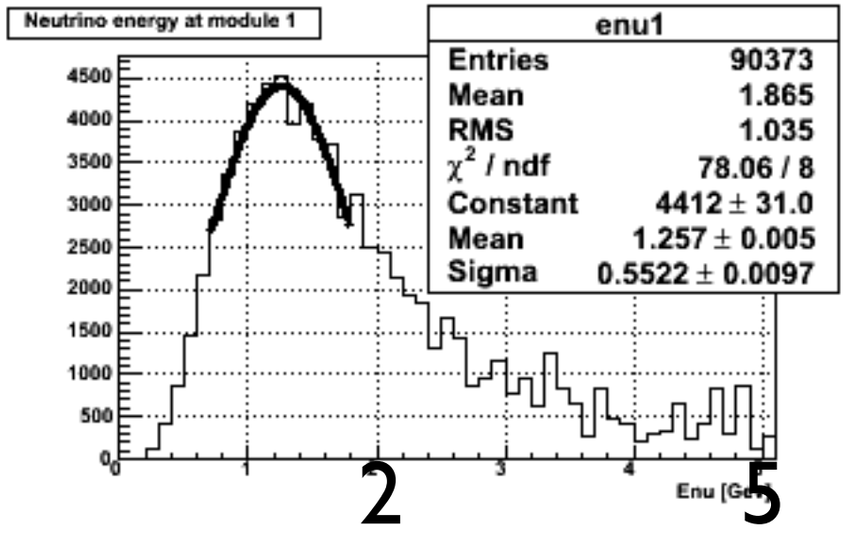

no energy at module 3
enu3
Entries 108985
Mean 2.582
RMS 2.277
Enu [Gev]

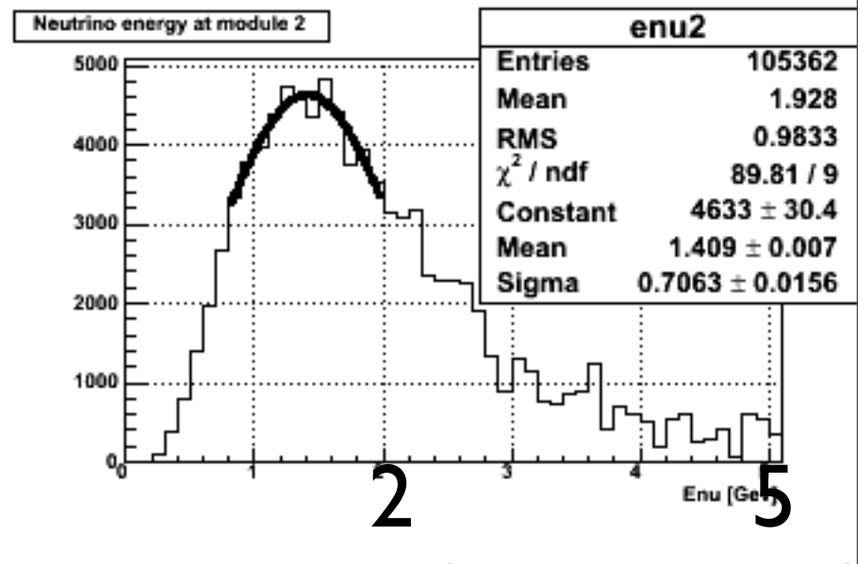

Neutrino energy at module 4
enu4
Entries 108928
Mean 2.902
RMS 2.717
Enu [Gev]

