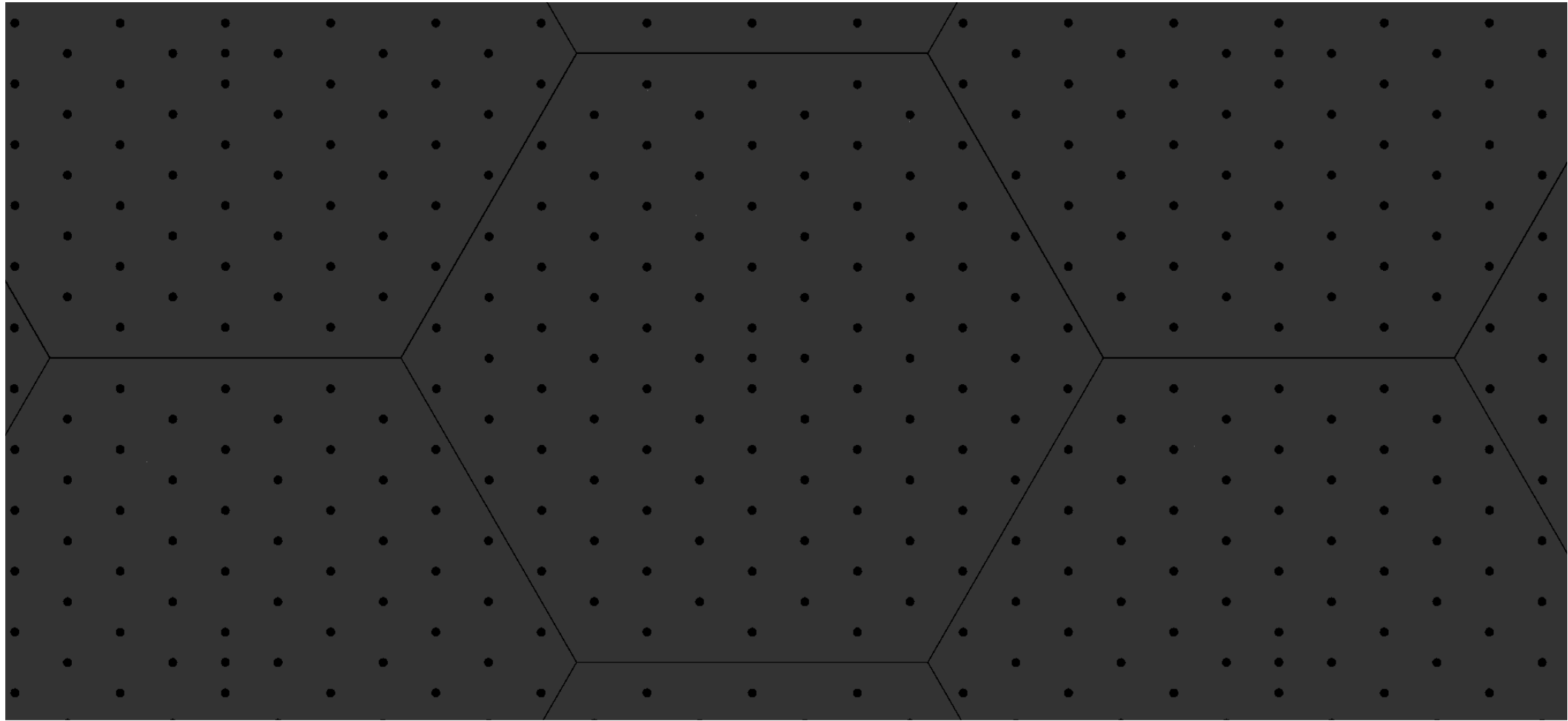


ECAL Summary 7

ECAL Fiber Hole Update

Fiber Holes in the G4 Geometry



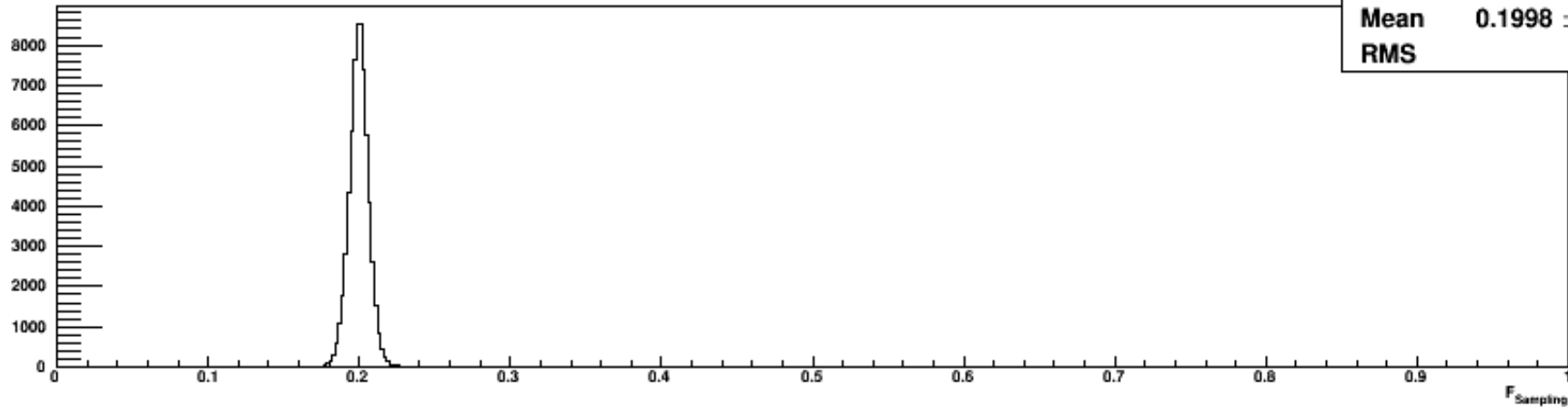
Update

- Compare sampling fractions before and after adding fiber holes to all the ecal blocks
- Input 10 – 11 GeV muons to check energy deposit variation
- High energy muons produce less soft-energy charge particles (due to the EM shower)
- Compare energy deposited only from muons to debug the ECAL shower

