

# Proton Therapy Group Meeting

## 10<sup>th</sup> January 2018

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(University College London)

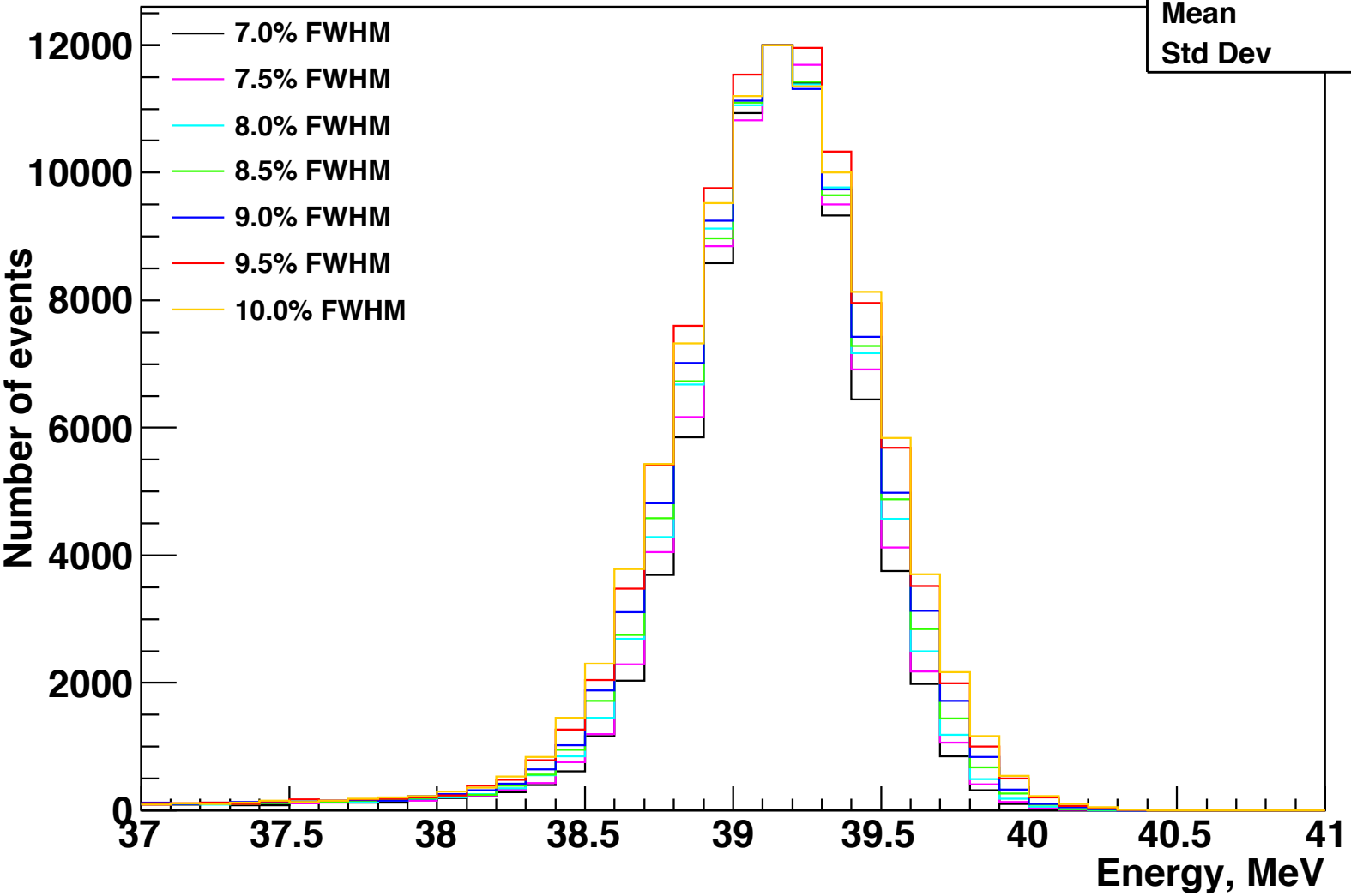
# Simulations

- Investigating the difference between MC truth and energy resolution returned by the fit
- Energy resolution input changed in steps of 0.5% from 7.0% to 10.5% (at FWHM)
- Input file into simulations:

output\_z1767\_1mm\_radius\_0mm\_offset\_1e9 primaries.txt  
(with end cap collimator)

