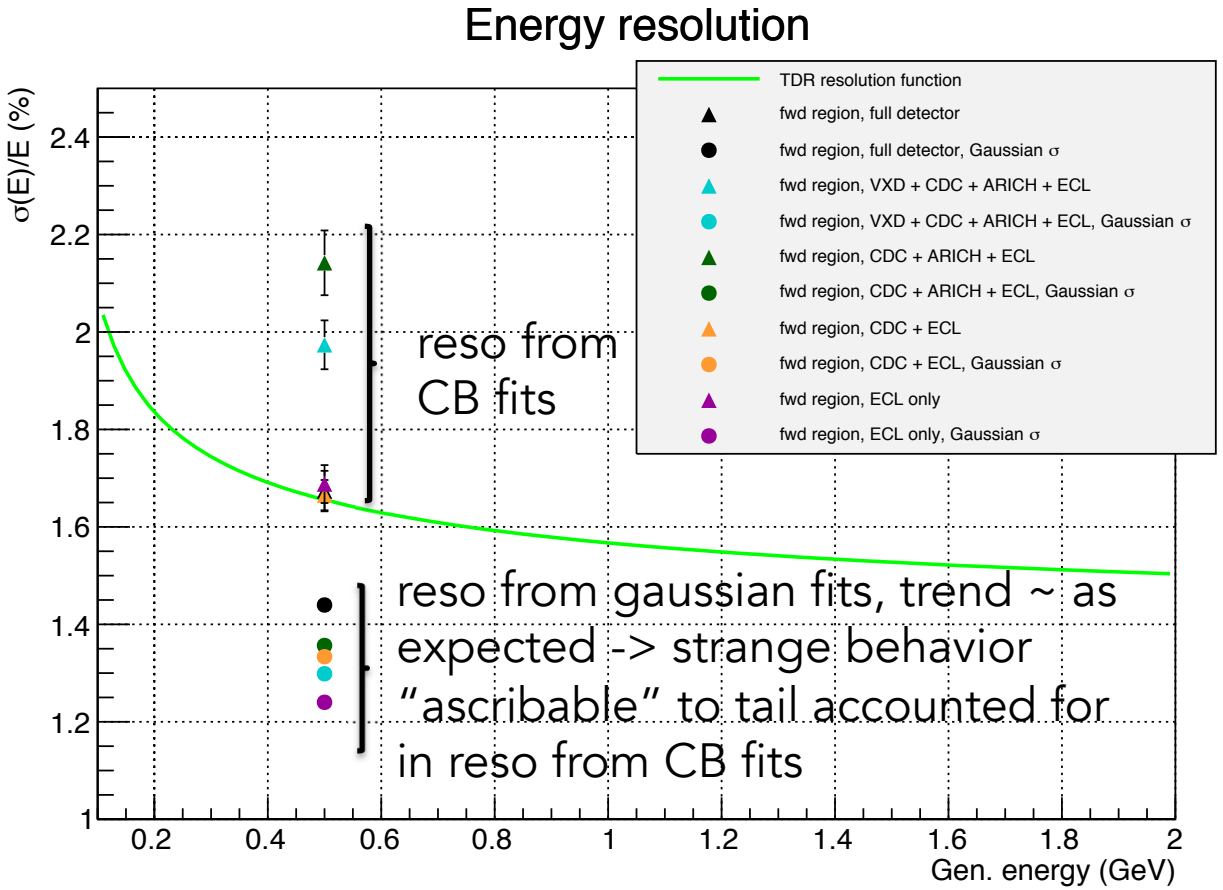
Resolutions and material budget

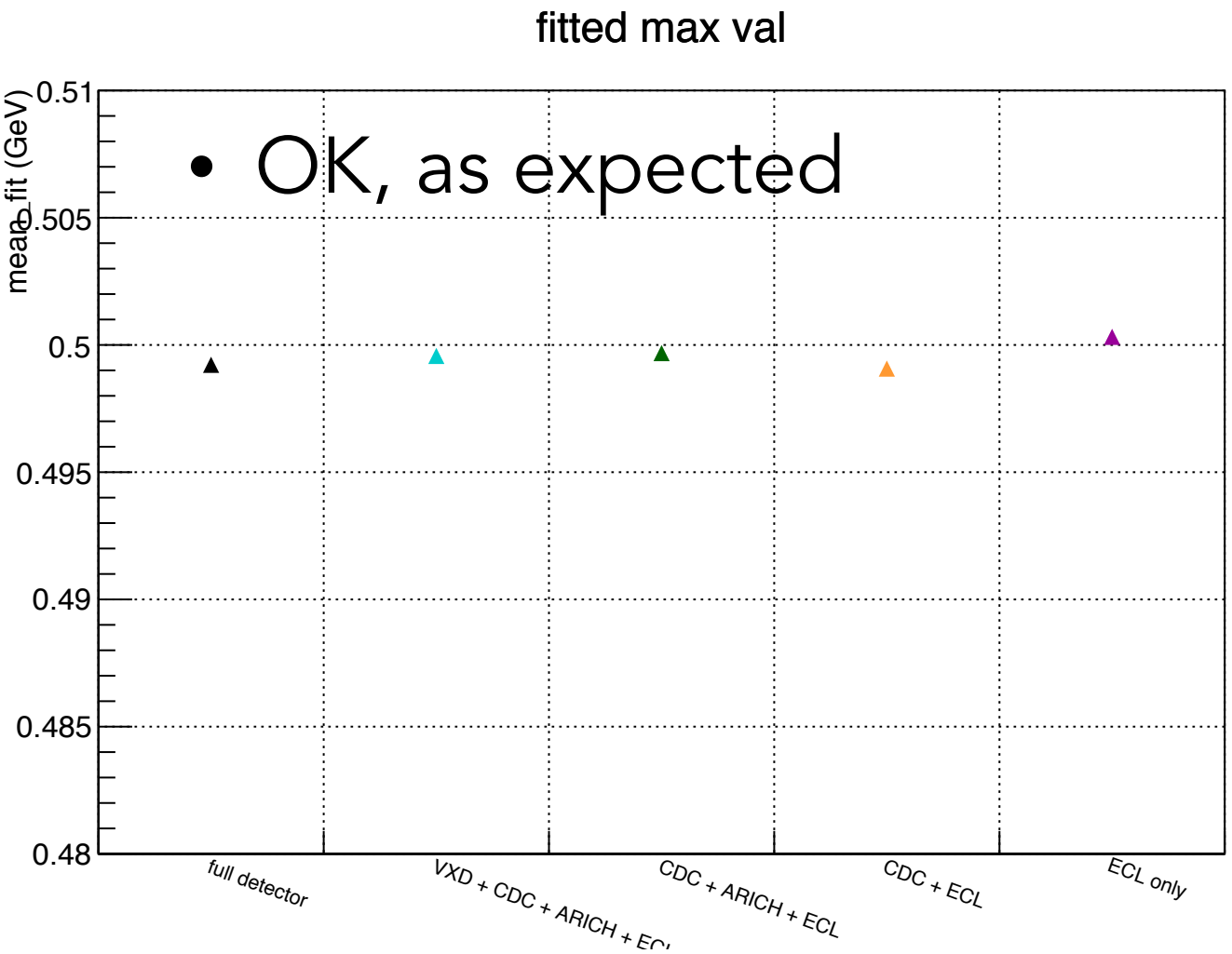
Erika & Elisa

Resolutions

- ECL only ~ full detector
- CDC+ARICH+ECL & VXD+CDC+ARICH+ECL much worse than previous two configs



