MUonE
small exercise to extract Δa_μ^{LO}

Fedor Ignatov

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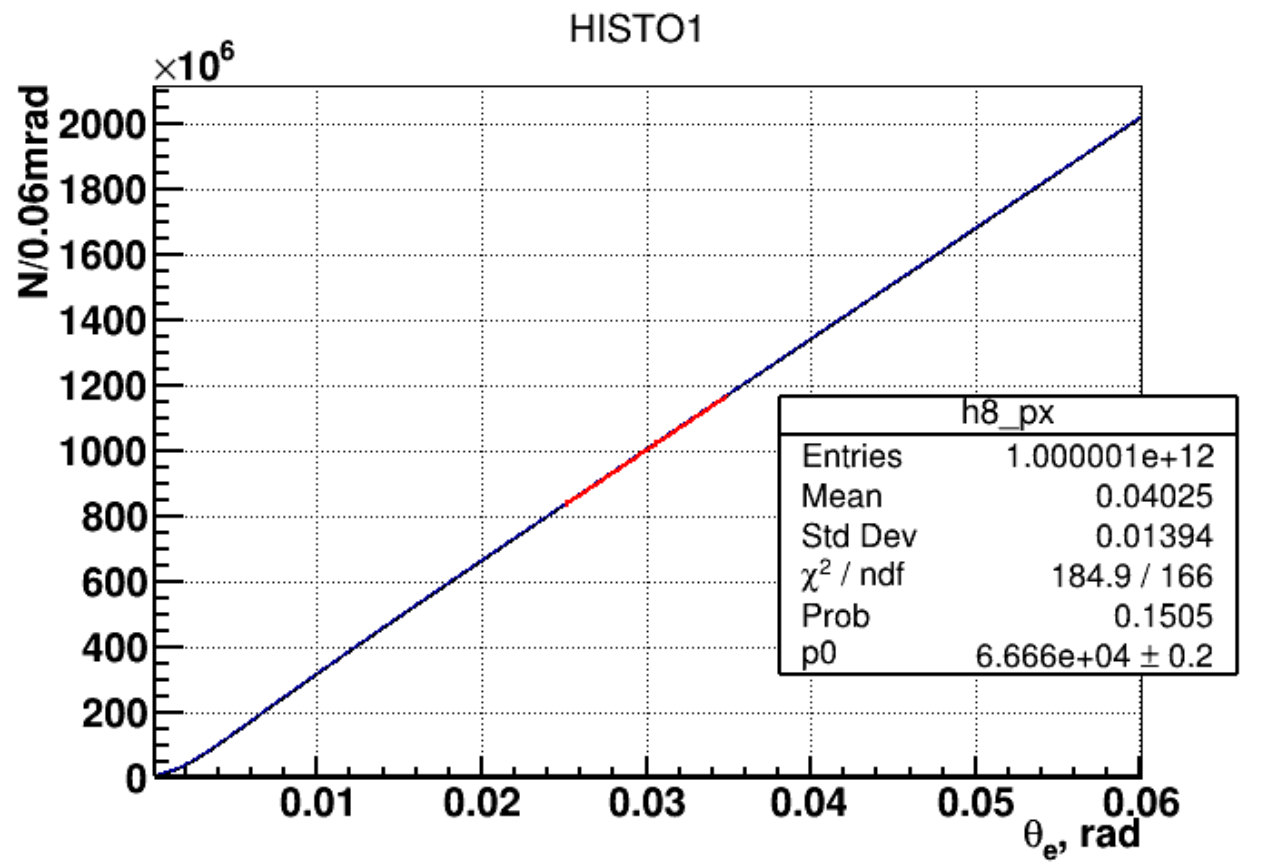
MUonE Riunione

Spectra

Spectra provided by Graziano



E_{beam} = 150 GeV

N = 1×10^{12} for θ_e<60 mrad

1/13.3 of full statistic with

L=1.5×10^{7} nb

No any smearing (only LO + VP)

Very simplified attempt:

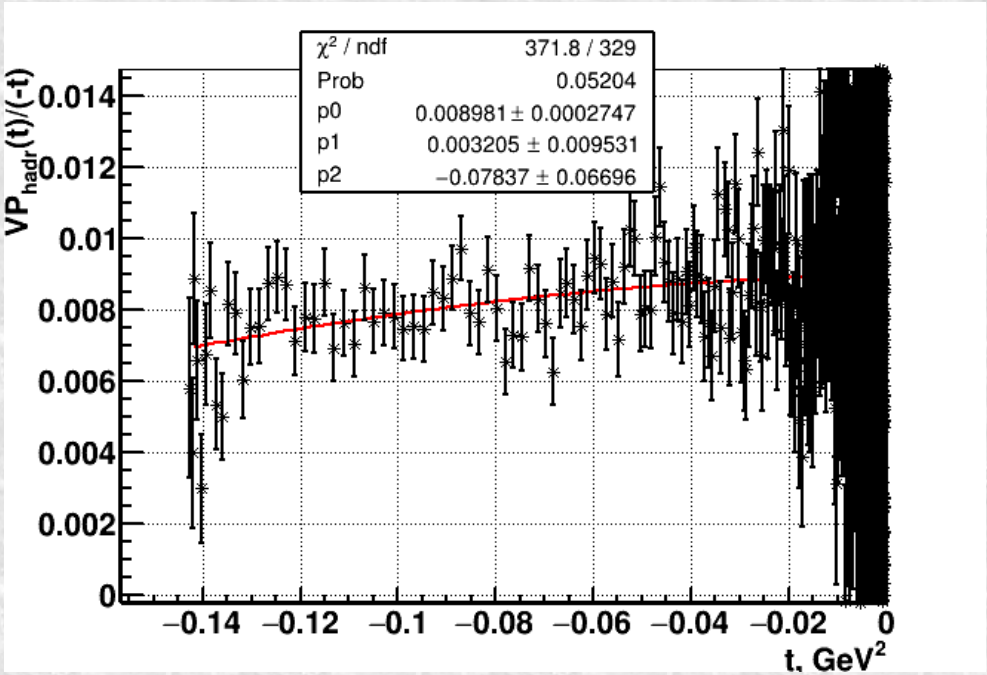
values on bin center(should be integral over bin),

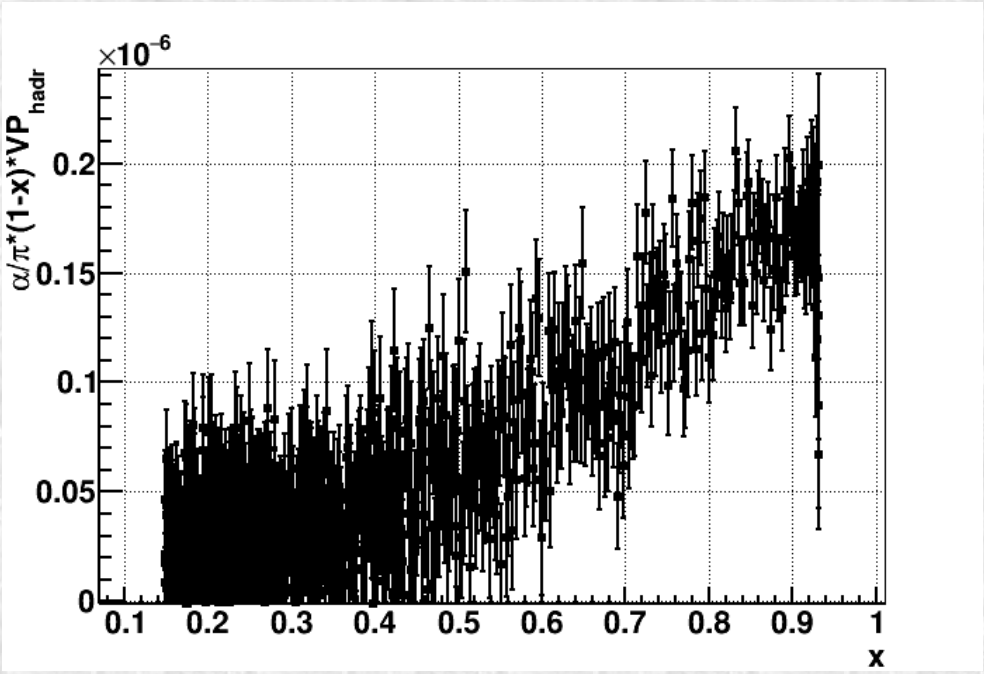
not accurate on first and last bin of integration

