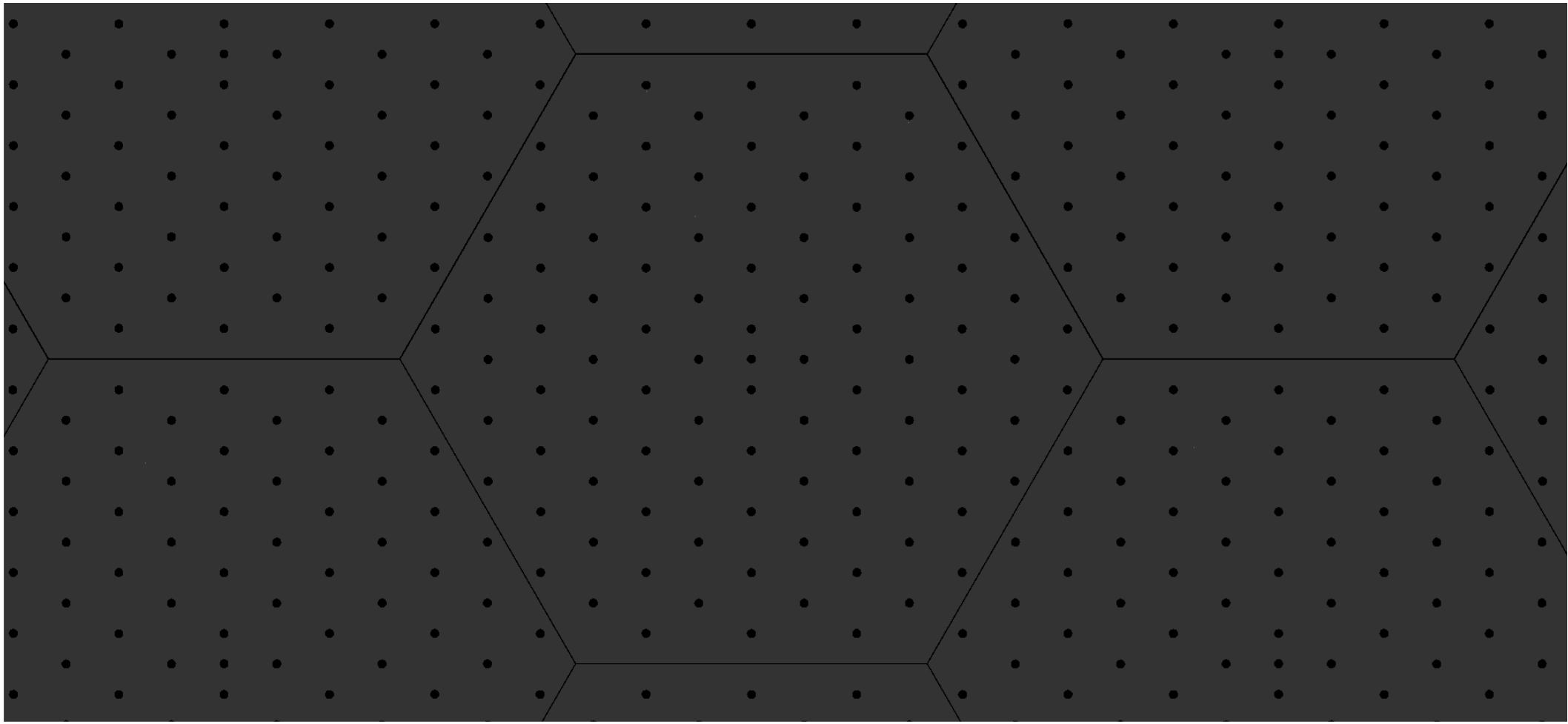
ECAL Summary 6

ECAL Energy Resolution Update

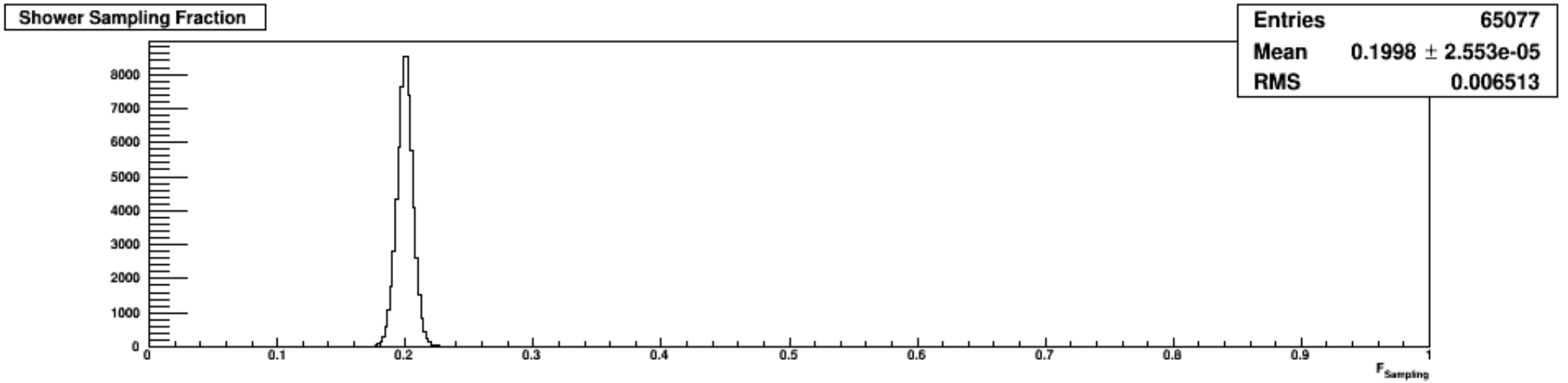
Update

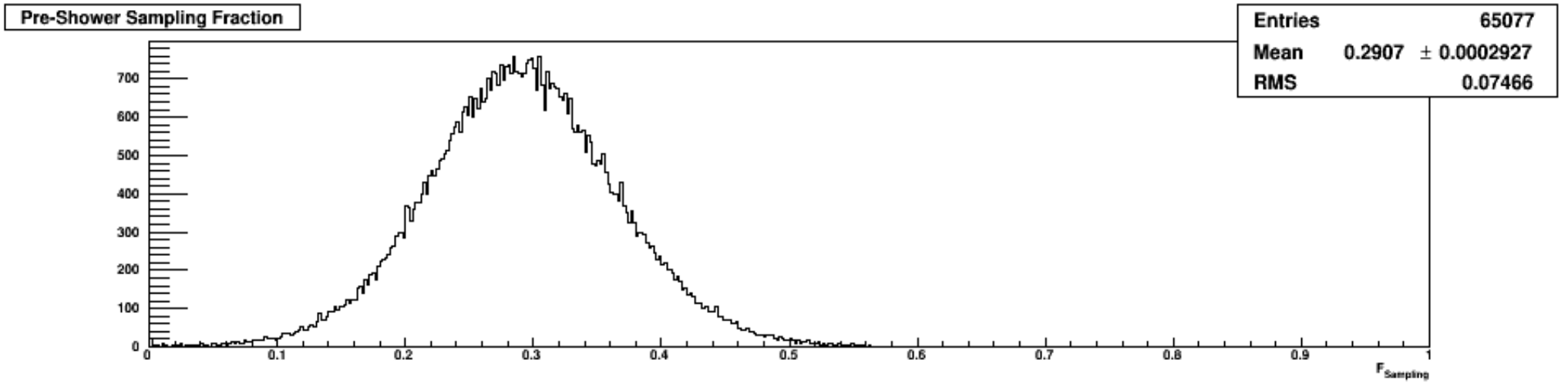
- Added fiber holes to all the ecal blocks
- Input 2 – 4 GeV electrons to check energy deposit variation : avg electron energy 3 GeV
- Default lead thickness is 0.05 cm
- It is interesting to note that with 0.034 cm lead, there is more energy deposit in the scintillator
  - But more energy leakage in the shower

