

Message ID: 4047    Entry time: **Fri Apr 18 18:47:02 2008**

Run:	49
Author:	TP
Type:	Shift summary
System:	General
Subject:	energy loss data for the 2.6ug/cm <sup>2</sup> TD foil

From the measurements with L3=RA=0, both, the Mu and mu+ peaks in TD-MCP2 TOF can be used to determine the energy spectrum of the muon beam at MCP2/sample position. The corresponding plots can be found in /mnt/home/nemu/analysis/2008/MCP2, and in the folder "LEM setup 2008" in my office.

In order to use the mu+ peak the mu+ TOF through the TD detector with acceleration/deceleration sections has to be taken into account (assuming homogenous electric fields). As an example, attachment 1 shows the 12kV mu+ data, attachment 2 the 12kV Mu data.

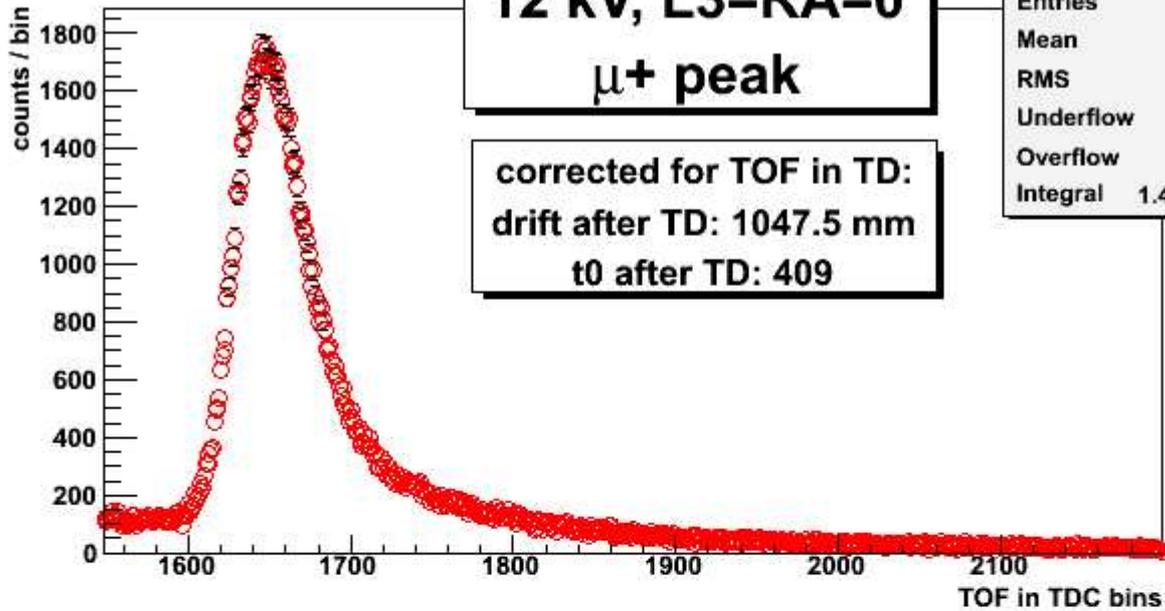
The energy width "sigma-E" is determined by the FWHM of the asymmetric energy spectrum, "sigma-E" = FWHM/2.36.

Moder. HV [kV]	Energy at foil [kV]	delta-E [keV]	Mean energy after foil [keV]	"sigma-E" [keV]
7.5	11.23	1.10	6.40	0.38
10	13.73	1.04	8.96	0.41
12	15.73	0.99	11.01	0.42
15	18.73	0.89	14.11	0.42
18	21.73	0.76	17.24	0.45
20	23.73	0.62	19.38	0.48

The energy loss data for muons are summarized and parameterized in attachments 3 and 4. The corresponding ODB parameters in the /Info structure for the automatic energy calculation have been updated.

