mTower test at DESY electron beam line in Feb. 2020

radial density profile

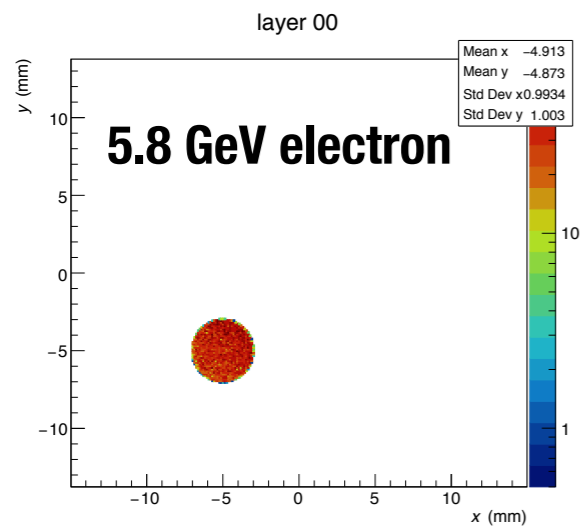**Hiroki Yokoyama**

30/03/2020

hitmap with cluster pos. selection

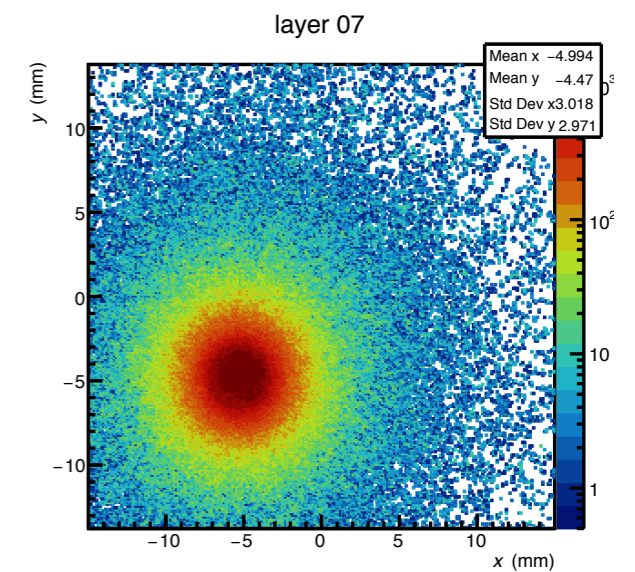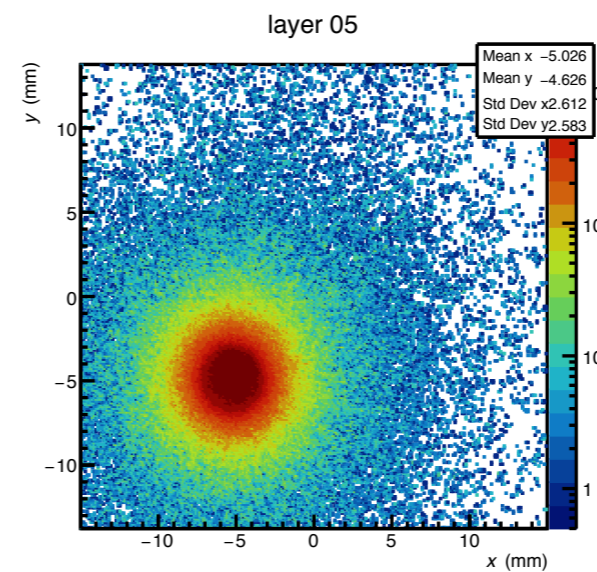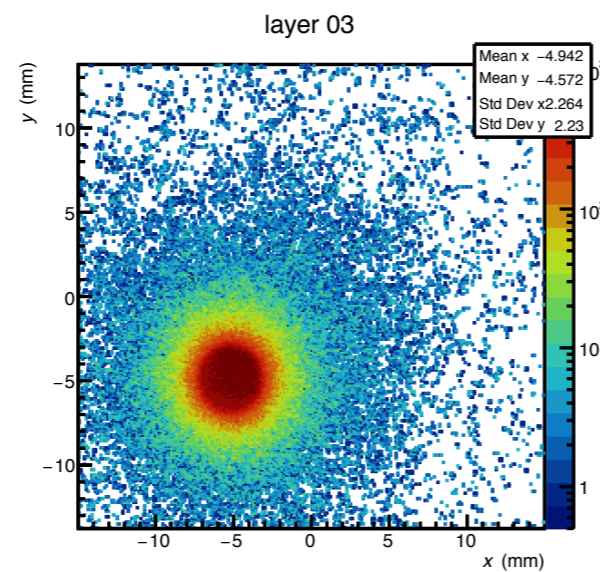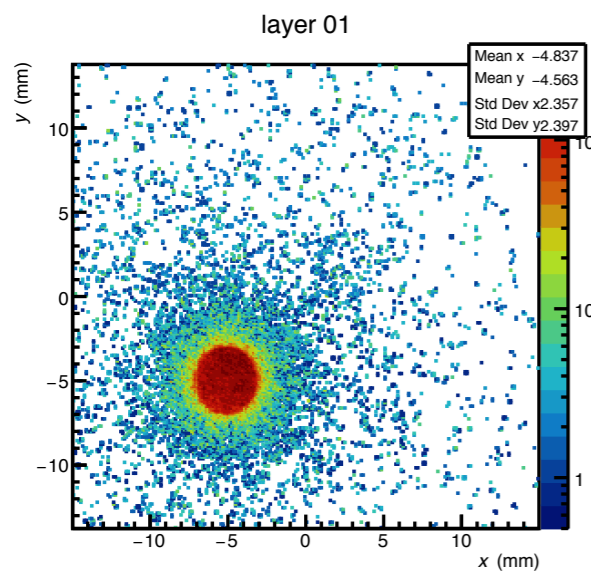☑ hitmap w/