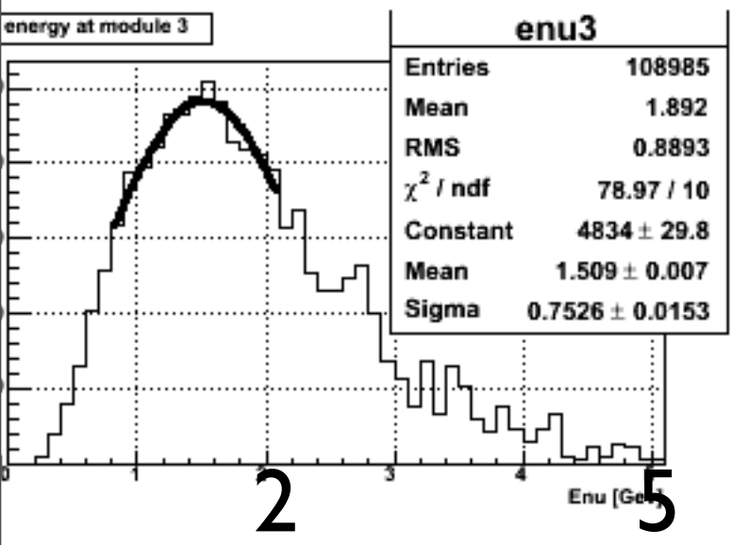

Neutrino energy at module 5
enu5
Entries 91758
Mean 2.68
RMS 2.566
Enu [Gev]

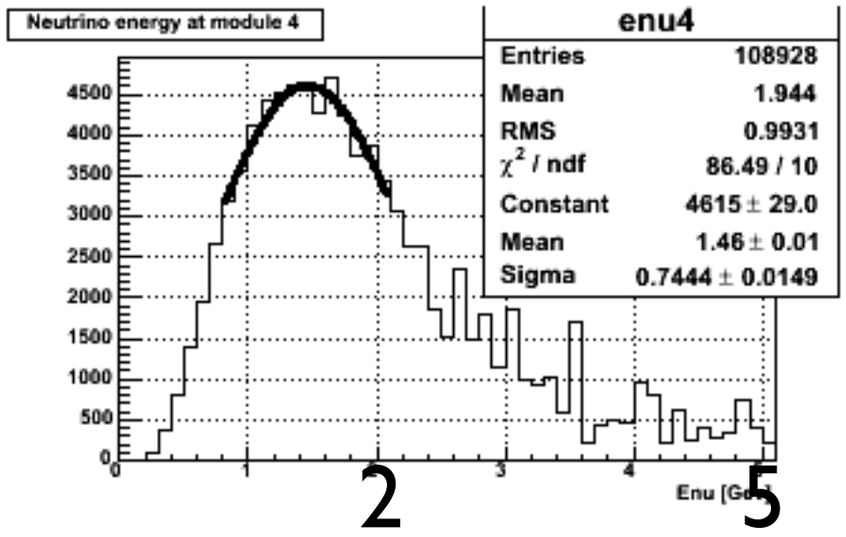

no energy at module 6
enu6
Entries 68059
Mean 2.698
RMS 2.955
Enu [Gev]

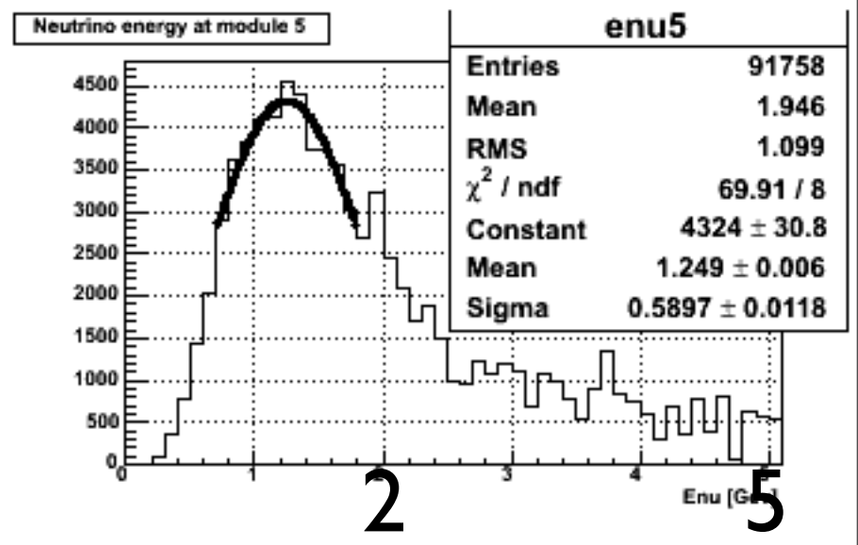

energy at module 0
enu0
Entries 66681
Mean 1.724
RMS 1.044
χ² / ndf 28.64 / 6
Constant 3936 ± 33.0
Mean 1.072 ± 0.004
Sigma 0.4152 ± 0.0076
Enu [Ge
2
5