Fiber Holes in the G4 Geometry

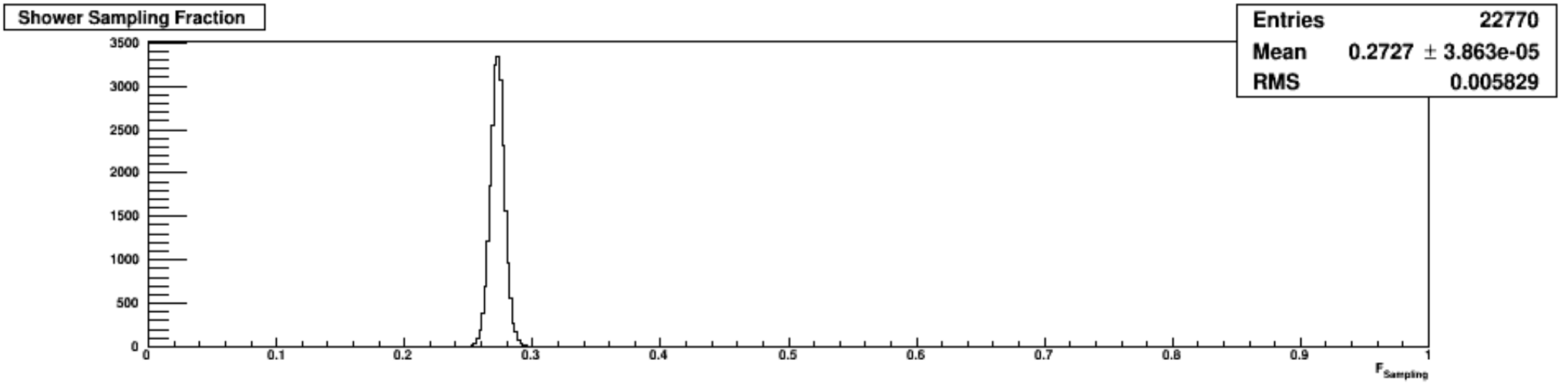


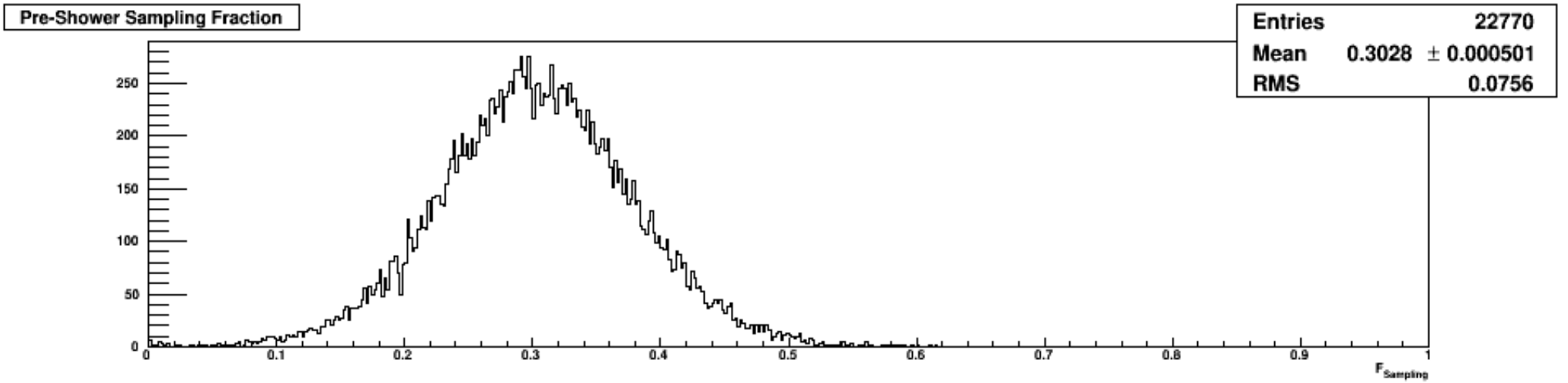
With No Holes : Sampling Fraction



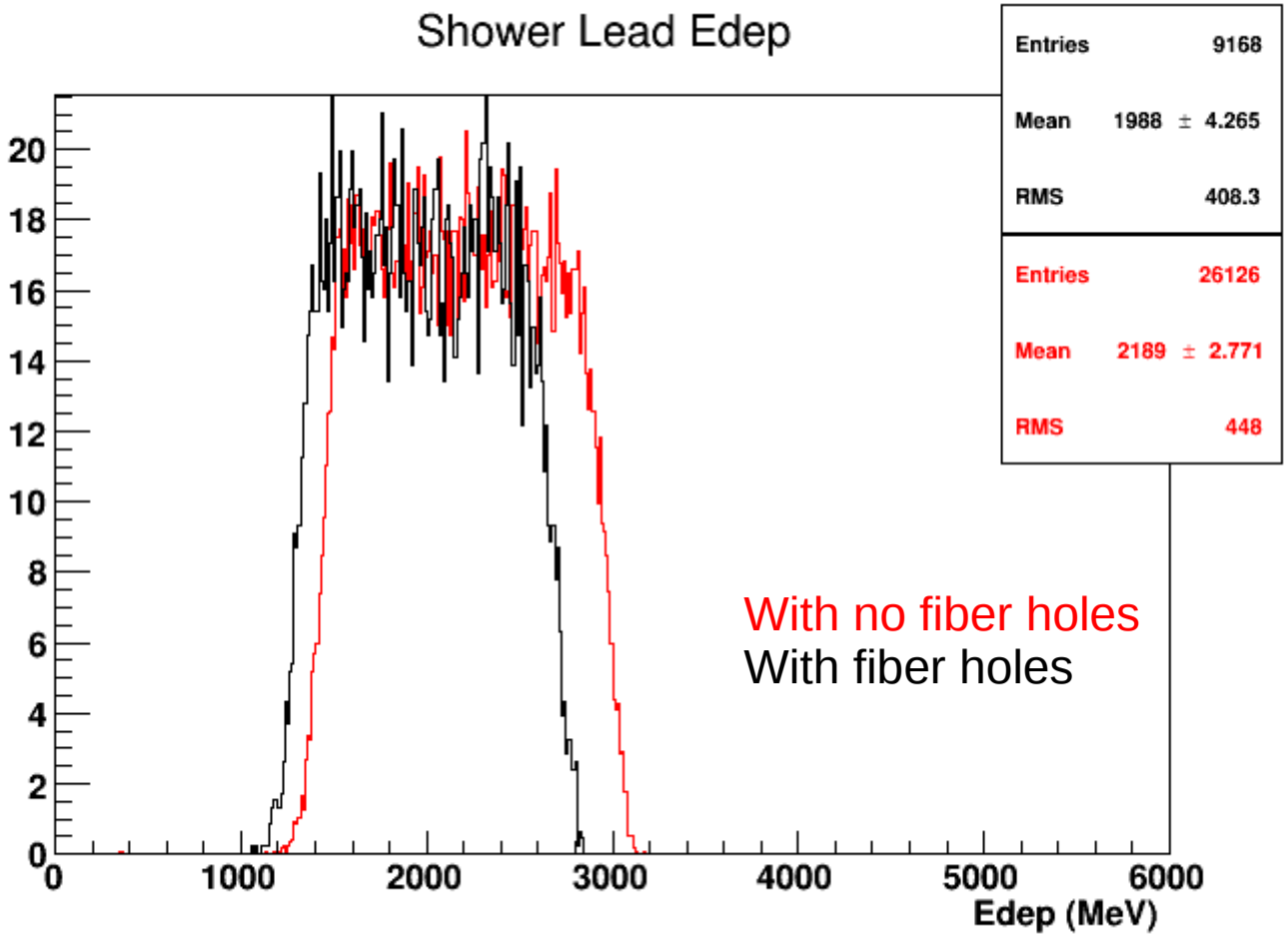