  ▷ one cluster in first layer

  ▷ $(x+5)^2 + (y+5)^2 < 4$ (mm²)

without selection

hhitmap_layer03

hhitmap_layer03	
Entries	1.137008e+08
Mean x	0.0367
Mean y	1.982
Std Dev x	5.616
Std Dev y	5.911

layer 00

5.8 GeV electron

Mean x	−4.913
Mean y	−4.873
Std Dev x	0.9934
Std Dev y	1.003

no weird structure exists when small area of beam position is selected.

layer 01

Mean x	−4.837
Mean y	−4.563
Std Dev x	2.357
Std Dev y	2.397

layer 03

Mean x	−4.942
Mean y	−4.572
Std Dev x	2.264
Std Dev y	2.23

layer 05

Mean x	−5.026
Mean y	−4.626
Std Dev x	2.612
Std Dev y	2.583

layer 07

Mean x	−4.994
Mean y	−4.47
Std Dev x	3.018
Std Dev y	2.971

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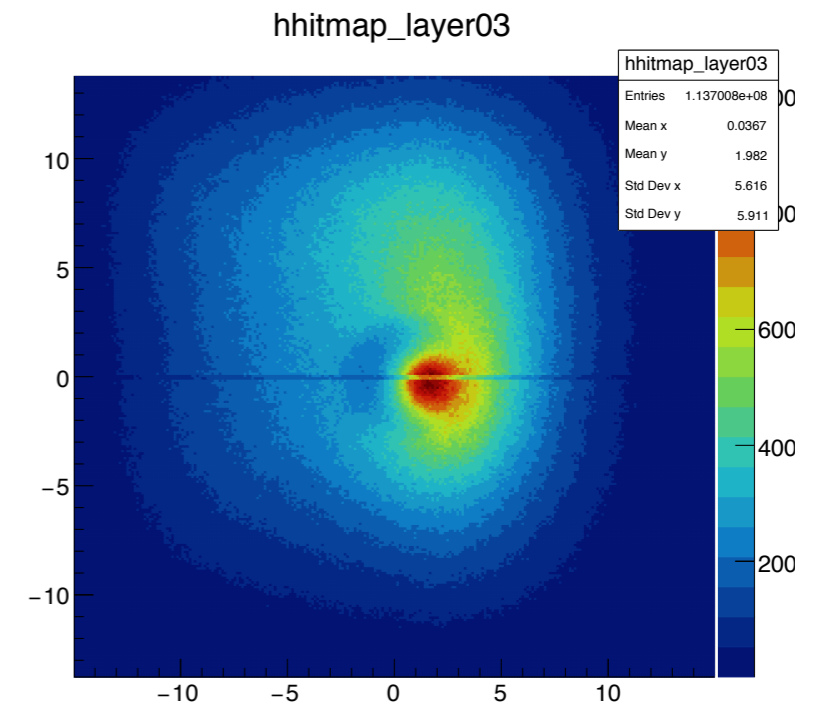
radial profile (without alignment)