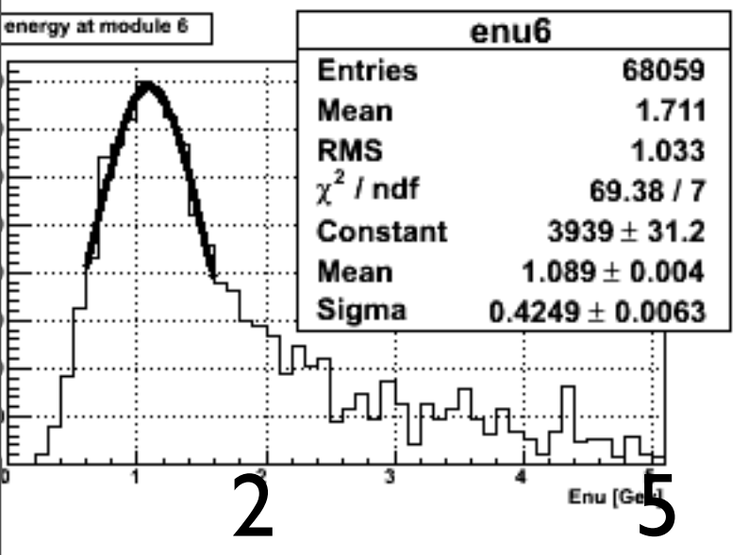

Neutrino energy at module 1
enu1
Entries 90373
Mean 1.865
RMS 1.035
χ² / ndf 78.06 / 8
Constant 4412 ± 31.0
Mean 1.257 ± 0.005
Sigma 0.5522 ± 0.0097
Enu [Ge
2
5

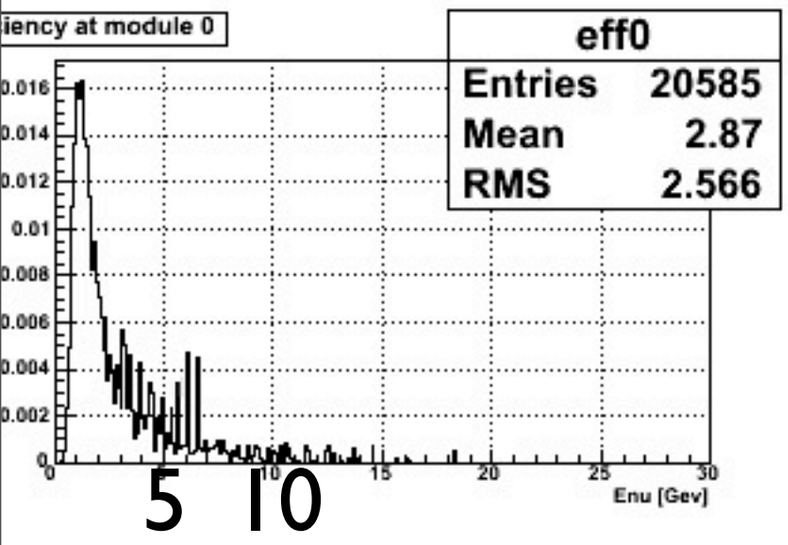

Neutrino energy at module 2
enu2
Entries 105362
Mean 1.928
RMS 0.9833
χ² / ndf 89.81 / 9
Constant 4633 ± 30.4
Mean 1.409 ± 0.007
Sigma 0.7063 ± 0.0156
Enu [Ge
2
5