Electrons

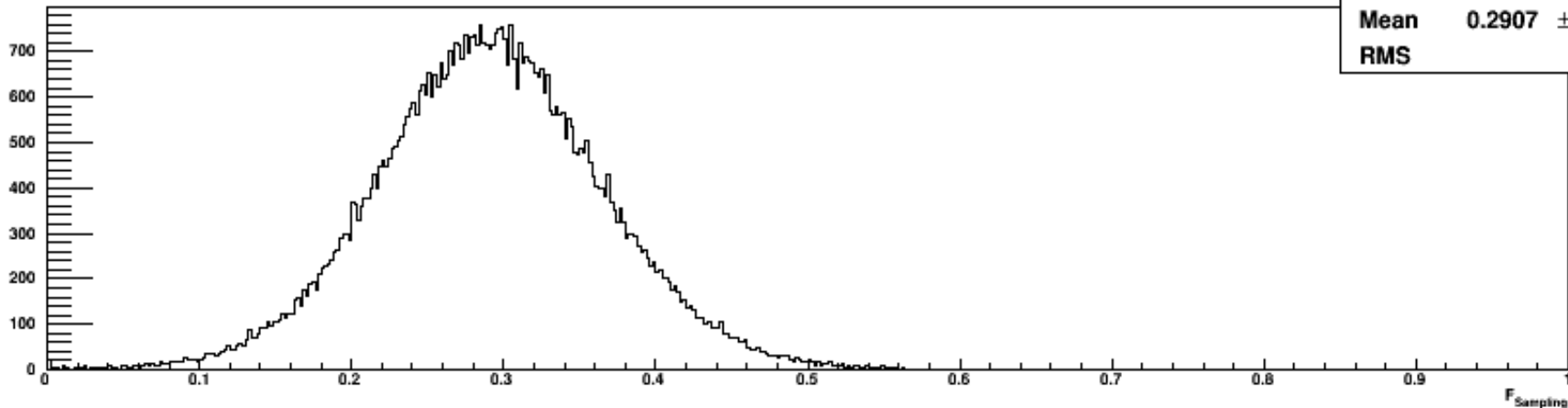
With No Holes : Sampling Fraction

Shower Sampling Fraction



Entries	65077
Mean	$0.1998 \pm 2.553e-05$
RMS	0.006513

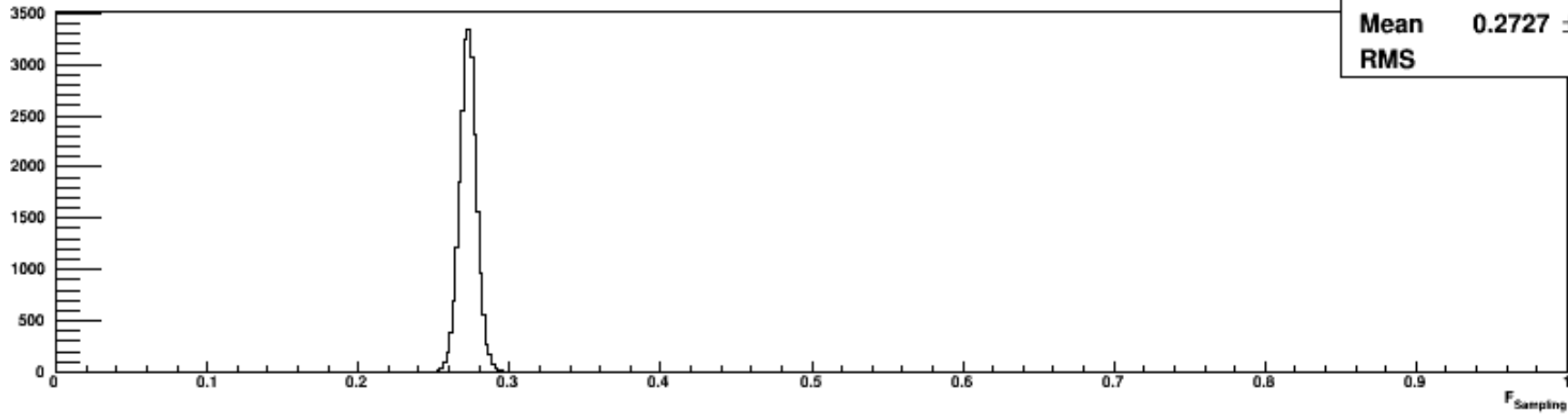
Pre-Shower Sampling Fraction



Entries	65077
Mean	0.2907 ± 0.0002927
RMS	0.07466

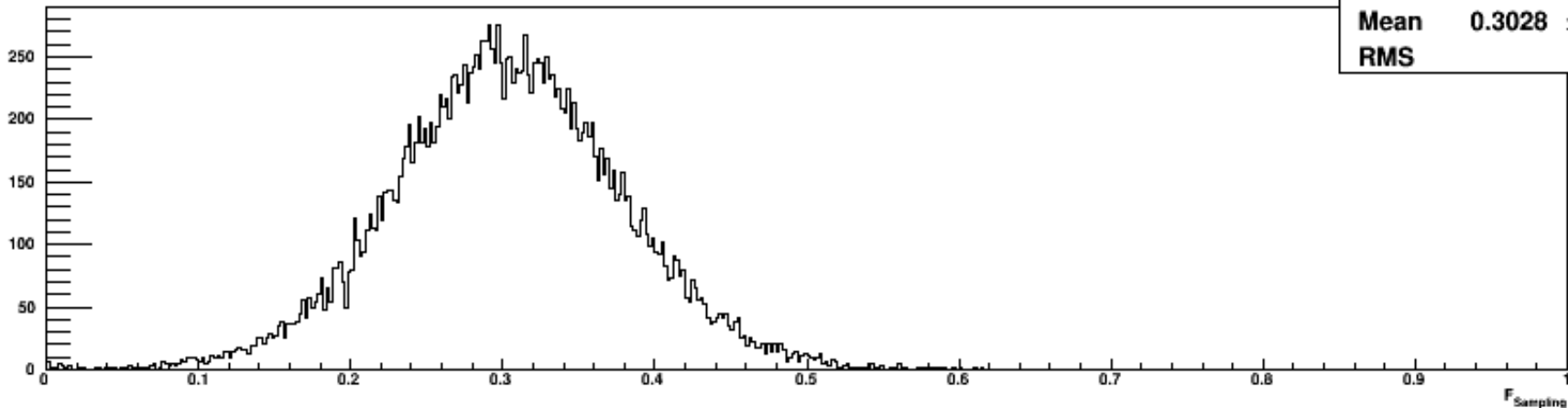
Electrons With Fiber Holes : Sampling Fraction