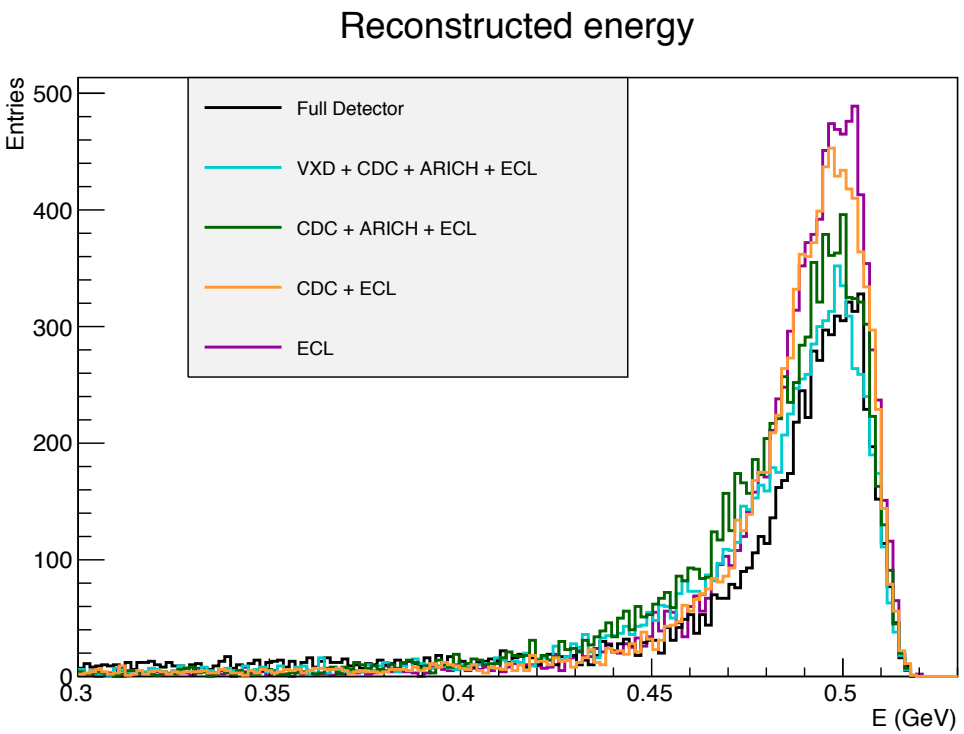
Linearity

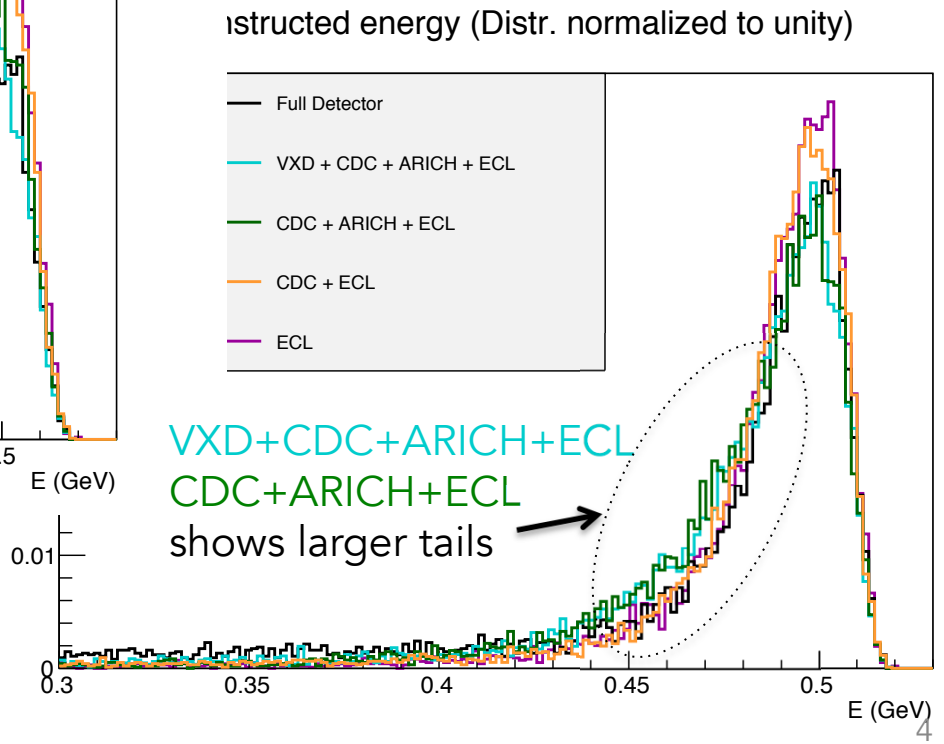


- OK, as expected

Shape comparison (I)