# Simulations

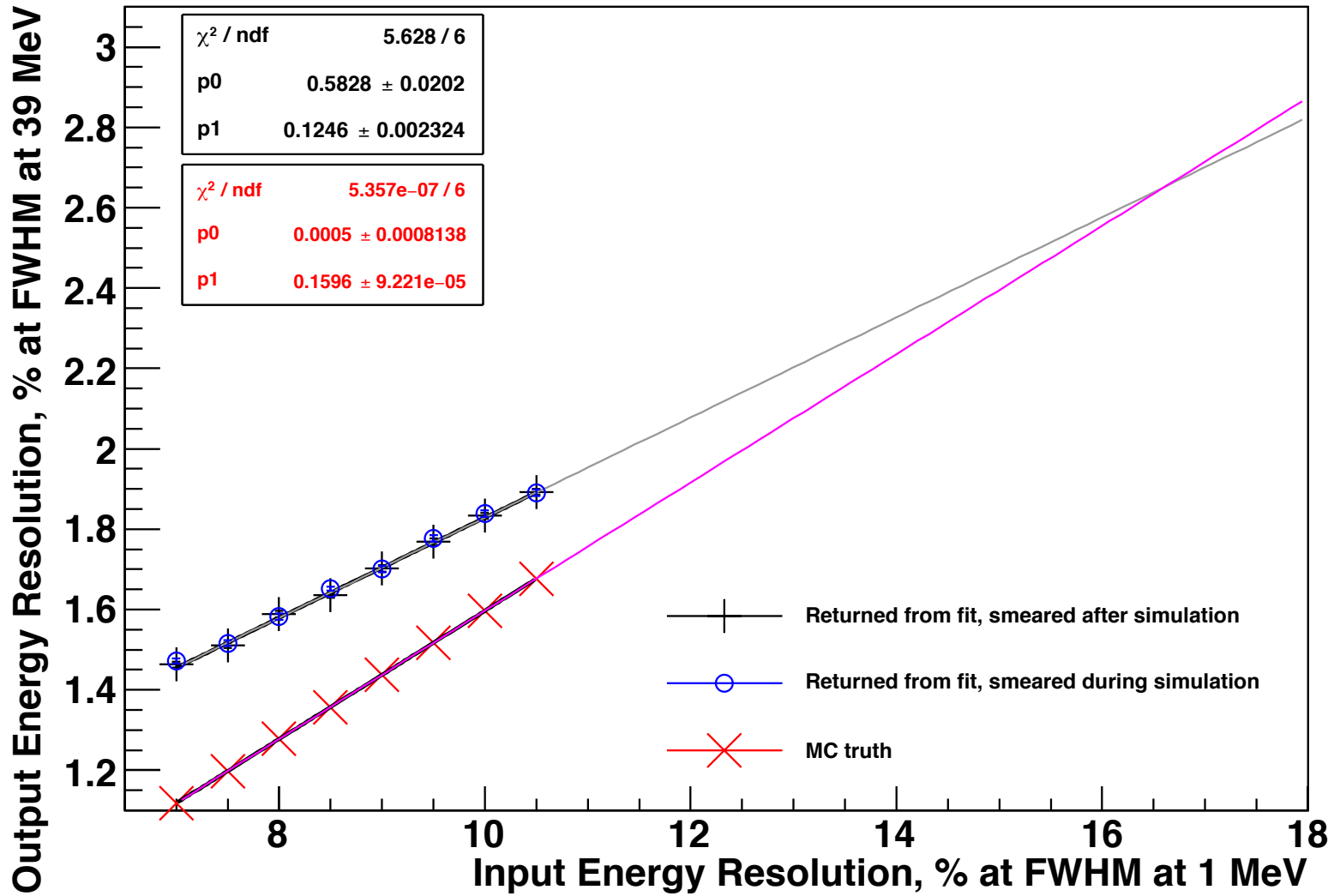
## Energy Deposited in Scintillator



energyDeposited	
Entries	170587
Mean	21.68
Std Dev	18.23

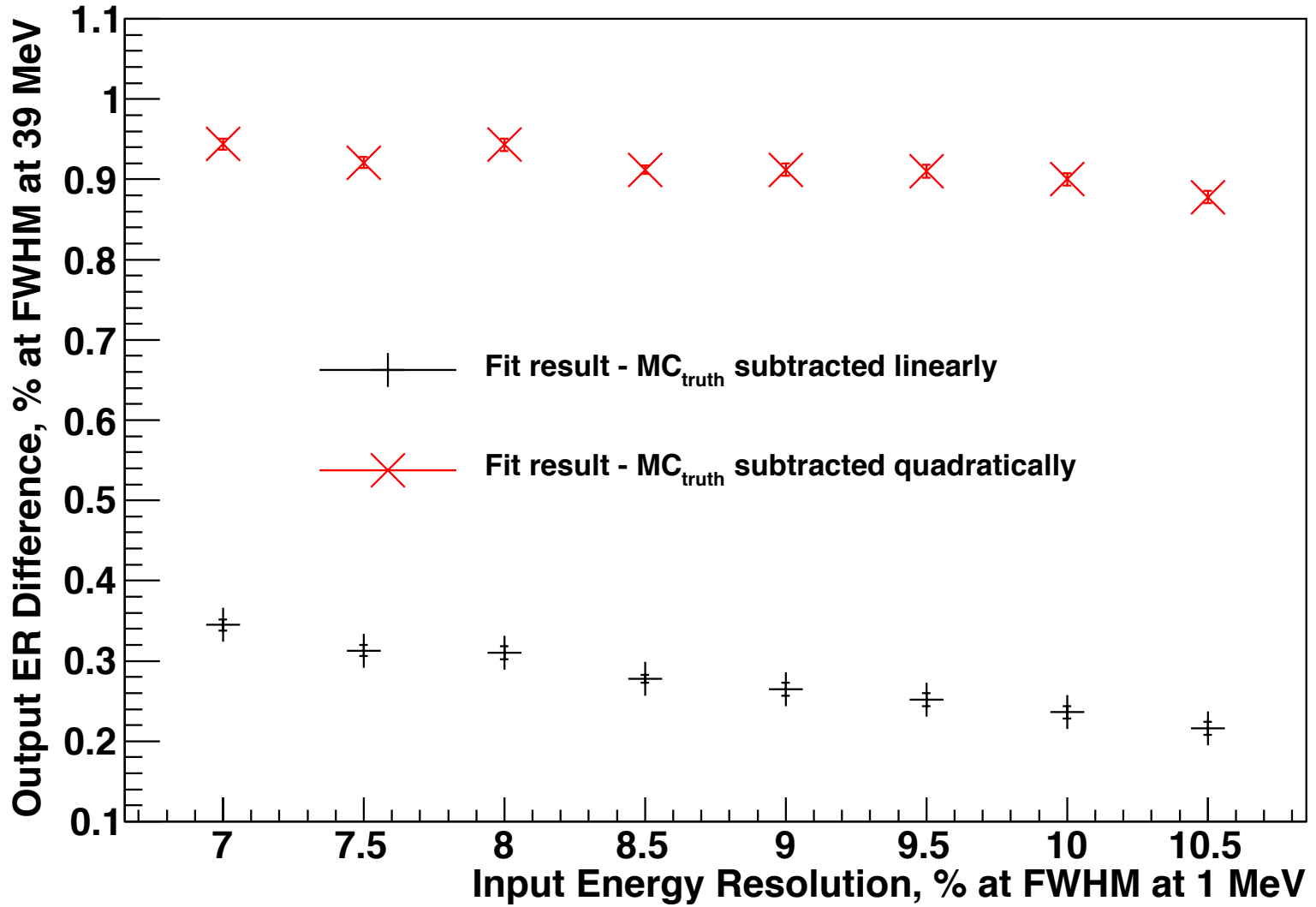
# Simulations

## Energy Resolution as a Function of Input Energy Resolution



# Simulations

Energy Resolution as a Function of Input Energy Resolution



# Paint Tests on Scintillator Sheets

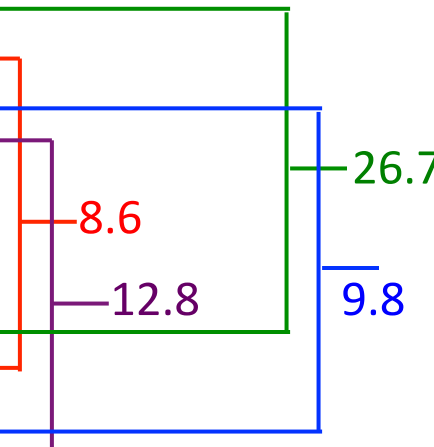
- Derek suggested to use black chalkboard paint (water based)
- Old scintillator sample sheet partially painted on 08/01/2018:
  - We will observe whether there are any effects on the scintillator with time
  - So far so good!



# Paint Tests on Scintillator Sheets

- 3mm enhanced composition sheet fully painted on all sides except the “read out” side and tested:

Wrapping	LED Voltage	$\mu$	$\sigma$ (pedestal subtracted)	$\Delta E/E$ (FWHM)	Npe
2 x Mylar	2.5 V	18461	53.7	$0.68 \pm 0.002$	118336
2 x Mylar	2.21 V	8807	74.0	$1.97 \pm 0.002$	14177
Naked	2.5 V	16196	53.0	$0.77 \pm 0.002$	93668
Naked	2.21 V	6578	62.0	$2.22 \pm 0.002$	11240
Black paint	2.5 V	2153	32.3	$3.53 \pm 0.003$	4440
Black paint	2.21 V	688	18.1	$6.18 \pm 0.004$	1444
Black paint	4.8 V	18103	65.0	$0.84 \pm 0.002$	77673



- More tests to be carried out:
  - How do we get an even and thin finish?
  - Air gun, spray paint etc.