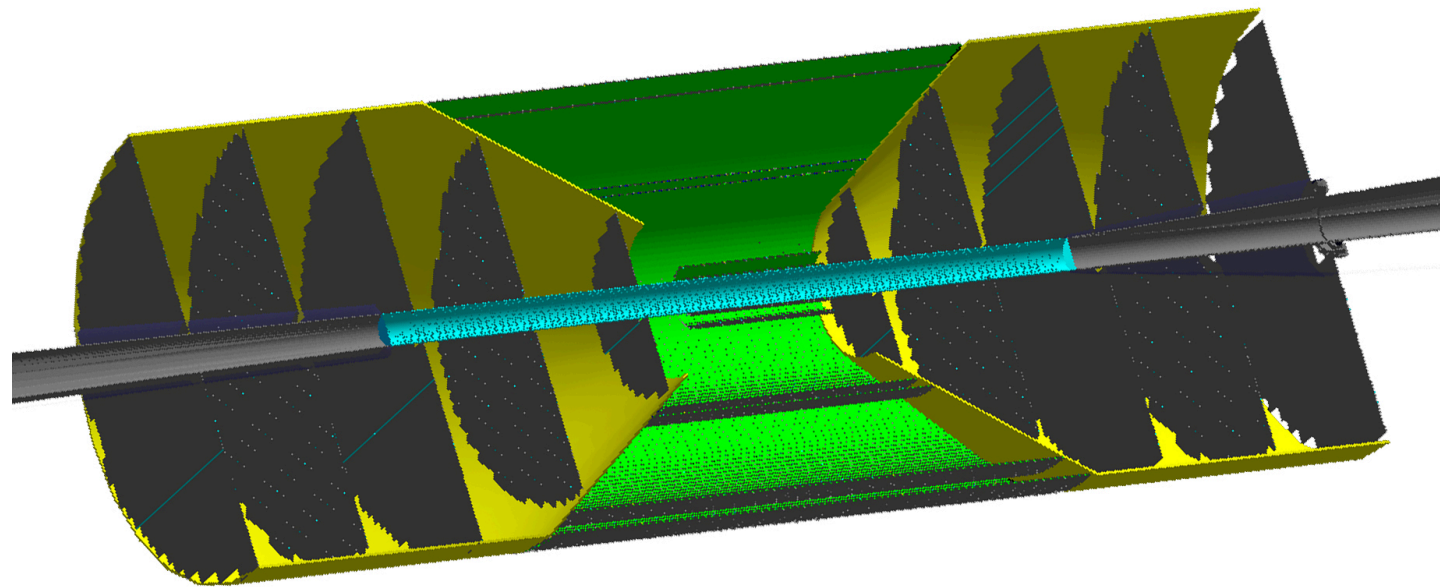


Momentum and vertex resolution parametrization



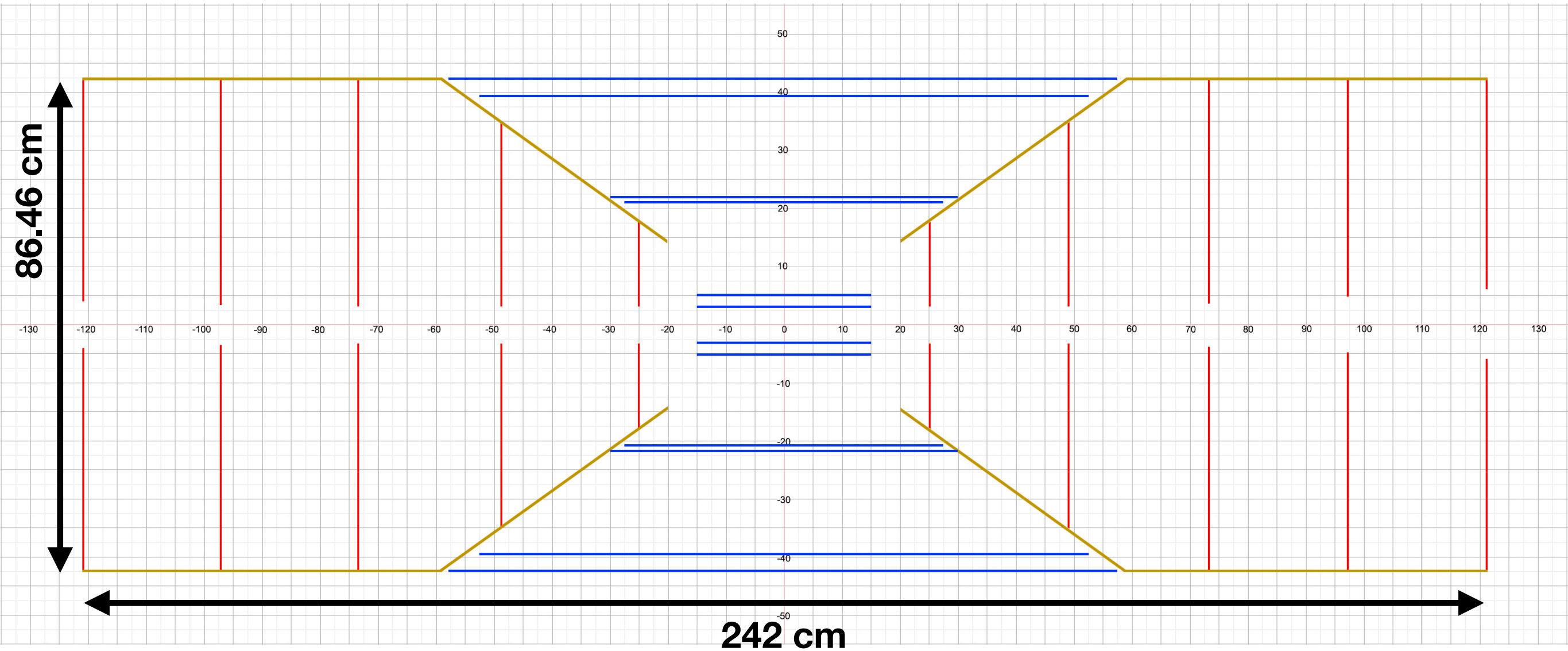
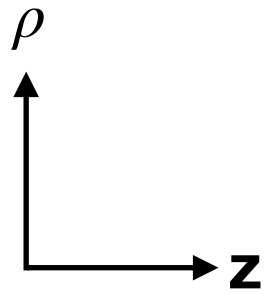
Rey Cruz-Torres
09/24/2020