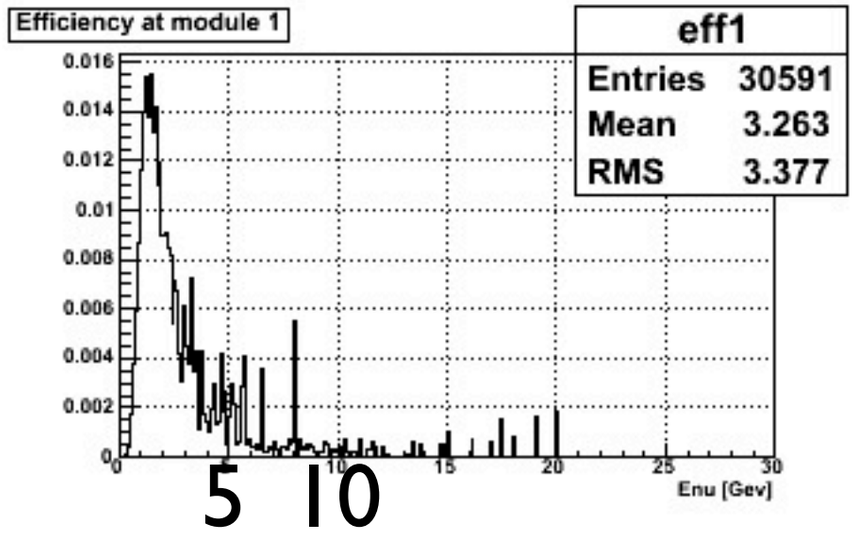

energy at module 3
enu3
Entries 108985
Mean 1.892
RMS 0.8893
χ² / ndf 78.97 / 10
Constant 4834 ± 29.8
Mean 1.509 ± 0.007
Sigma 0.7526 ± 0.0153
Enu [Ge
2
5

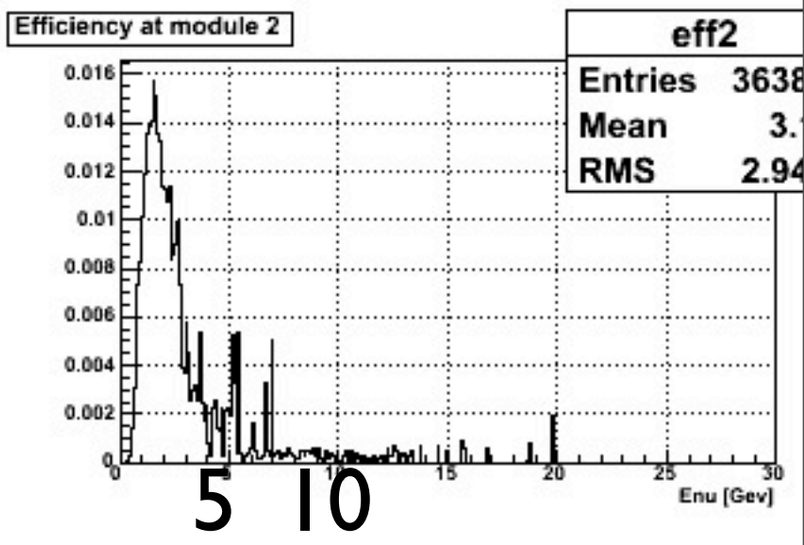

Neutrino energy at module 4
enu4
Entries 108928
Mean 1.944
RMS 0.9931
χ² / ndf 86.49 / 10
Constant 4615 ± 29.0
Mean 1.46 ± 0.01
Sigma 0.7444 ± 0.0149
Enu [Ge
2
5

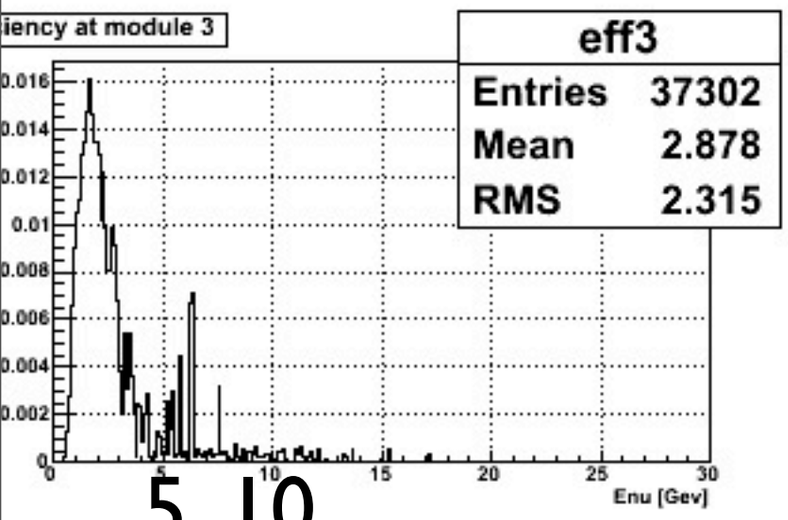

Neutrino energy at module 5
enu5
Entries 91758
Mean 1.946
RMS 1.099
χ² / ndf 69.91 / 8
Constant 4324 ± 30.8
Mean 1.249 ± 0.006
Sigma 0.5897 ± 0.0118
Enu [Ge
2
5