Shower Sampling Fraction



Entries	22770
Mean	$0.2727 \pm 3.863e-05$
RMS	0.005829

Pre-Shower Sampling Fraction

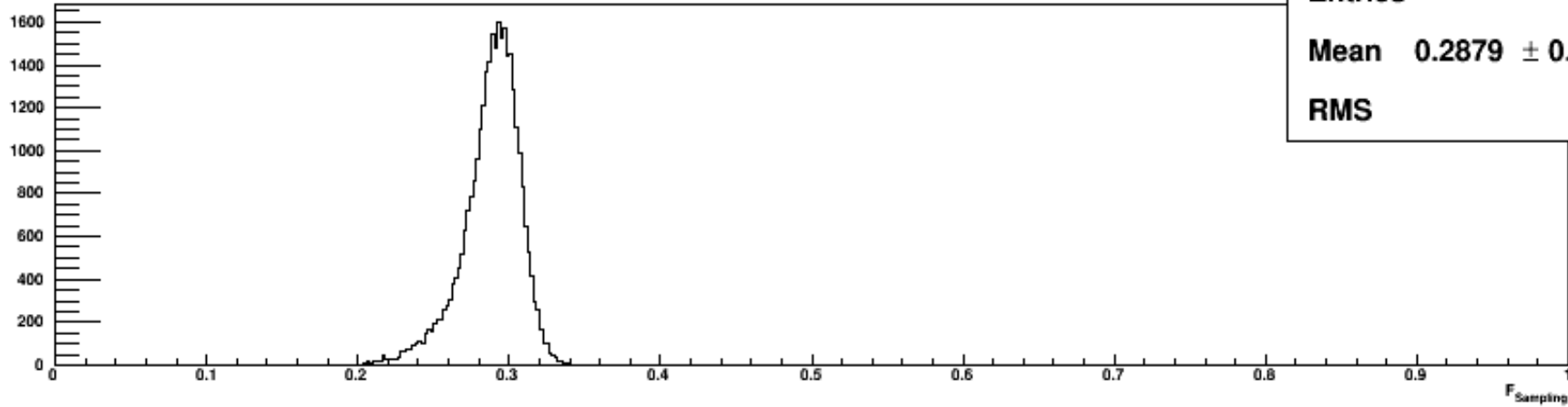


Entries	22770
Mean	0.3028 ± 0.000501
RMS	0.0756

Muons

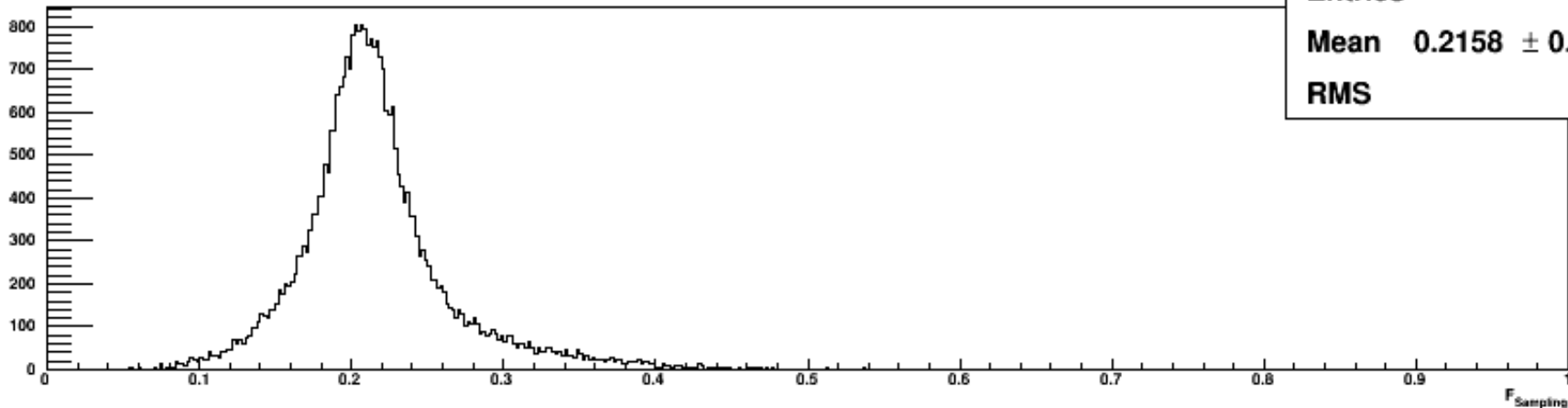
With No Holes : Sampling Fraction

Shower Sampling Fraction



Entries	31251
Mean	0.2879 ± 0.0001079
RMS	0.01907

Pre-Shower Sampling Fraction

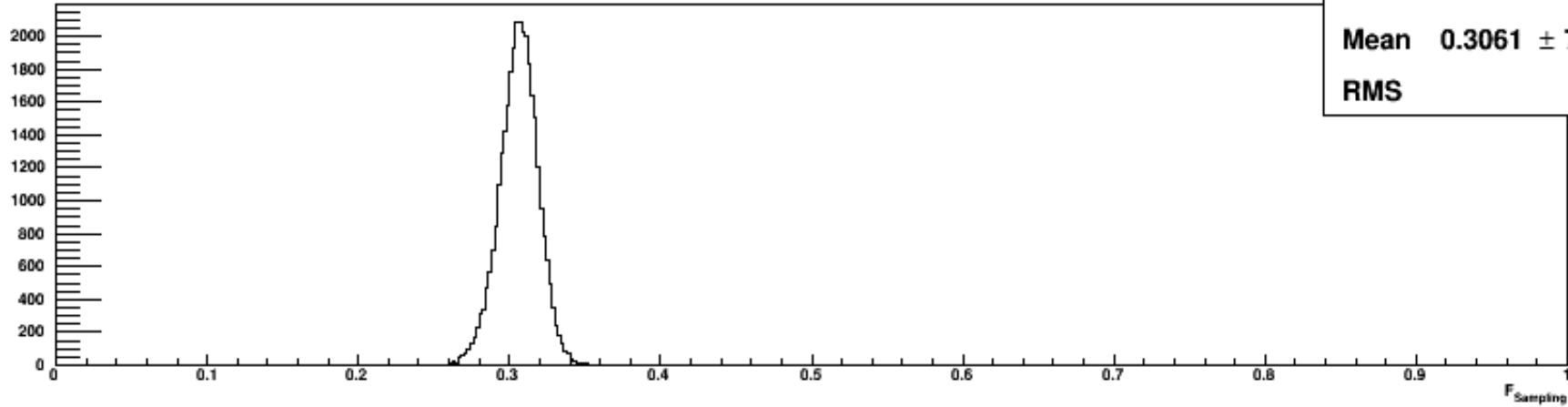