- Reco'd energy

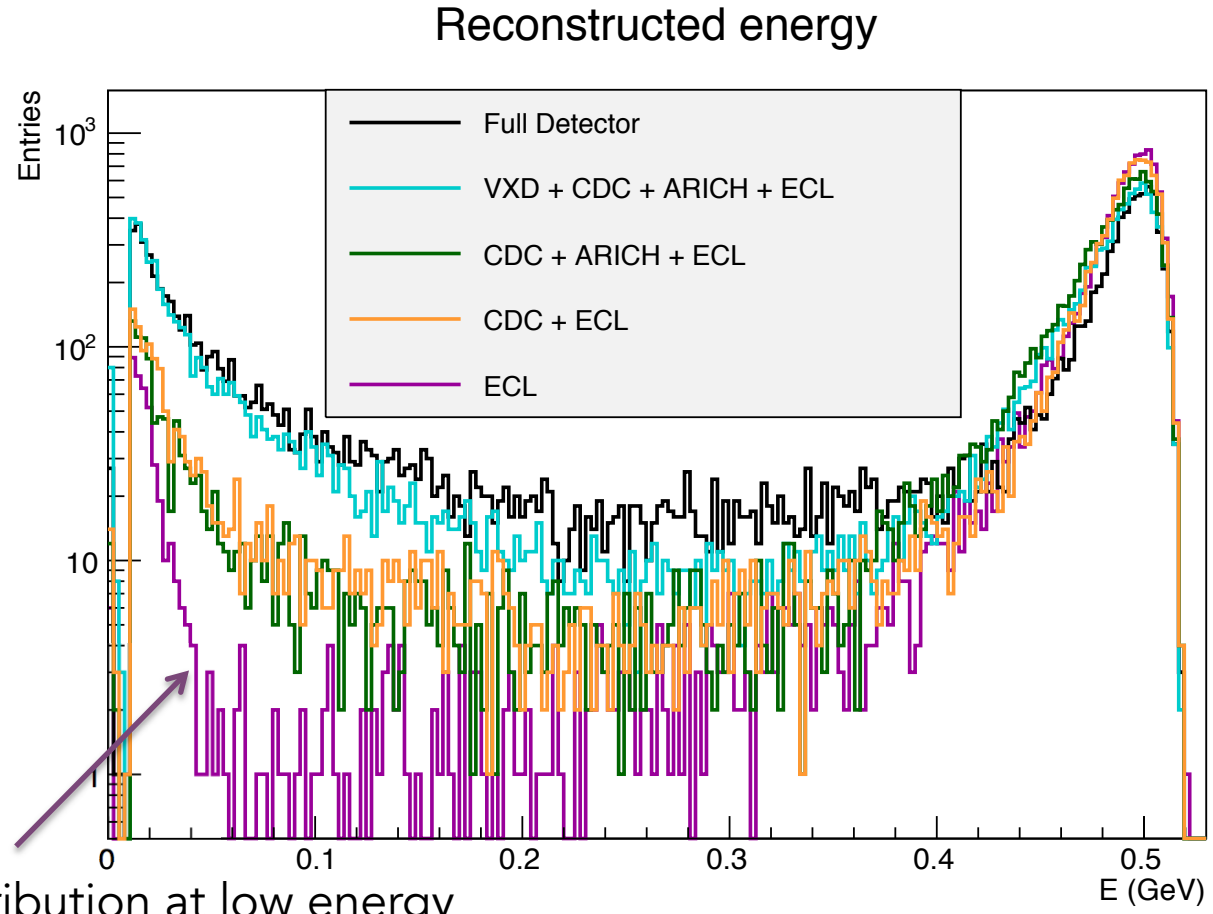




VXD+CDC+ARICH+ECL
CDC+ARICH+ECL
shows larger tails

Shape comparison (II)

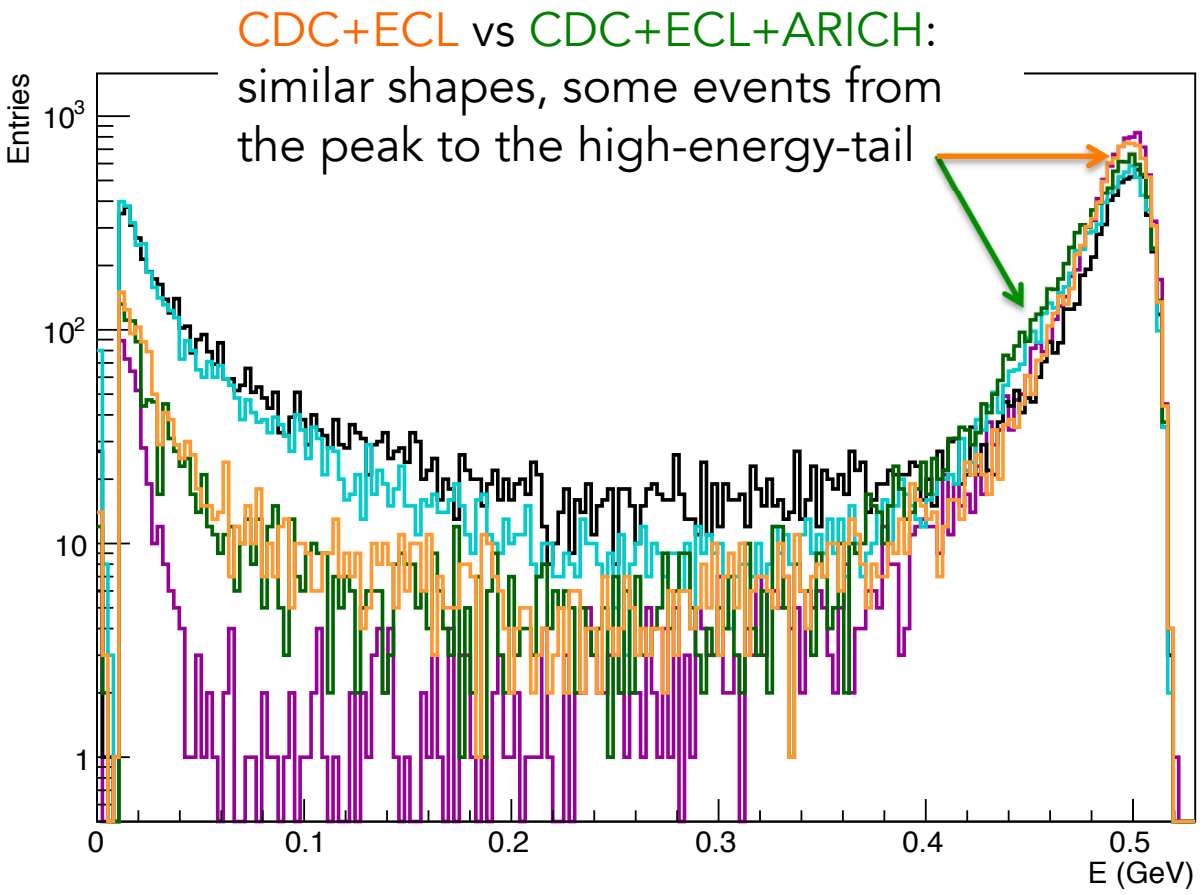
- Reco'd energy, low energy region



ECL ONLY:
small contribution at low energy
(no splitting from material)