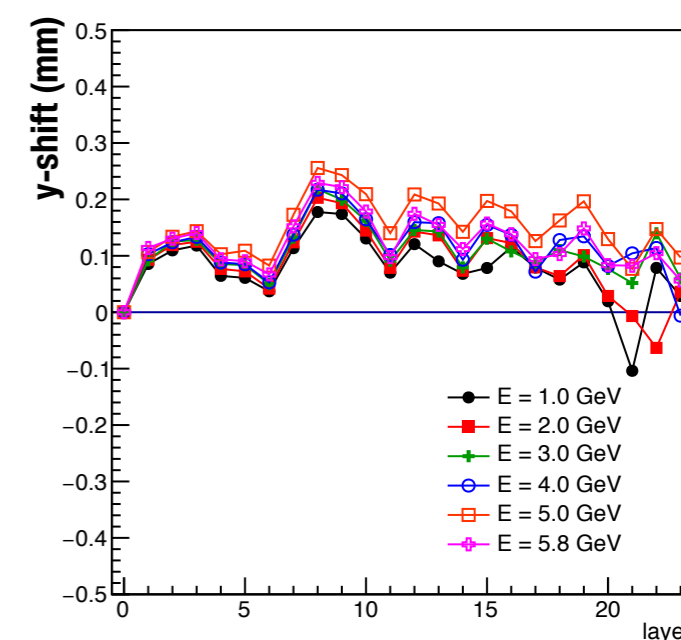☑ hit density as function of R (distance from cluster position in first layer)
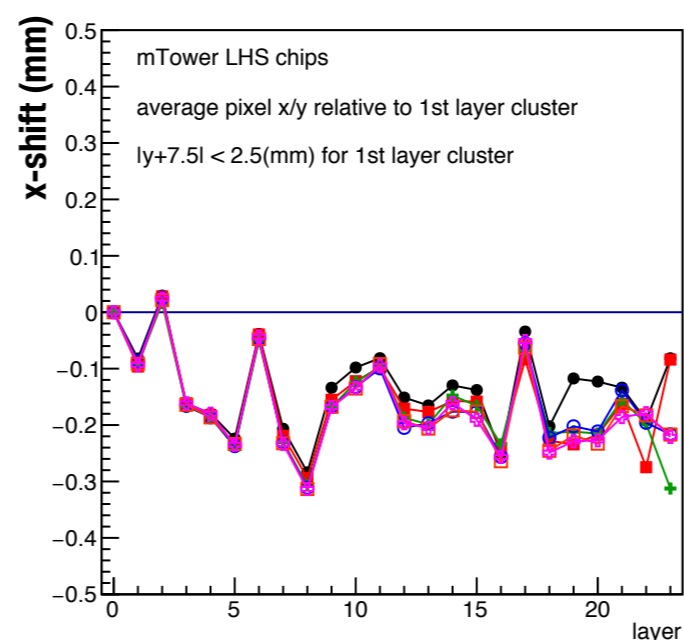