Entries	31251
Mean	0.2158 ± 0.0002876
RMS	0.05083

Muons

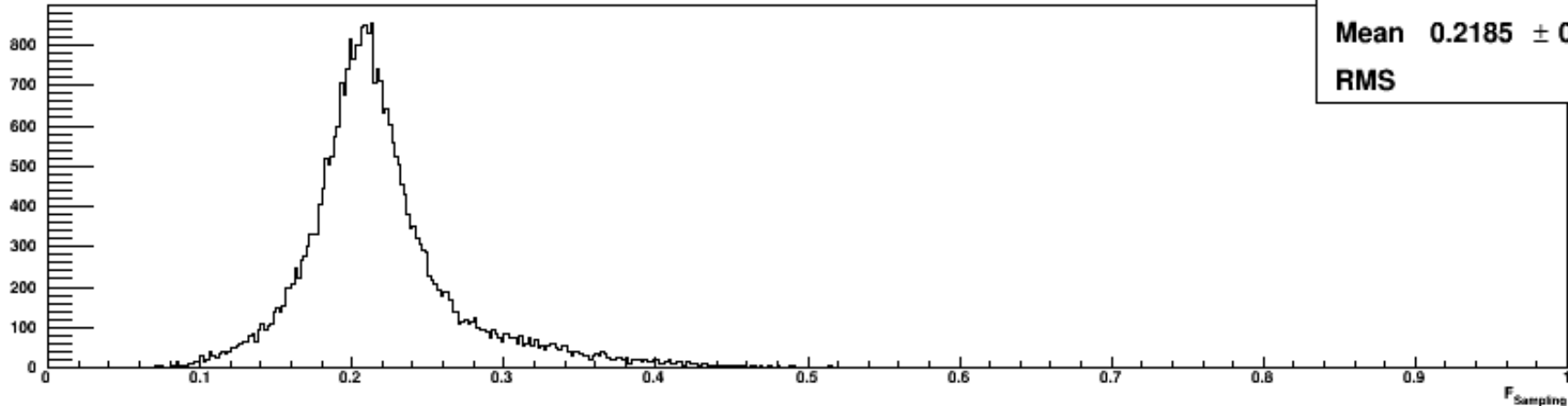
With Fiber Holes : Sampling Fraction

Shower Sampling Fraction



Entries	31659
Mean	$0.3061 \pm 7.184e-05$
RMS	0.01278

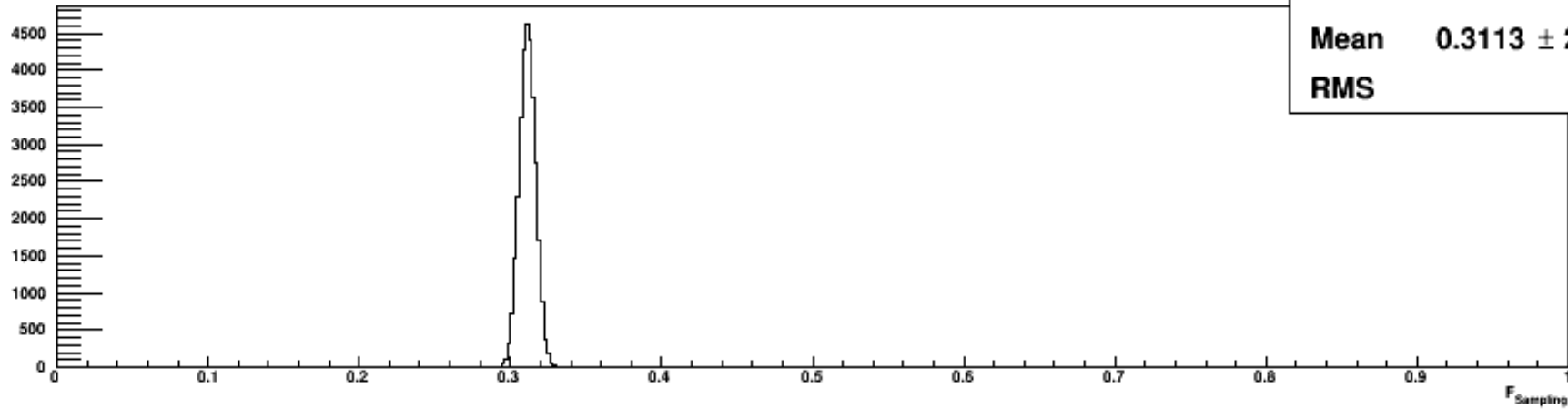
Pre-Shower Sampling Fraction



Entries	31659
Mean	0.2185 ± 0.0002935
RMS	0.05222

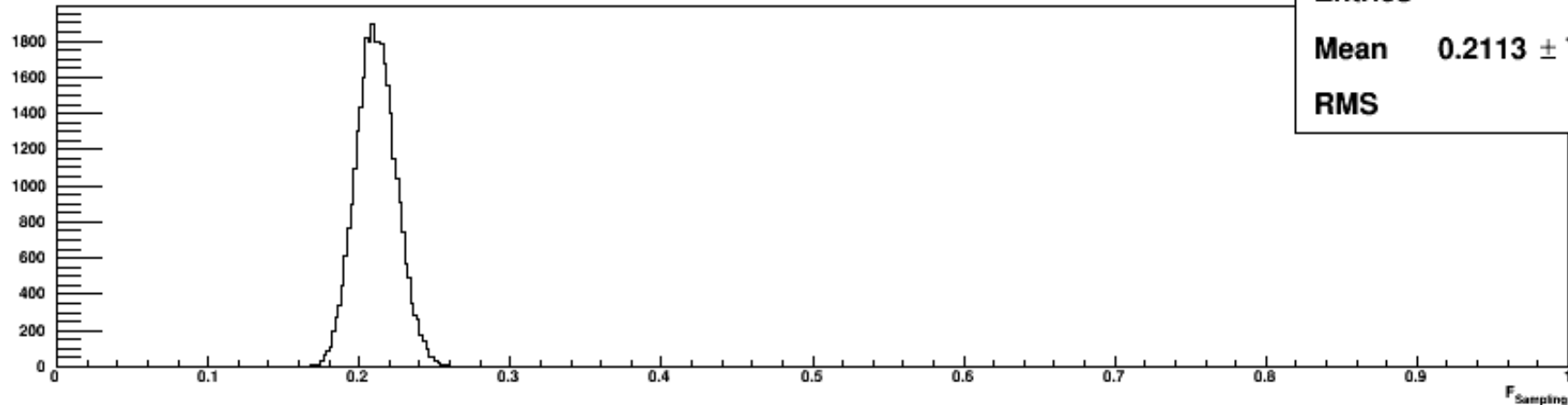
Only Edep from Muons With No Holes : Sampling Fraction