Update to Analysis

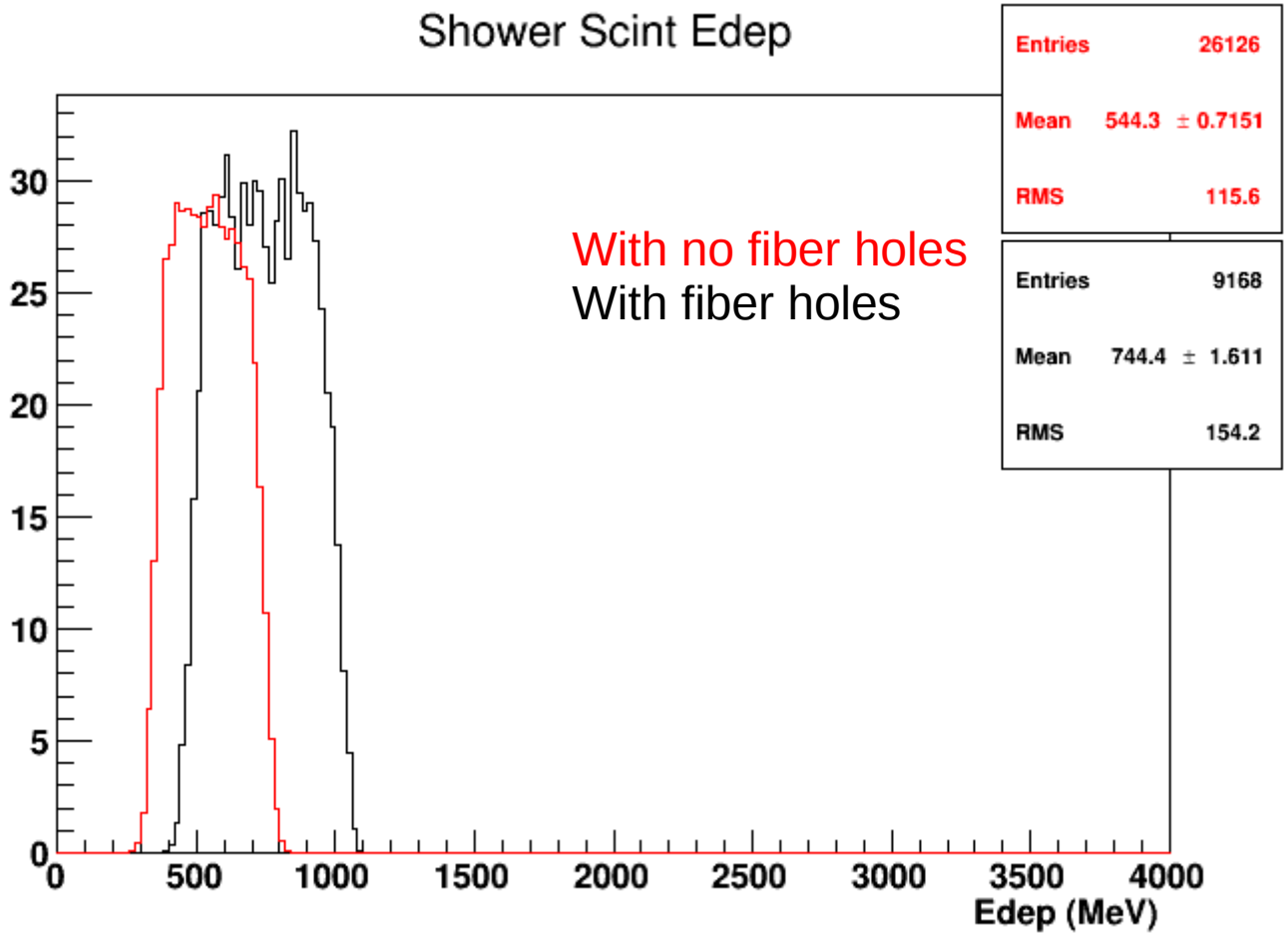




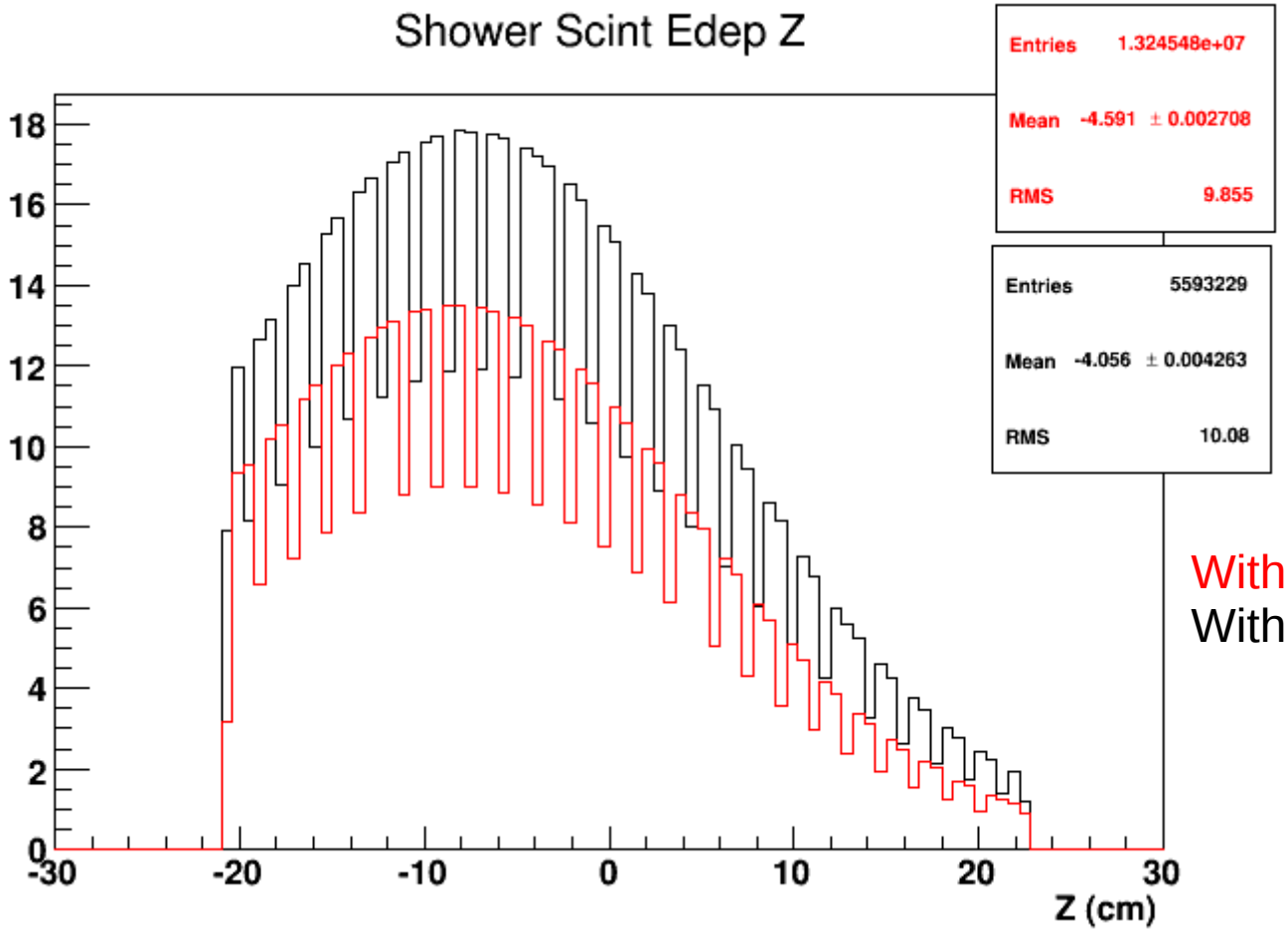
Energy Deposit in Lead



Energy Deposit in Scintillator



Scint. Energy Deposit Z Profile



With no fiber holes
With fiber holes

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

Energy Leakage in ECAL

Definition,

- Leakage = (total edep in PS + toal edep in SH)/ (incident electron energy)
  - Where total edep in PS and Sh are total energy deposit in the active and passive layers
- If all the energy is deposited in the ECAL ratio would be close to unity

Energy Leakage in ECAL with thin Lead