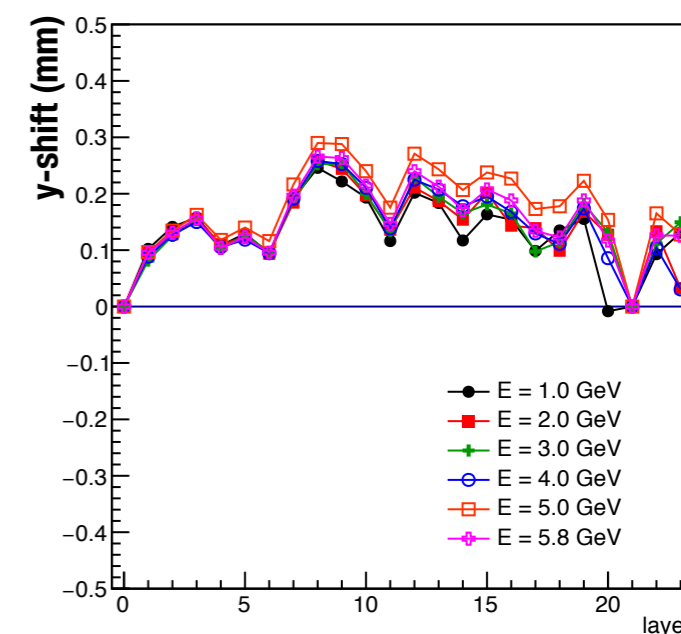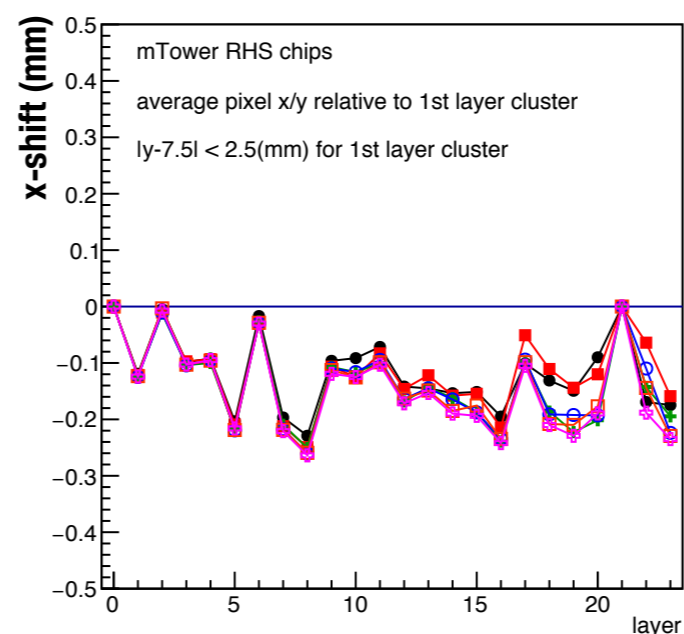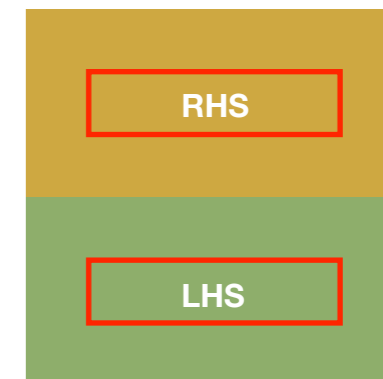