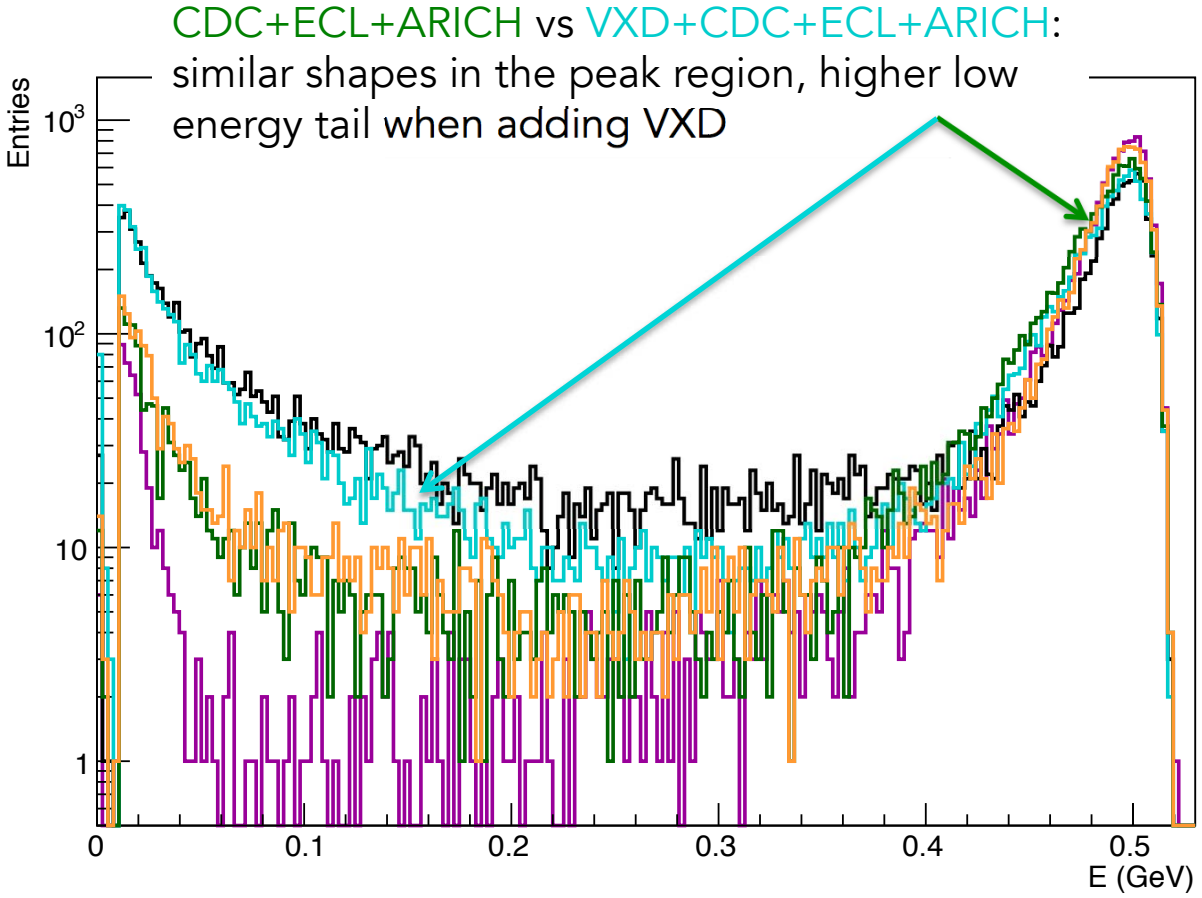
Shape comparison (II)

- Reco'd energy, low energy region



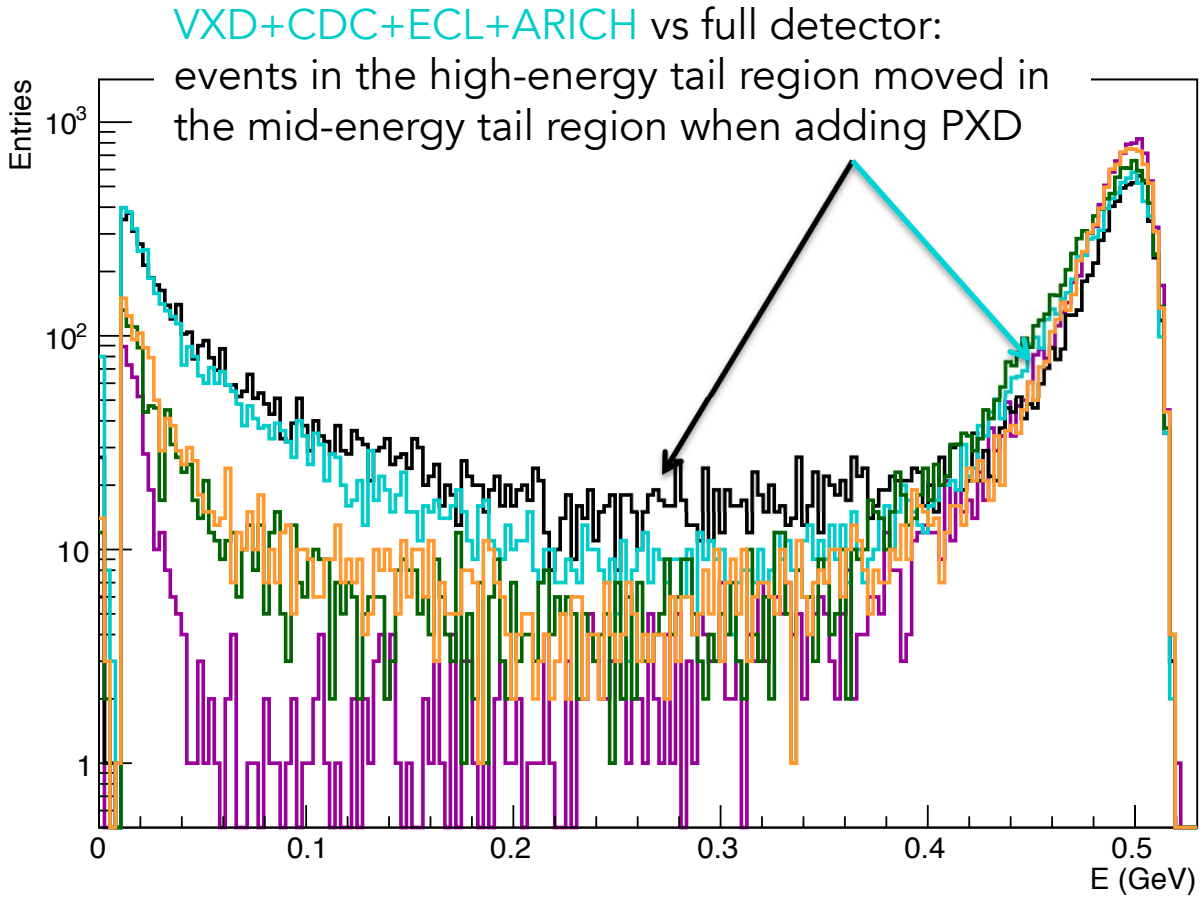
Shape comparison (II)

- Reco'd energy, low energy region



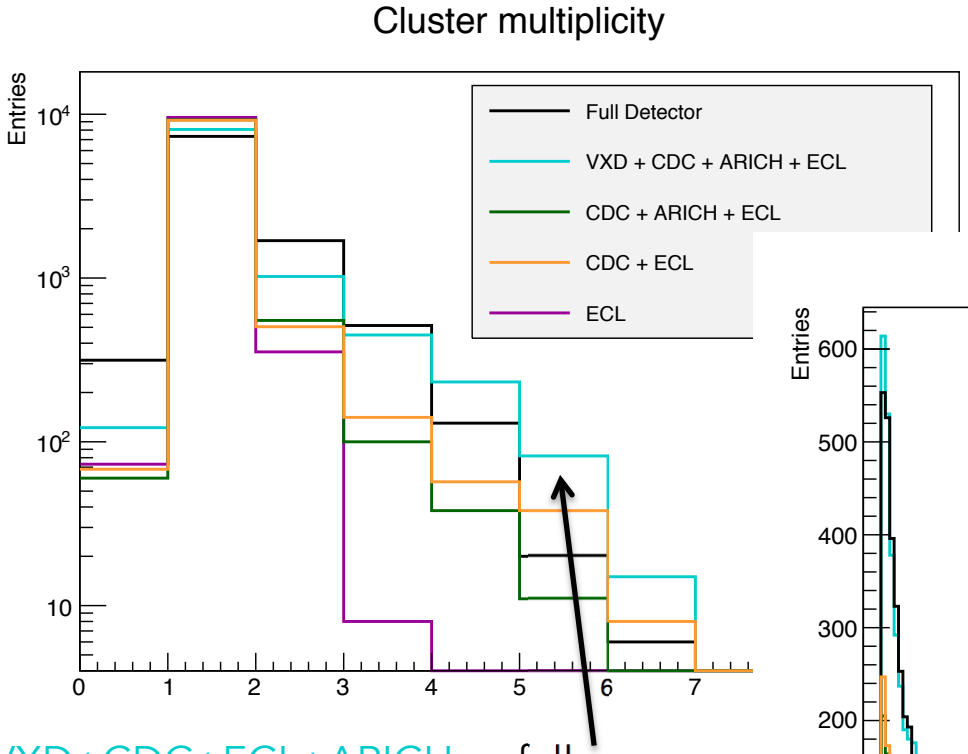
Shape comparison (II)