Shower Sampling Fraction



Entries	31251
Mean	$0.3113 \pm 2.991e-05$
RMS	0.005288

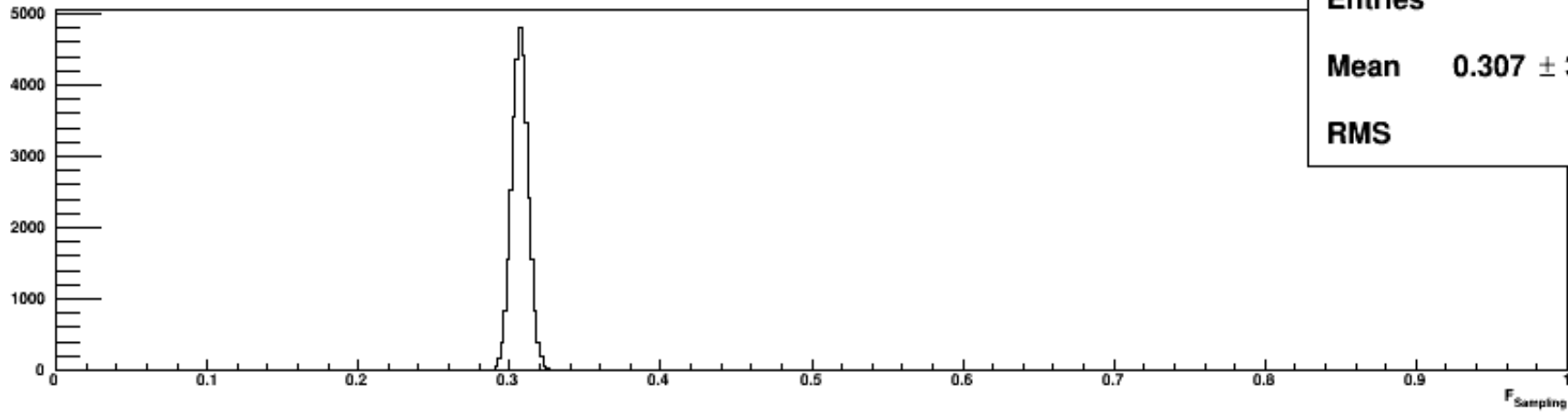
Pre-Shower Sampling Fraction



Entries	31251
Mean	$0.2113 \pm 7.621e-05$
RMS	0.01347

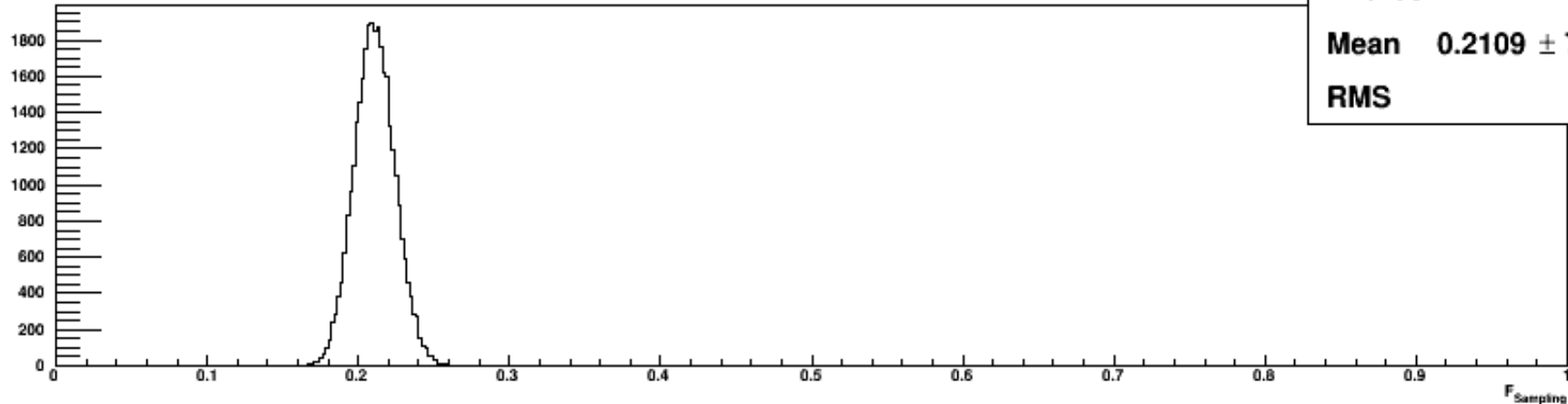
Only Edep from Muons With Fiber Holes : Sampling Fraction