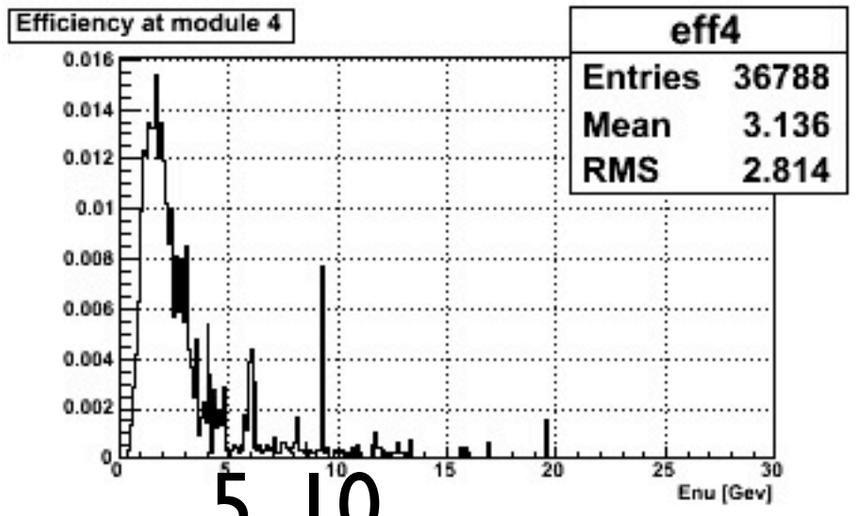

energy at module 6
enu6
Entries 68059
Mean 1.711
RMS 1.033
χ² / ndf 69.38 / 7
Constant 3939 ± 31.2
Mean 1.089 ± 0.004
Sigma 0.4249 ± 0.0063
Enu [Ge
2
5

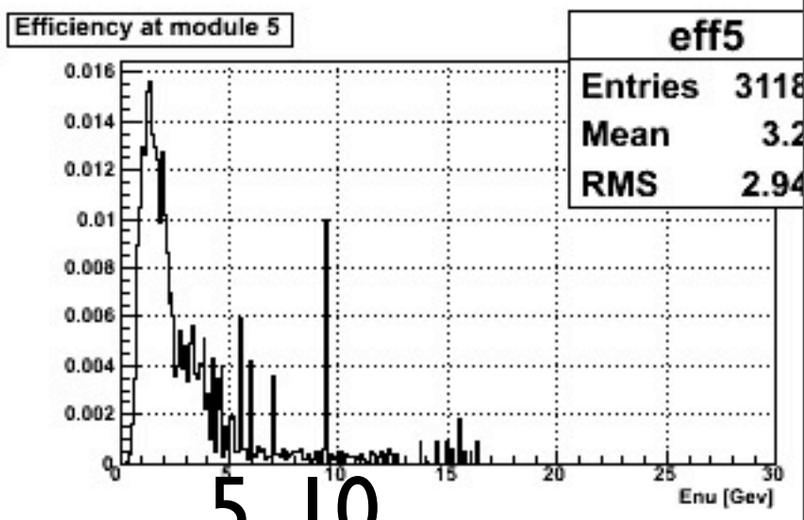

iency at module 0
eff0
Entries 20585
Mean 2.87
RMS 2.566
Enu [Gev]