- Reco'd energy, low energy region

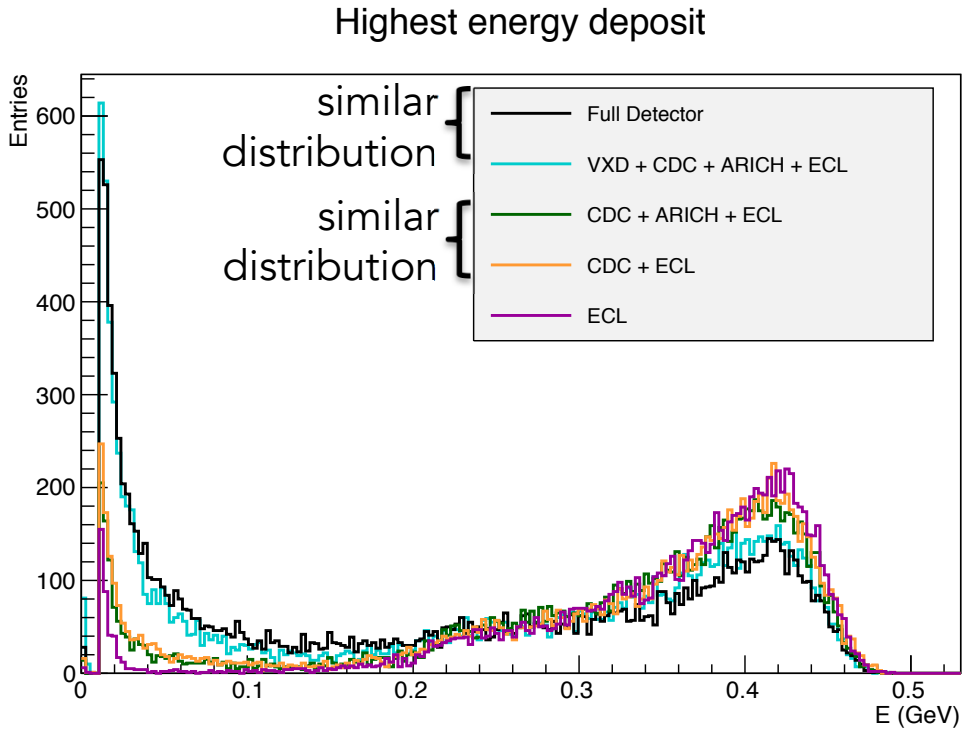


Shape comparison (III)

- Multiplicity & highest energy deposit

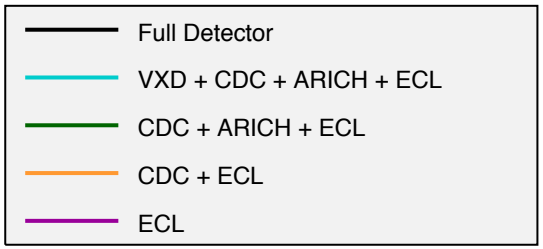


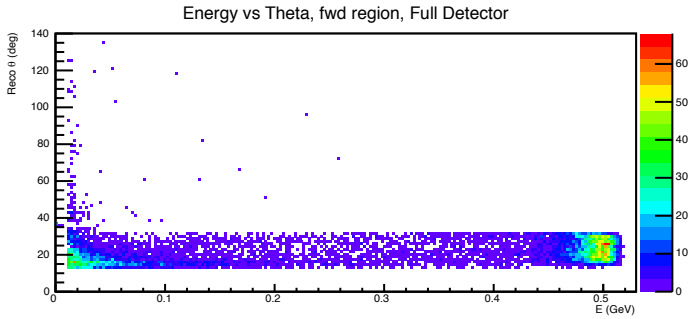
VXD+CDC+ECL+ARICH vs full detector: higher multip without PXD compensated by higher inefficiency with full detector

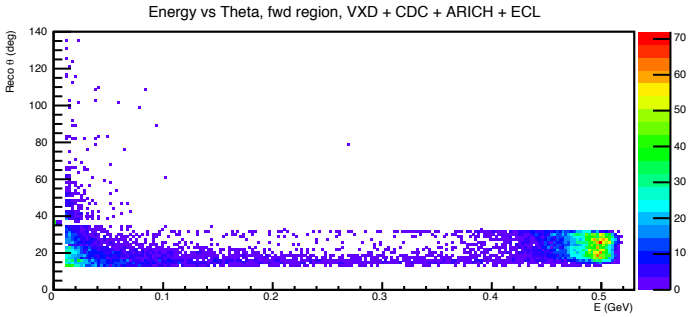


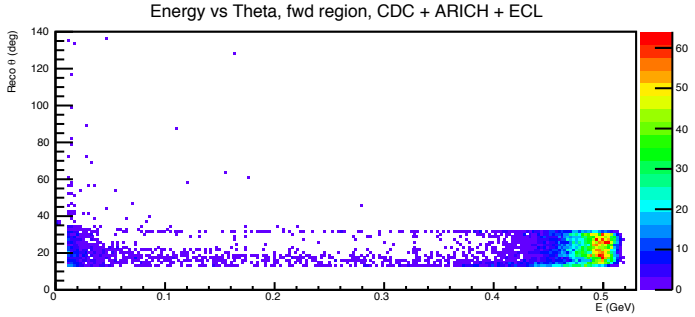
Shape comparison (IV)