Shower Sampling Fraction



Entries	31659
Mean	$0.307 \pm 3.013e-05$
RMS	0.005361

Pre-Shower Sampling Fraction



Entries	31659
Mean	$0.2109 \pm 7.611e-05$
RMS	0.01354

Average Energy Deposit for Muons

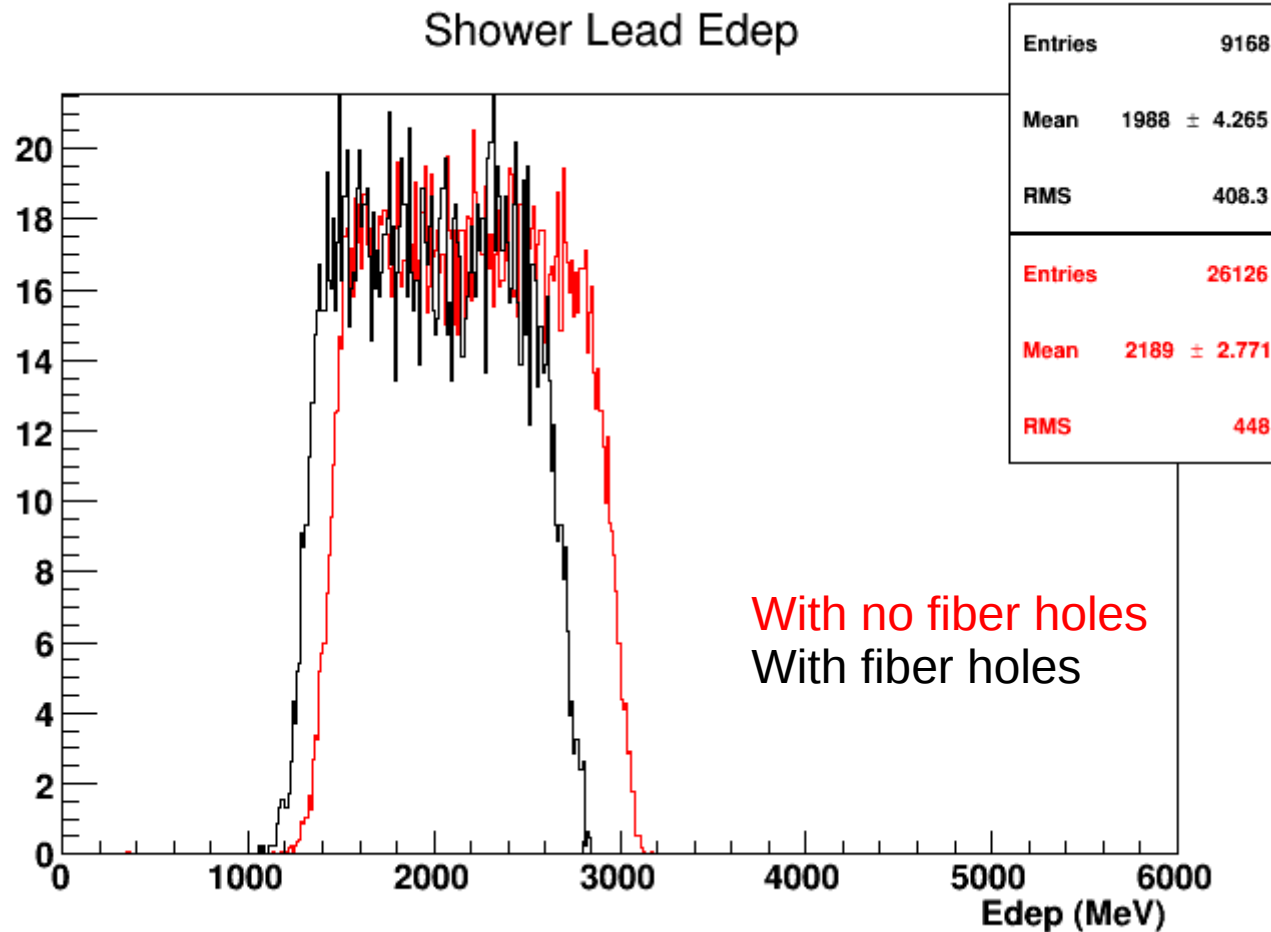
	No Holes Avg. Energy Dep. Per track (MeV)	Holes Avg. Energy Dep. Per track (MeV)
Shower (Lead + Scint)	297	293
Shower (Lead)	213	204