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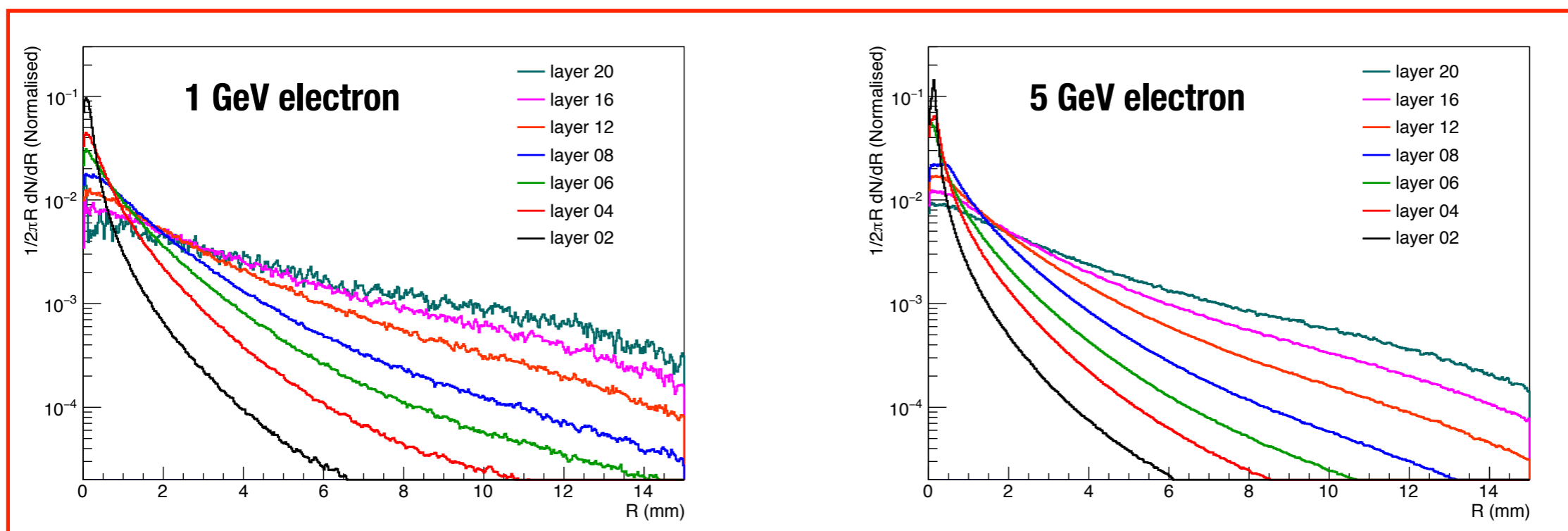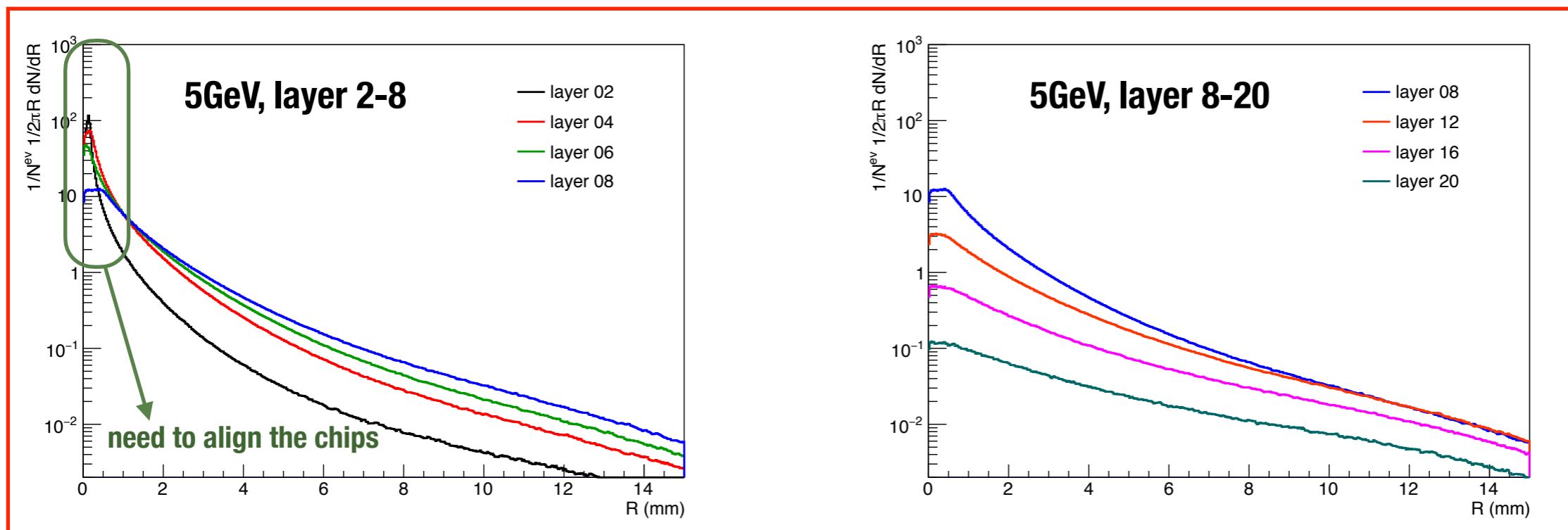
alignment with beam centre