Attachment 1: [lem08\\_0015\\_convTofMuon\\_12kV.png](#) 36 kB Uploaded Fri Apr 18 19:49:40 2008  
 | [Hide](#) | [Hide all](#)

MCP2-F Run lem08\_0015



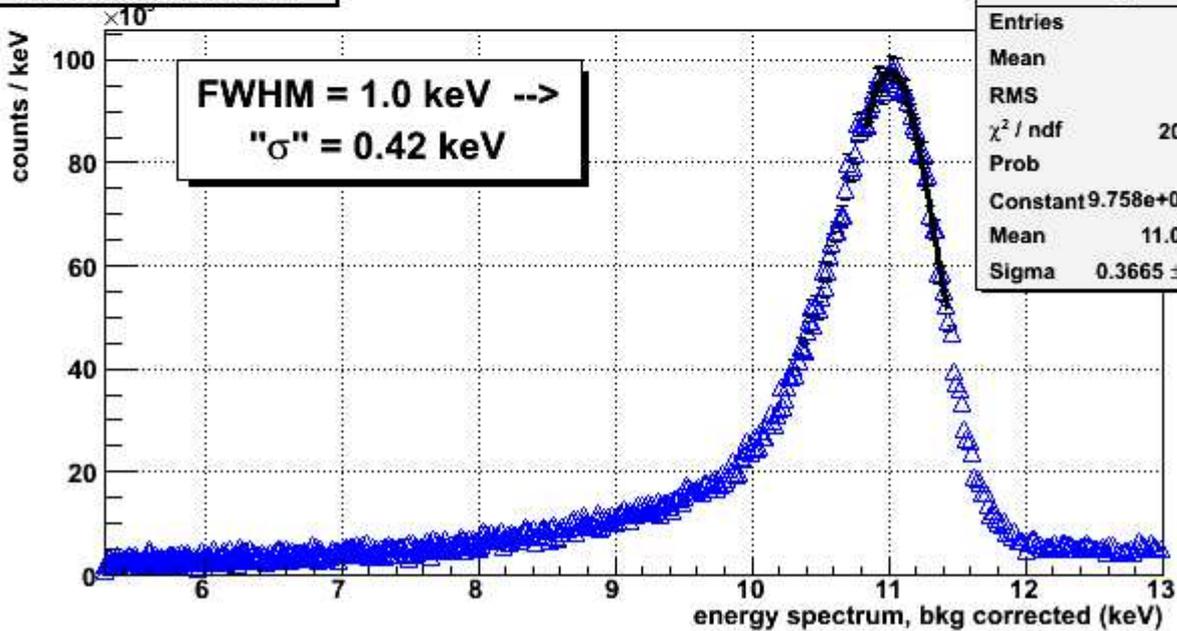
12 kV, L3=RA=0  
 $\mu^+$  peak

corrected for TOF in TD:  
drift after TD: 1047.5 mm  
t0 after TD: 409

hTOF00

Entries	257628
Mean	1696
RMS	102.7
Underflow	0
Overflow	5995
Integral	1.444e+05

online histo: hTOF00