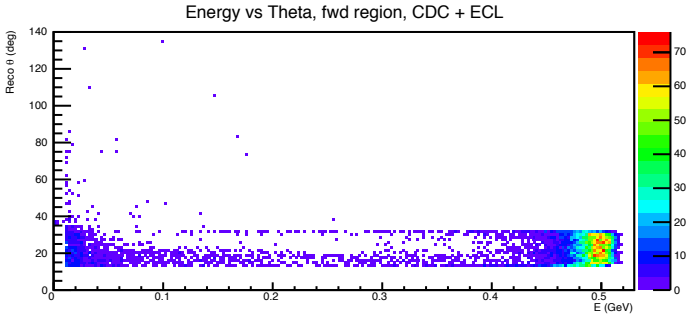
- Reco theta vs energy

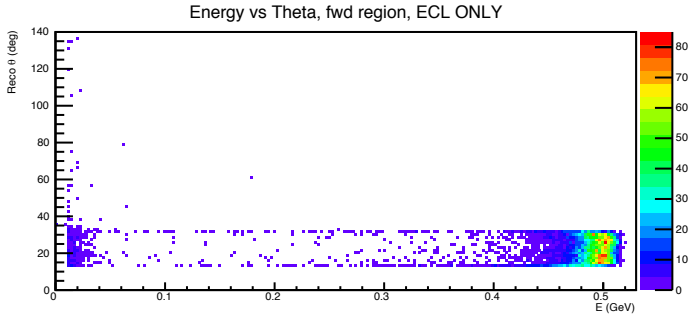






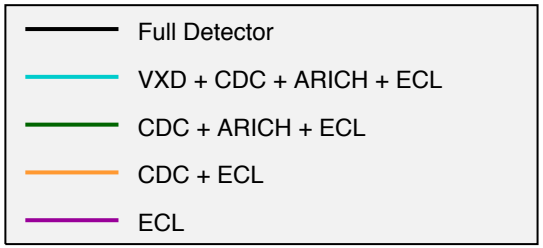


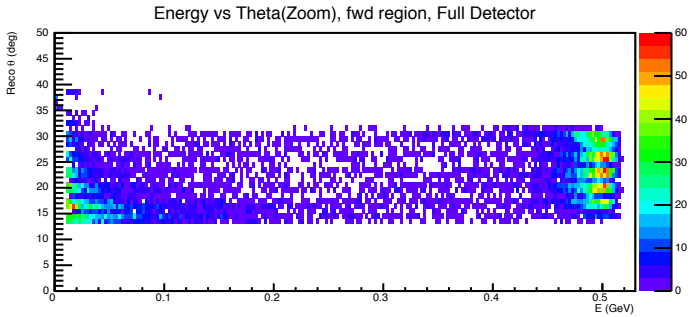


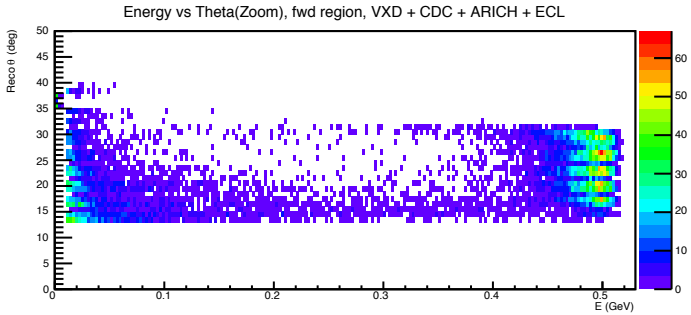


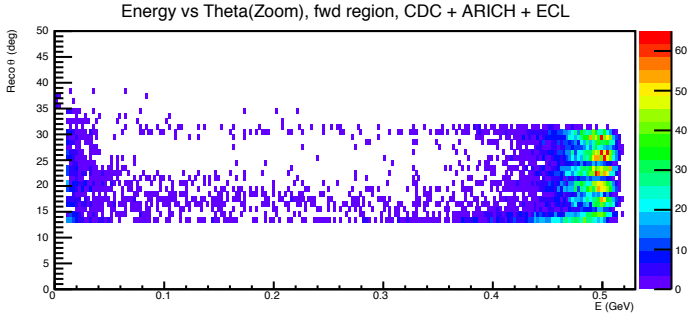
Shape comparison (V)