☑ event cut

  ▷ <u>one cluster in first layer</u>

  ▷ <u>the cluster position in chip center (RHS/LHS)</u>
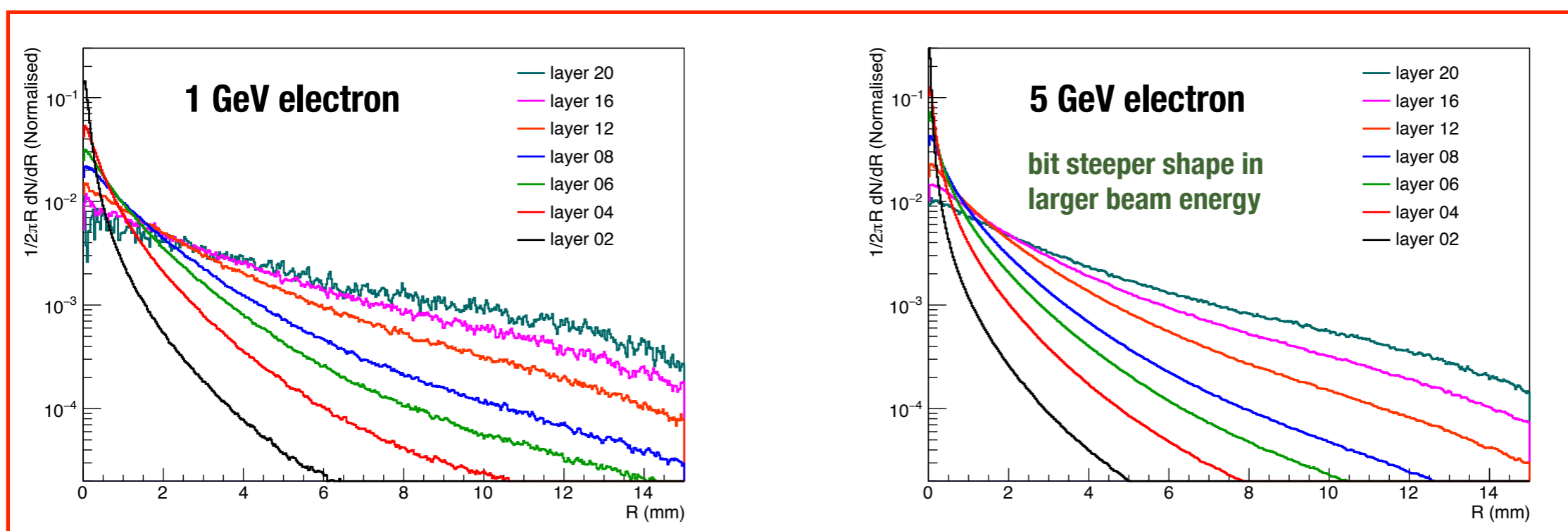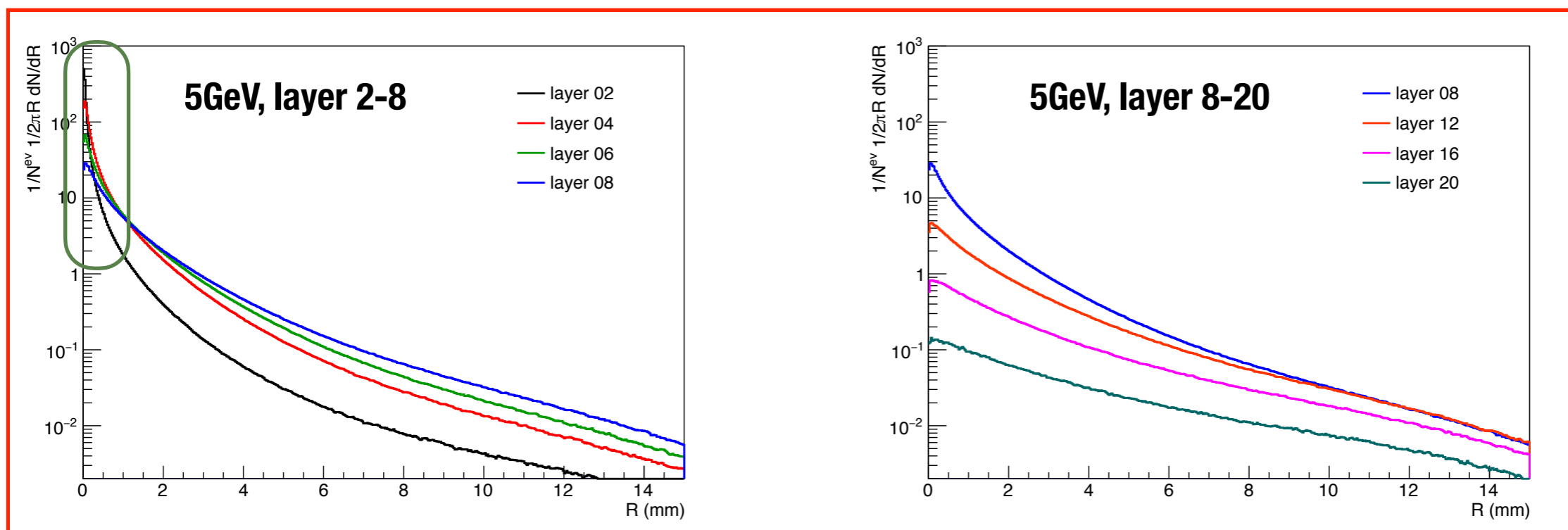
☑ average dx(dy) is considered as x(y)-shift of the chips

  ▷ NO gap b/w RHS/LHS chips is taken into account for now

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radial profile (after alignment with beam centre)

☑ hit density as function of R, alignment parameters are taken from 5 GeV data

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cosmic data

☑ cluster selection

☑ alignment algorithm