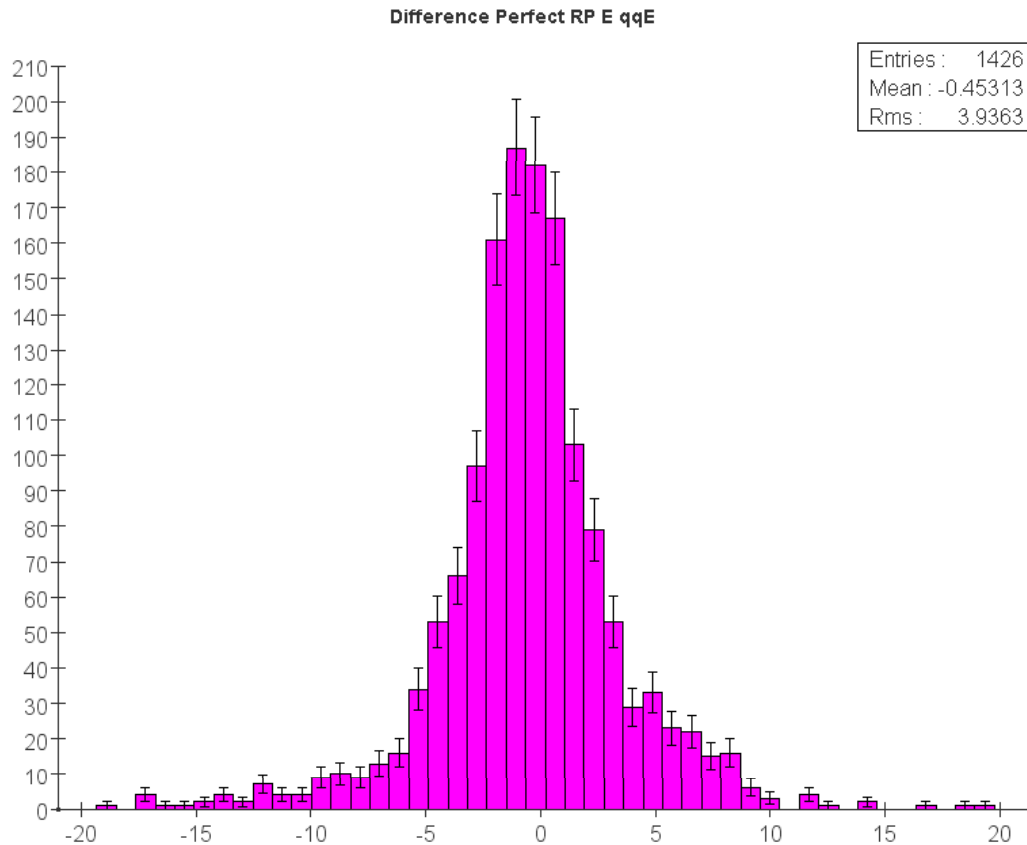


# Perfect PFA for SiD

qqbar @ 200 GeV

PerfRecPart ESum – qqbar ESum



rms = 3.94 GeV

rms90 = 2.51 GeV

->  $\alpha = 35.5\%$

From Marcel's slides :

Pandora results with  
SiDish\_ecal40 (LDC00Sc)

->  $\alpha = 33.9\%$

**SiD Perfect PFA worse than small LDC real PFA!**

# Effect of decays, interactions in material in SiD

Total rms of PerfRP ESum plot has the following terms :

- > track resolution (ignore here)
- > resolution of photons (gaussian distribution)
- > resolution of neutral hadrons (gaussian distribution)
- > rms from Perfect RPs (? distribution)

For qqbar @ 200 GeV :

(similar results from ZZ @ 500 GeV)

Total rms = 3.94 GeV

Sigma from photons = 1.22 GeV

Sigma from neutral hadrons = 2.80 GeV

Contribution to rms from PPFA =  $15.52 - 1.49 - 7.84 = 6.19 \text{ GeV}^2$

-> 2.49 GeV

Subtracting this from the total rms (in quadrature), get rms = 3.05 GeV

Assuming this is proportional to rms90, rms90 for this distribution is 1.94 GeV

->  $\alpha = 27.4\%$

(Less than LDC00Sc result by 20%)

SiD model has a large contribution to Perfect PFA from material effects between IP and calorimeter

Perfect PFA results are worse than real PFA results on LDC00Sc

-> Need a SiD model with no material to verify that this effect also impacts our real PFAs on SiD