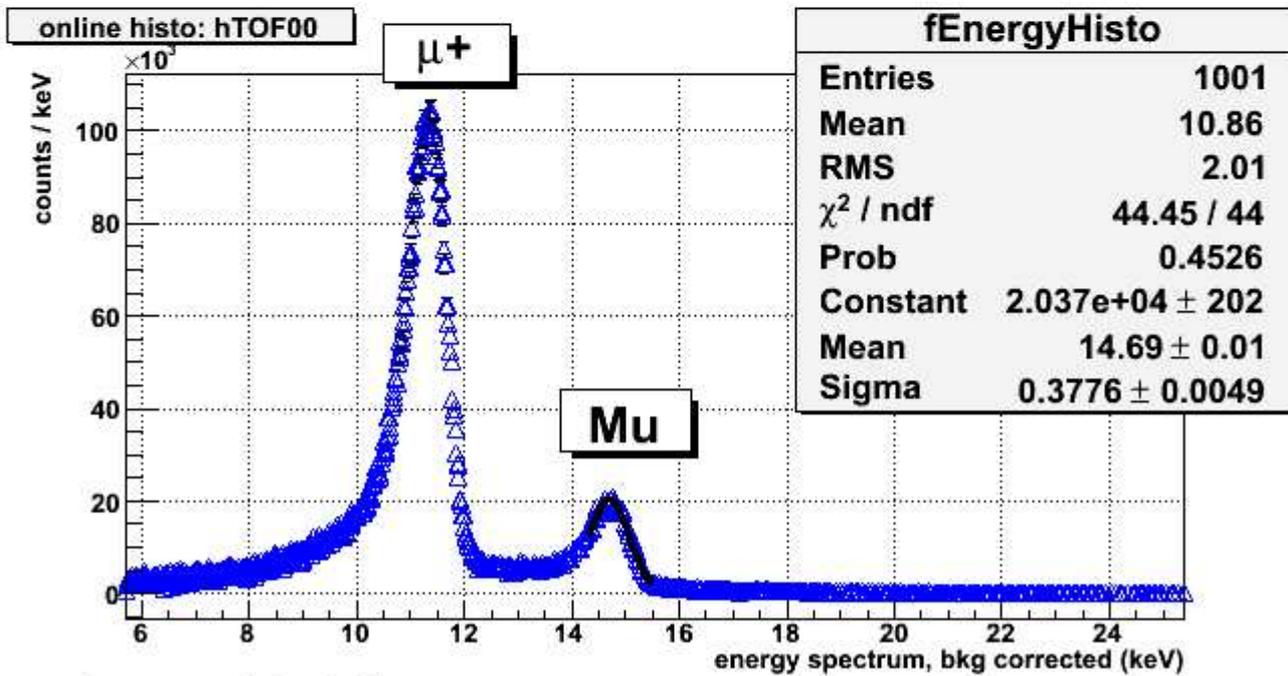
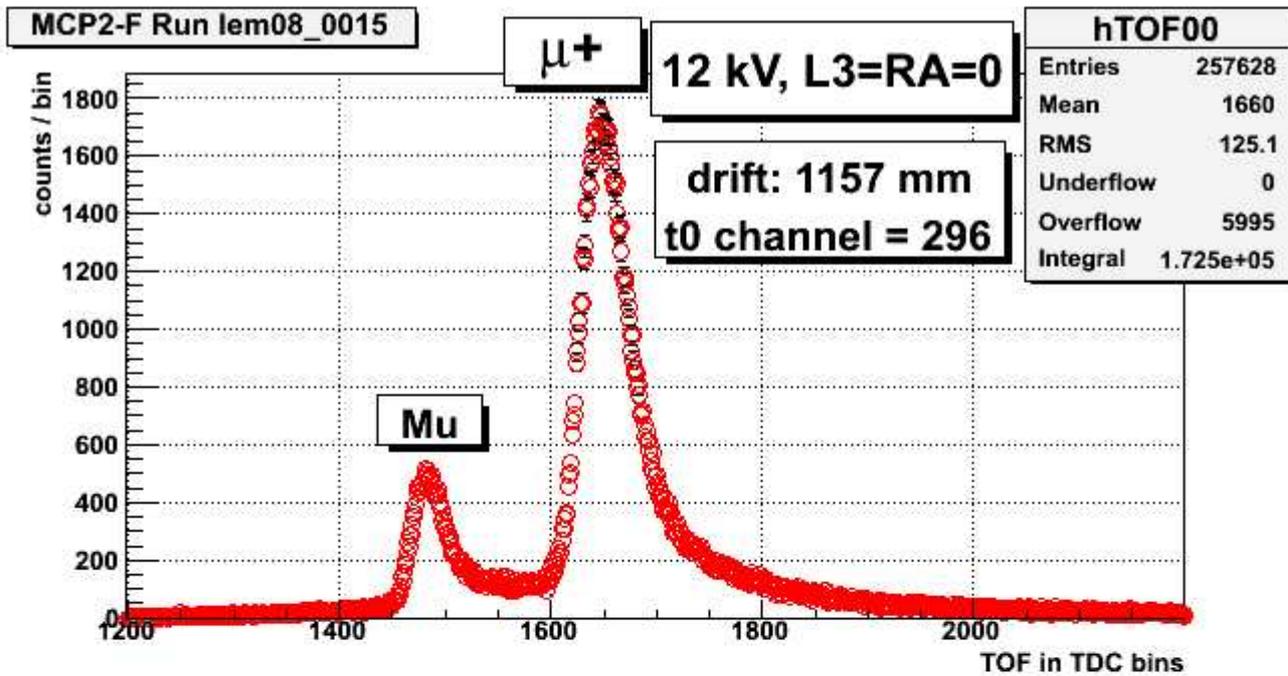
FWHM = 1.0 keV -->  
"σ" = 0.42 keV

fEnergyHisto

Entries	651
Mean	10.01
RMS	1.611
$\chi^2 / \text{ndf}$	20.14 / 30
Prob	0.9129
Constant	$9.758e+04 \pm 566$
Mean	$11.01 \pm 0.01$
Sigma	$0.3665 \pm 0.0086$

Attachment 2:

lem08\_0015\_convTof\_12kV.png 39 kB Uploaded Fri Apr 18 19:49:53 2008  
| Hide | Hide all