Fit in 25-35 mrad with $A*d\sigma^{LO}/d\theta/|1-P_{lept}(t)-P_{hadr}(t)|^2$

$P_{hadr}(t)$ – taken from data fit itself iteratively

VP hadr





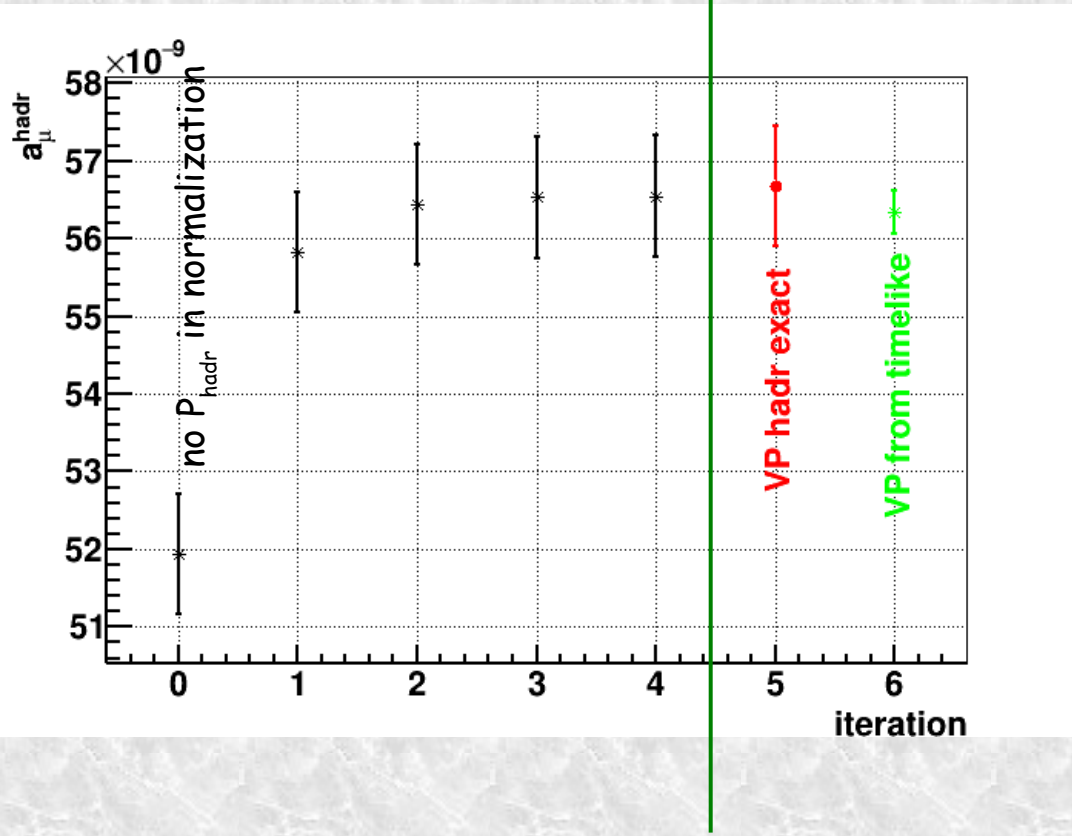
$P_{hadr}(t) = 1 - \sqrt{[(A * d\sigma^{LO}/d\theta)/(dN/d\theta)]} - P_{lept}(t)$

Fitted wit 2nd polynom in
Θ = 0-20 mrad
t = -0.142564 – -0.00256365 GeV2
X = 0.931984 – 0.377952

This function used in normalization region

Integral to Δa_μ^{LO} by trapezoidal summing over points

Δa_μ^{LO}



X= 0.377952 - 0.931984

From timelike data:
$\Delta a_\mu^{LO} = 563.4 +- 2.8 \times 10^{-10}$

Integral After last iteration:
$565.5 +- 7.8 \times 10^{-10}$

Precision 1.37%
Compatible with 0.4%

Last iteration is compatible with
when used timelike $P_{hadr}(t)$ in normalization