Shower (Scint)	84	89
PreShower (Lead)	20	20
PreShower (Scint)	5	5

Average Energy Deposit for Muons : Only with Muons Energy Deposit

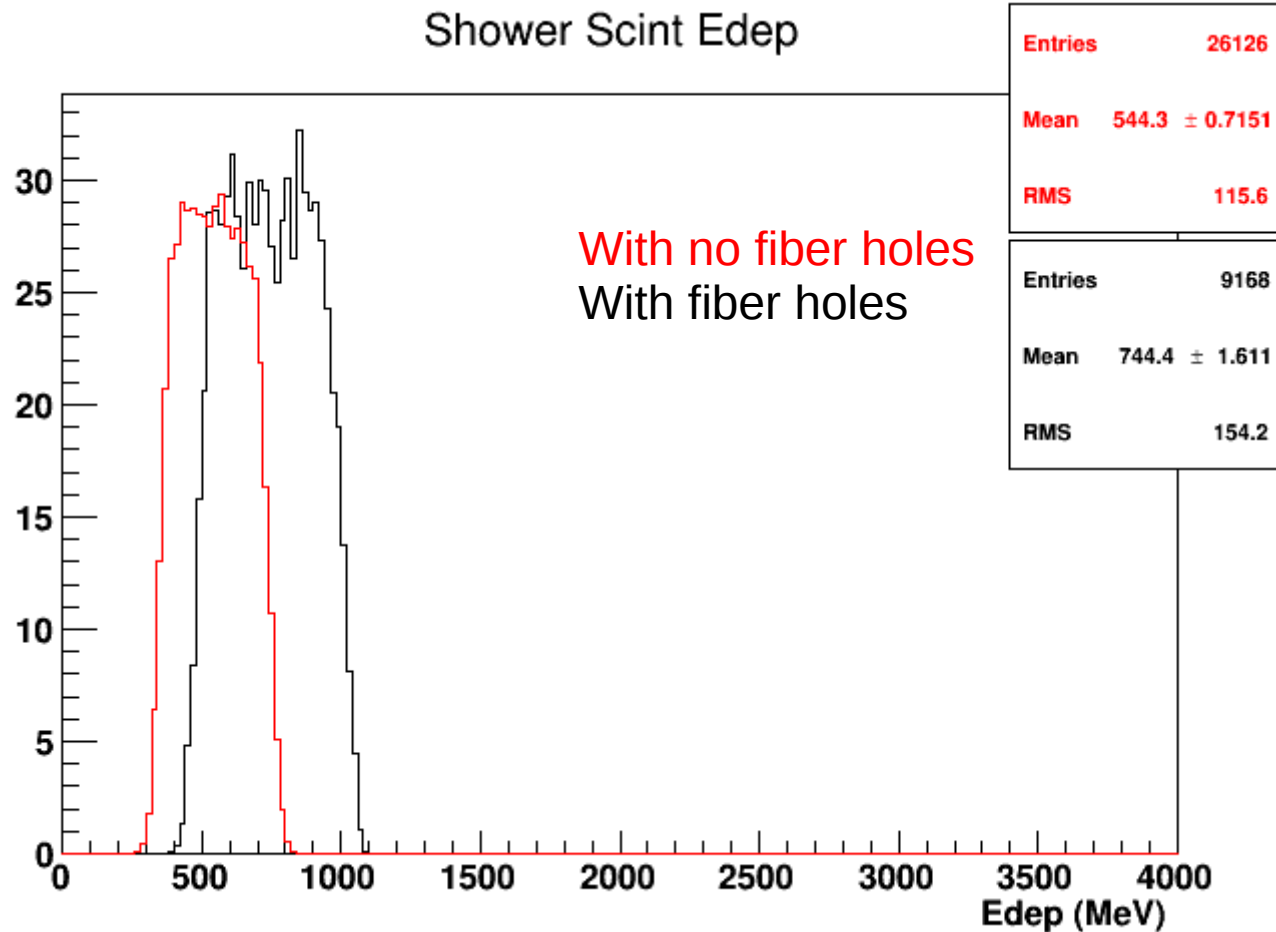
	No Holes Avg. Energy Dep. Per track (MeV)	Holes Avg. Energy Dep. Per track (MeV)
Shower (Lead + Scint)	208	206
Shower (Lead)	143	143
Shower (Scint)	65	63
PreShower (Lead)	17	17
PreShower (Scint)	4	4