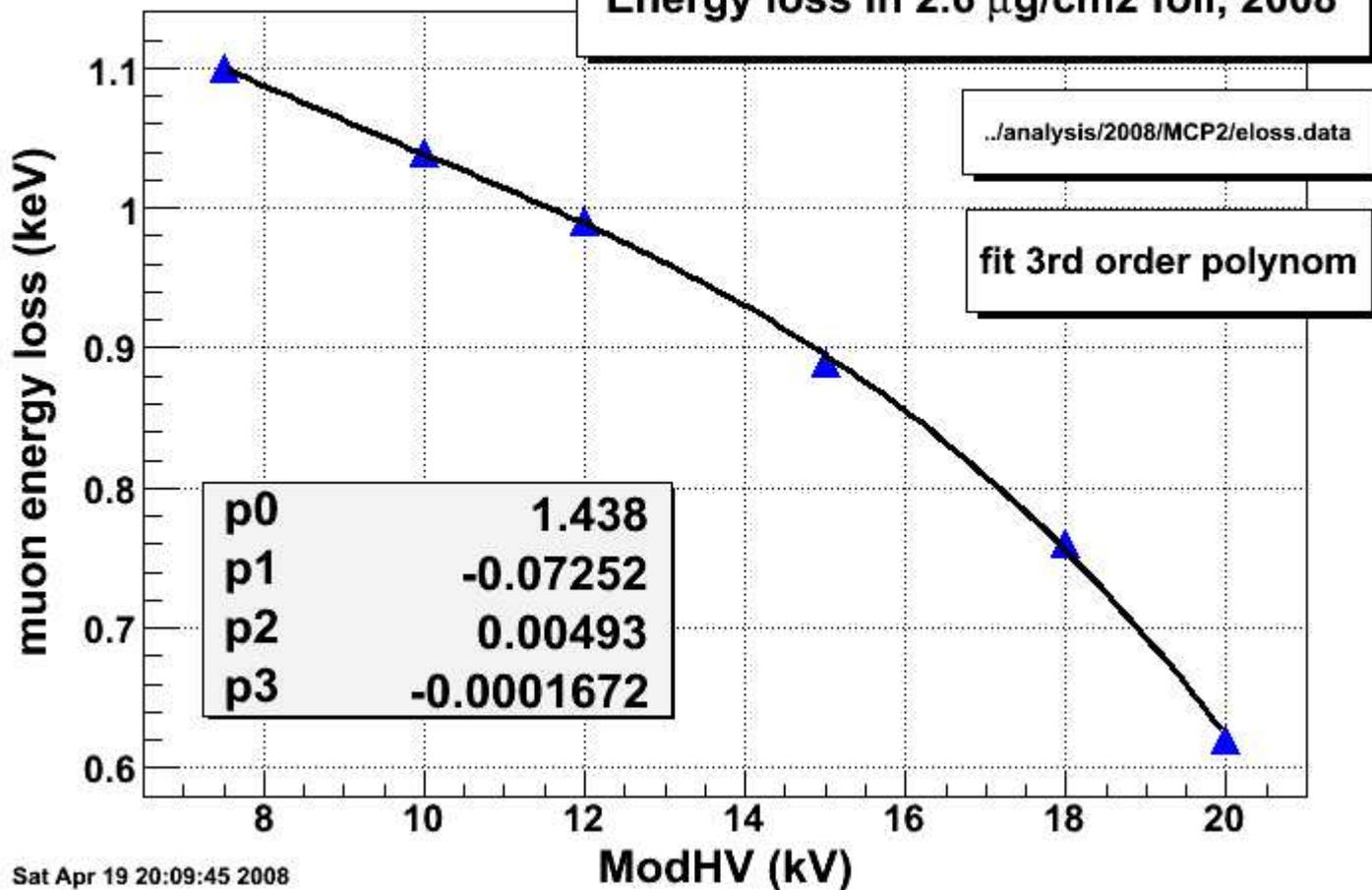


Attachment 3:

[elossMuon.png](#) 22 kB Uploaded Sat Apr 19 21:17:51 2008 | [Hide](#) | [Hide all](#)

Data.dE:Data.ModHV

Energy loss in 2.6  $\mu\text{g}/\text{cm}^2$  foil, 2008



Attachment 4:

[elossMuon\\_DownstreamTD.png](#) 21 kB Uploaded Sat Apr 19 21:18:04 2008  
[| Hide](#) | [Hide all](#)

Data.EAfterFoil:Data.ModHV

Energy after TD for 2.6  $\mu\text{g}/\text{cm}^2$  foil