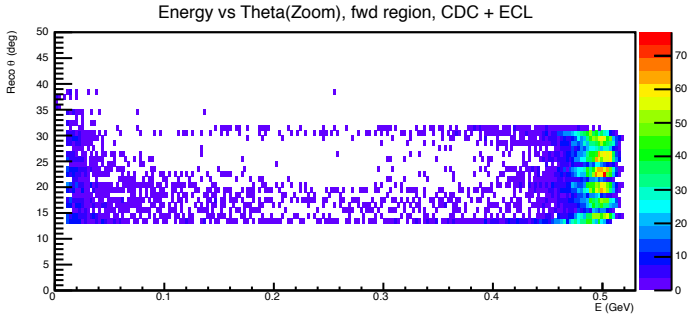
- Reco theta vs energy: zoom

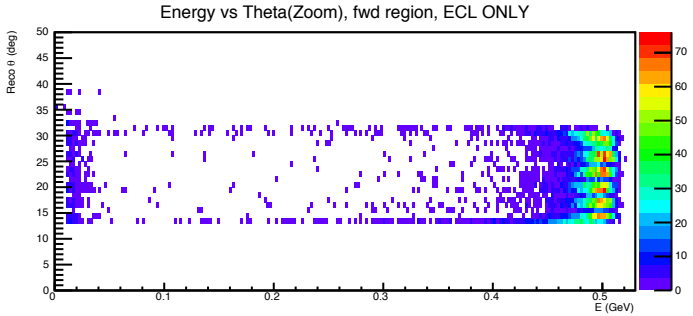










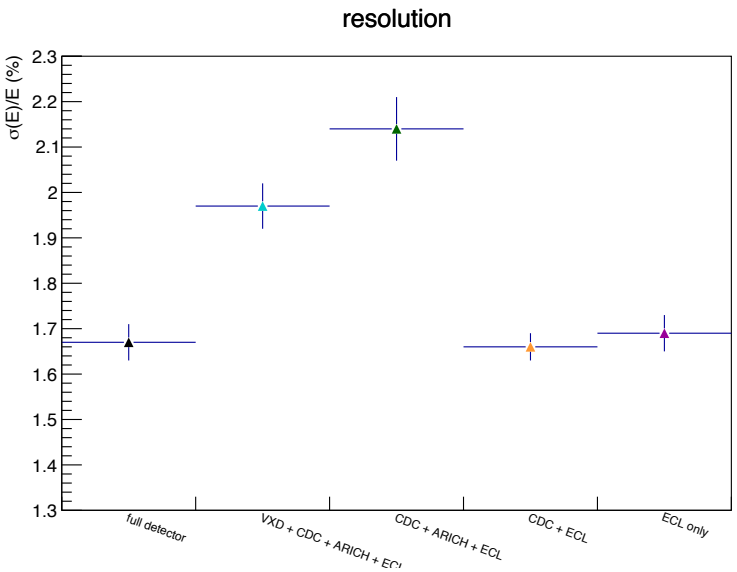


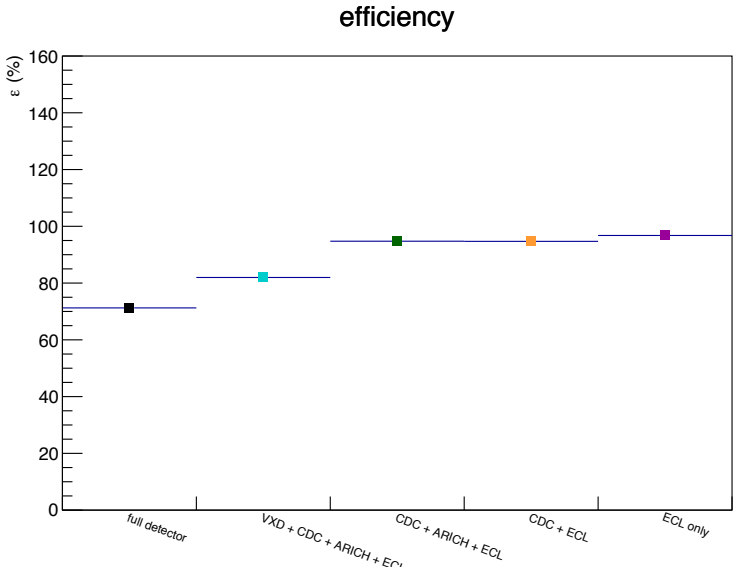
Combining efficiency and resolution (I)

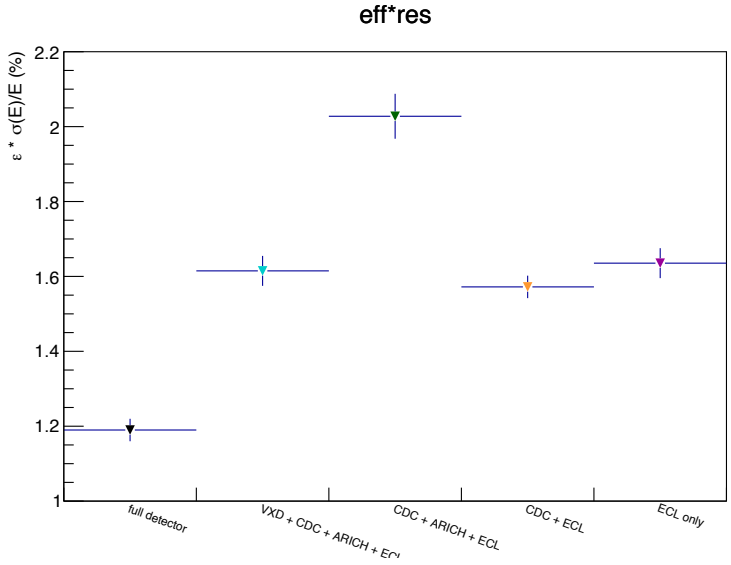
Config	σ(E)/E (%)	(fit range) ε (%)	(0.35-0.53 MeV range) ε (%)
full	1.67± 0.04	(0.35-0.53 MeV) 71.25 ± 0.45	71.25 ± 0.45
ECAV	1.97±0.05	(0.3-0.53 MeV) 81.97 ± 0.38	80.33 ± 0.40
ECA	2.14±0.07	(0.3-0.53 MeV) 94.75 ± 0.22	93.66 ± 0.24
EC	1.66±0.03	(0.3-0.53 MeV) 94.70 ± 0.22	93.48 ± 0.25
ECL ONLY	1.69±0.04	(0.35-0.53 MeV) 96.77 ± 0.18	96.77 ± 0.18

Config	σ(E)/E * ε (fit range) (%)	(common range) ε (%)
full	1.19 ± 0.03	1.19 ± 0.03
ECAV	1.61± 0.04	1.58 ± 0.03
ECA	2.03 ± 0.06	2.00 ± 0.07
EC	1.52 ± 0.03	1.55 ± 0.03
ECL ONLY	1.63 ± 0.04	1.63 ± 0.04

Combining efficiency and resolution (II)