Backups

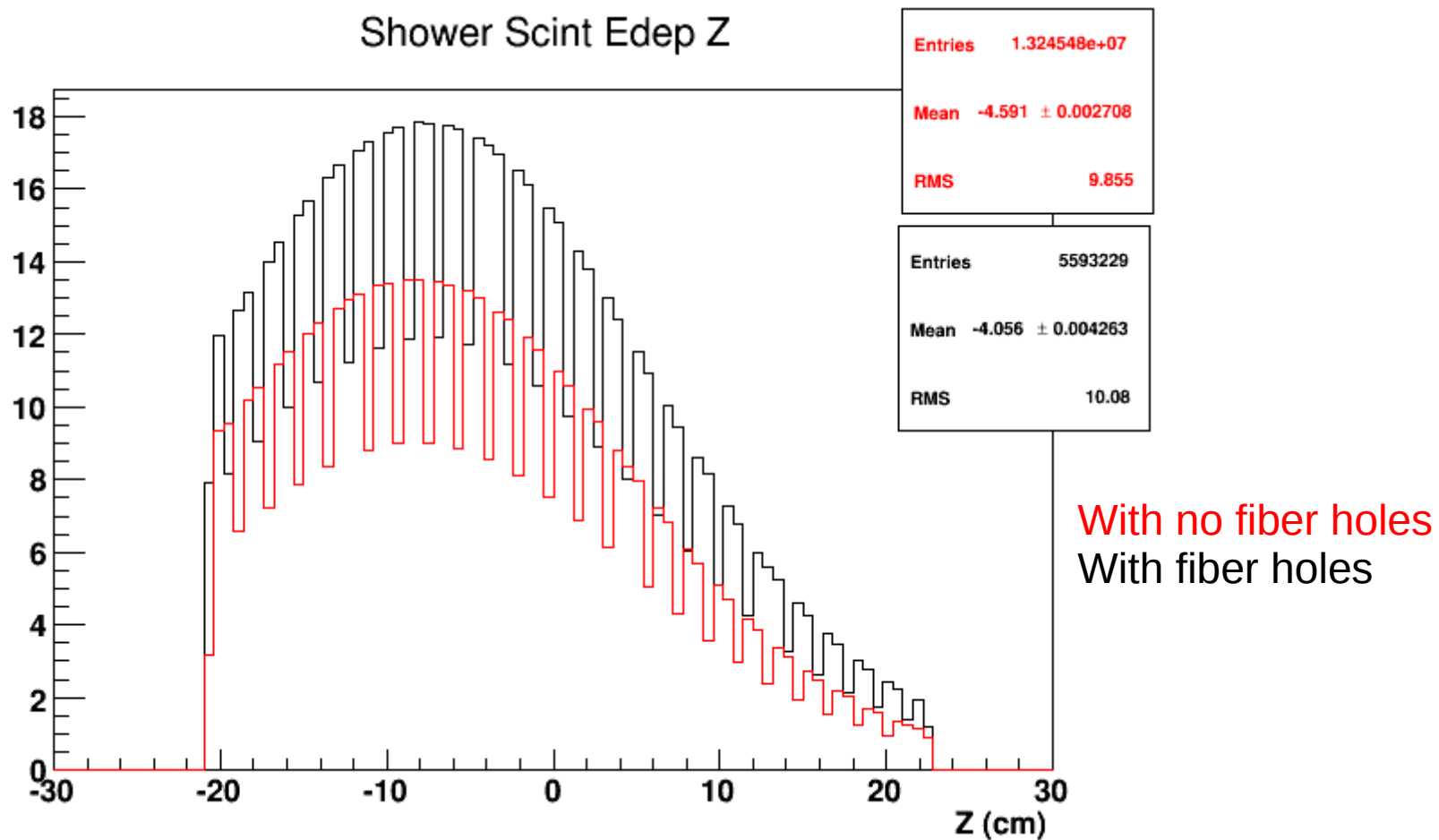
Energy Deposit in Lead



Energy Deposit in Scintillator



Scint. Energy Deposit Z Profile



Average Energy Deposit for Electrons 2 – 4 GeV

	No Holes Avg. Energy Dep. Per track (MeV)	Holes Avg. Energy Dep. Per track (MeV)
Shower (Lead + Scint)	2733	2732
Shower (Lead)	2189	1988
Shower (Scint)	544	744
PreShower (Lead)	170	169
PreShower (Scint)	67	69

- With holes shower lead had 201 MeV less energy deposited
 - This 201 MeV energy is now deposited in the Scint
- 9 % less energy deposit in the lead with holes