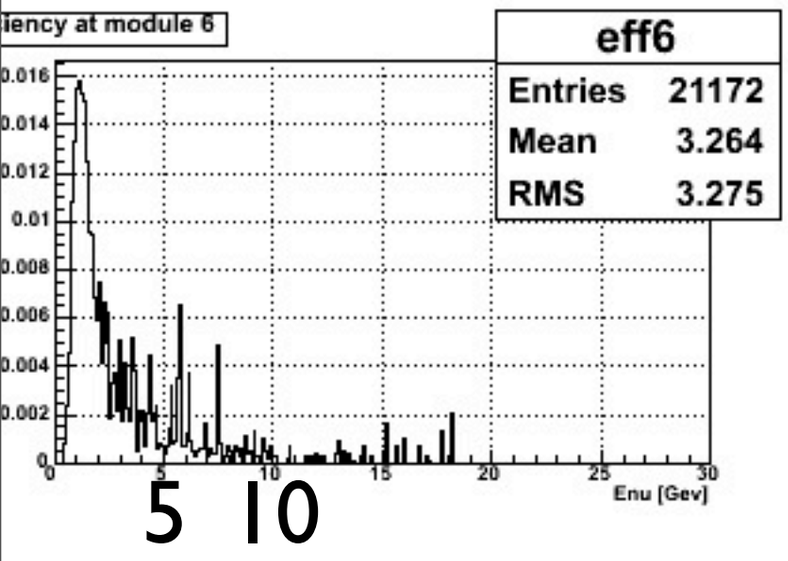

Efficiency at module 1
eff1
Entries 30591
Mean 3.263
RMS 3.377
Enu [Gev]

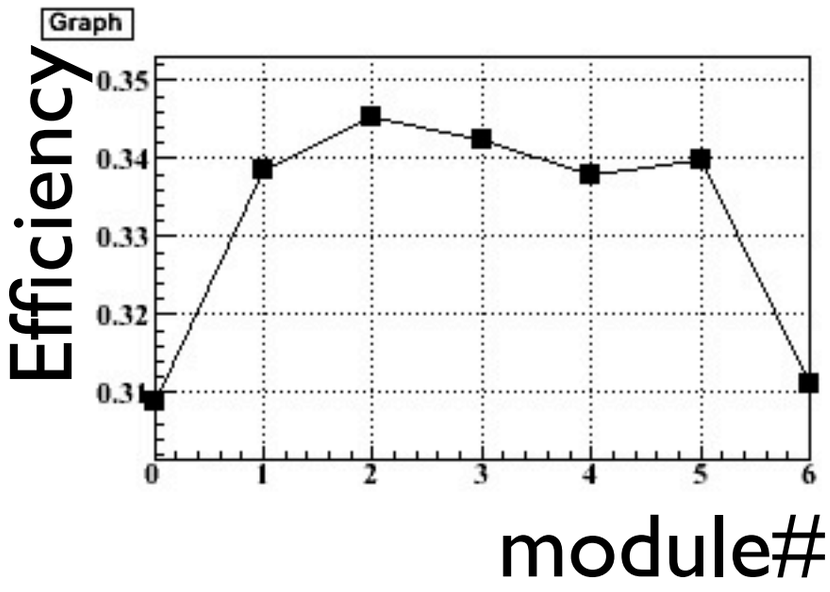

Efficiency at module 2
eff2
Entries 3638
Mean 3.
RMS 2.94
Enu [Gev]


iency at module 3
eff3
Entries 37302
Mean 2.878
RMS 2.315
Enu [Gev]


Efficiency at module 4
eff4
Entries 36788
Mean 3.136
RMS 2.814
Enu [Gev]


Efficiency at module 5
eff5
Entries 3118
Mean 3.2
RMS 2.94
Enu [Gev]


iency at module 6
eff6
Entries 21172
Mean 3.264
RMS 3.275
Enu [Gev]


Graph
Efficiency
module#

module 0

		Totalとの比	条件をかける前との比
Total	66681		
Nactive>1	44917	0.67361	
beam related	44897	0.67331	0.999555
Nactive>2	32417	0.48615	
+layerpe>6.5	32417	0.48615	1
+matchtrack	28723	0.430752	0.886047
+veto cut	27223	0.408257	0.947777
+fiducial cut	20585	0.308709	0.756162

module 1

90373		
64162	0.709969	
64138	0.709703	0.999626
47199	0.522269	
47198	0.522258	0.999979
41730	0.461753	0.884148
39483	0.436889	0.946154
30590	0.338486	0.774764

# of active plane によるカットの時点で差が出ている。

module 3

108985		
78671	0.721852	
78637	0.72154	0.999568
57564	0.528183	
57564	0.528183	1
51082	0.468707	0.887395
48098	0.441327	0.941584
37301	0.342258	0.775521

- Jnubeam 10a以前のニュートリノフラックスの詰め方でのベクターファイルを用意
  - 久保さんにお願い→ すでに作成済み
    - Neutを通す（南野さん、村上）
- Back ground study 用のベクターファイル
- （宇宙線MC）