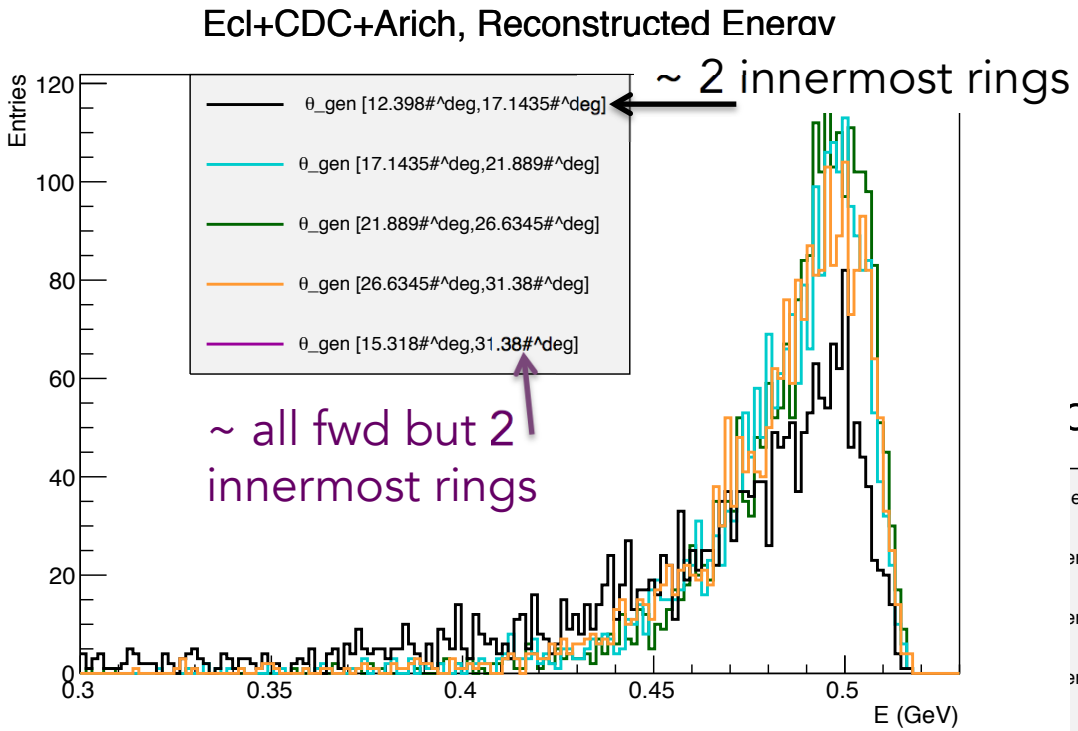






FOCUSSING ON CDC +ARICH+ECL CONFIG

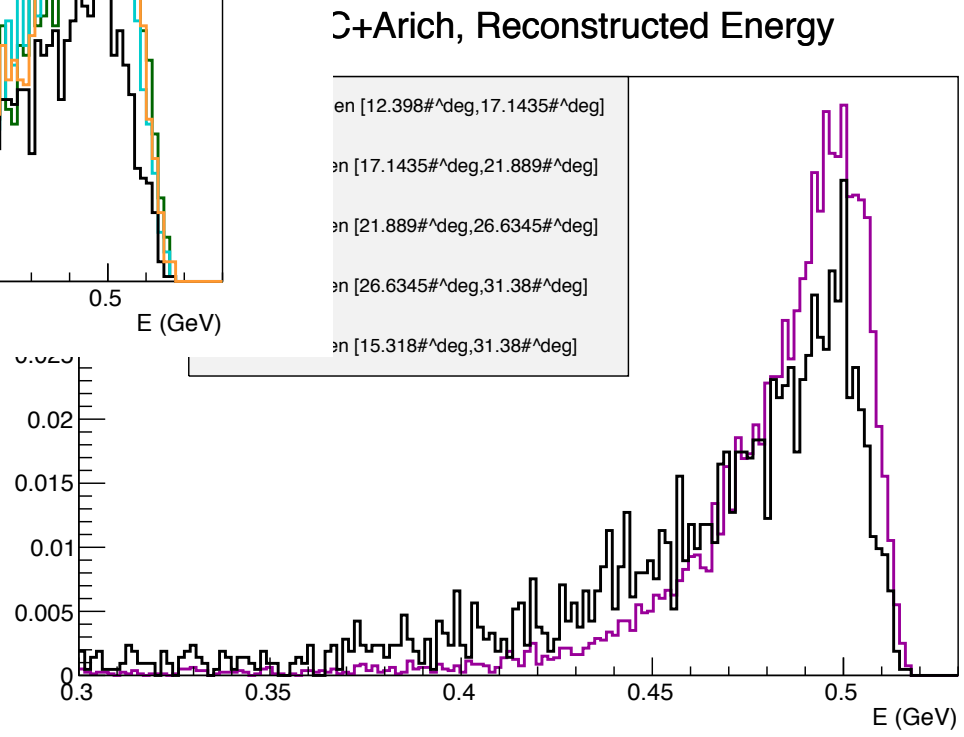
Reco'd energy



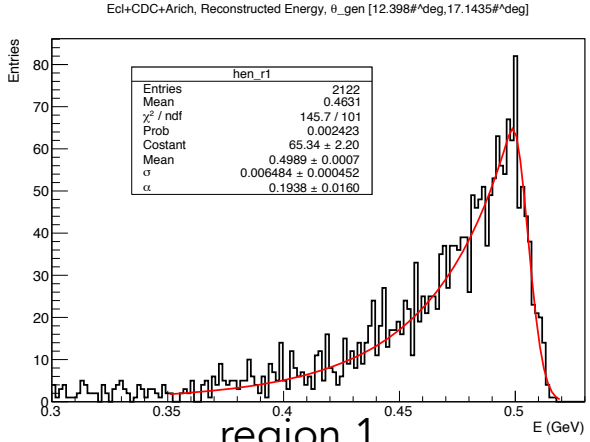
~ 2 innermost rings

~ all fwd but 2 innermost rings

- fwd in 4 slices
- excluding the inner slice, en dep distribution is similar for the others



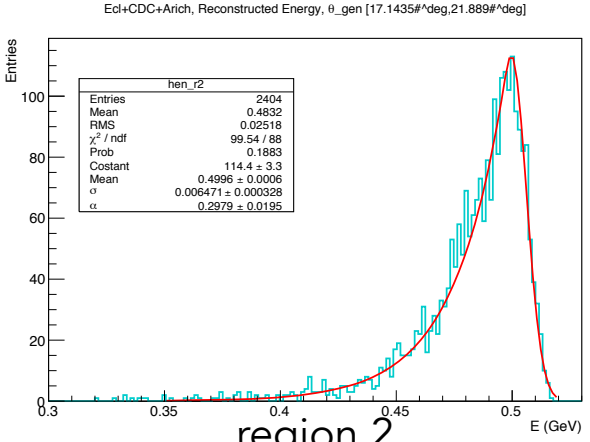
CB fits



region 1

$\sigma(E)/E = (2.7 \pm 0.2)\%$

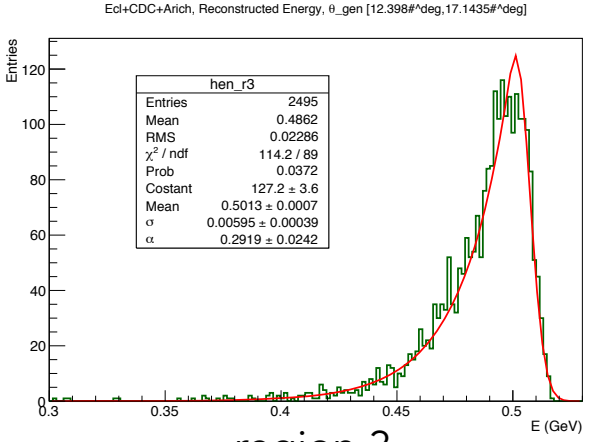
$\sigma(E)/E_{gaus} = 1.30\ \%$



region 2

$\sigma(E)/E = (2.01 \pm 0.11)\%$

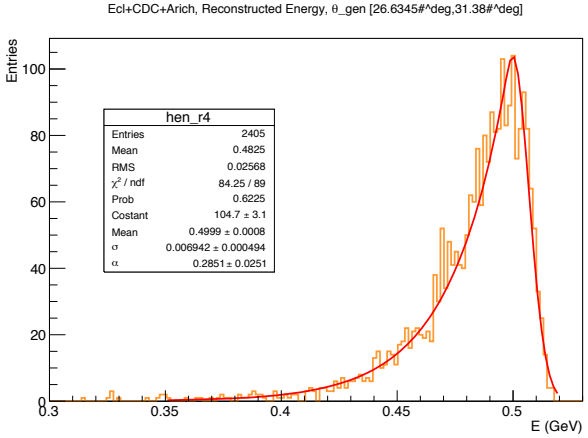
$\sigma(E)/E_{gaus} = 1.29\ \%$



region 3

$\sigma(E)/E = (1.87 \pm 0.13)\%$

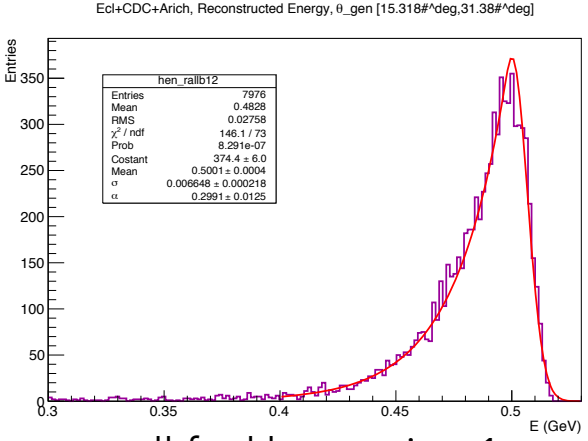
$\sigma(E)/E_{gaus} = 1.19\ \%$



region 4

$\sigma(E)/E = (2.22 \pm 0.17)\%$

$\sigma(E)/E_{gaus} = 1.39\ \%$



all fwd but region 1

$\sigma(E)/E = (2.06 \pm 0.07)\%$

$\sigma(E)/E_{gaus} = 1.33\ \%$

Resolution and linearity