Detector schematic

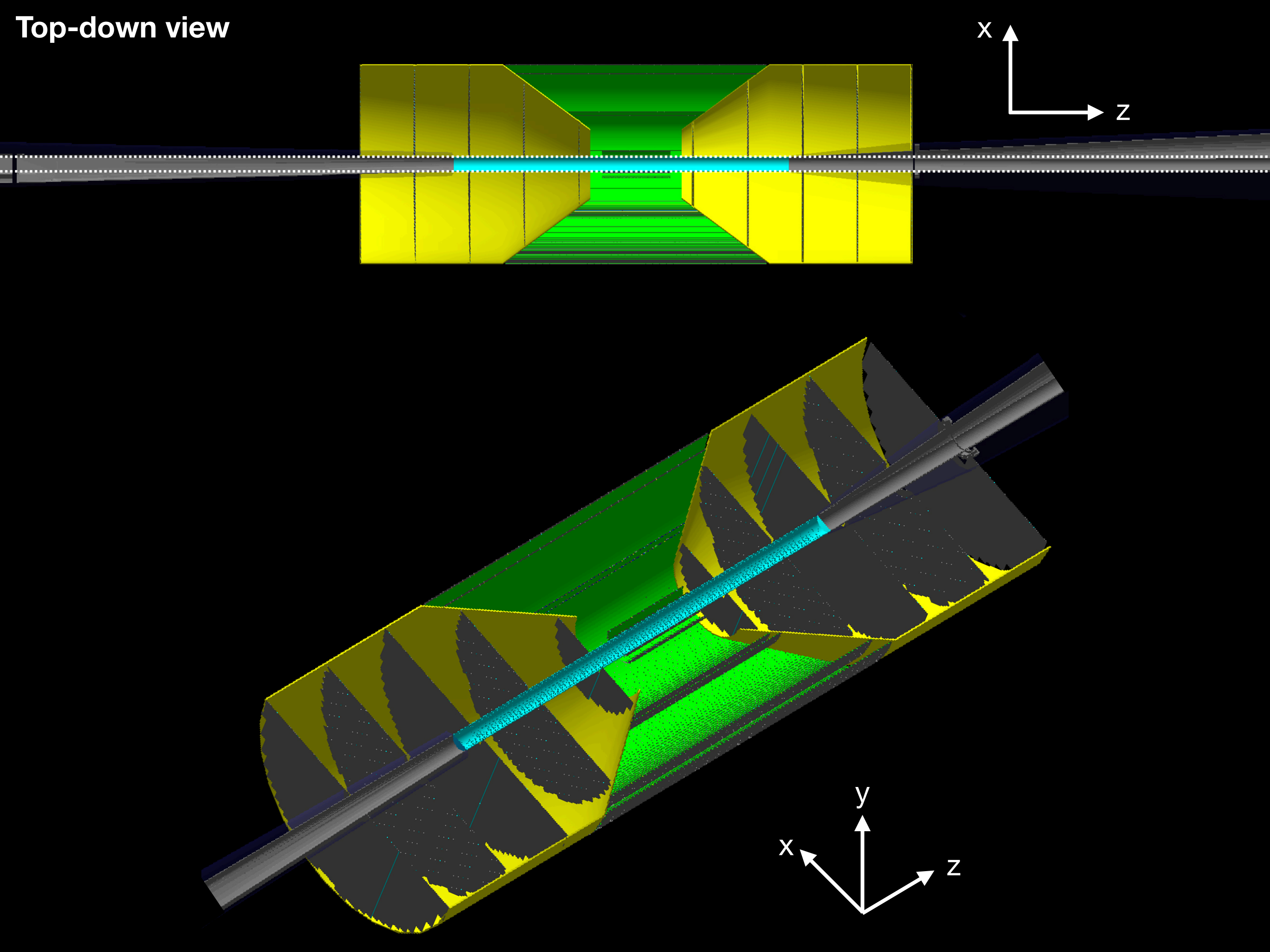
Barrel

Disks

Support structure

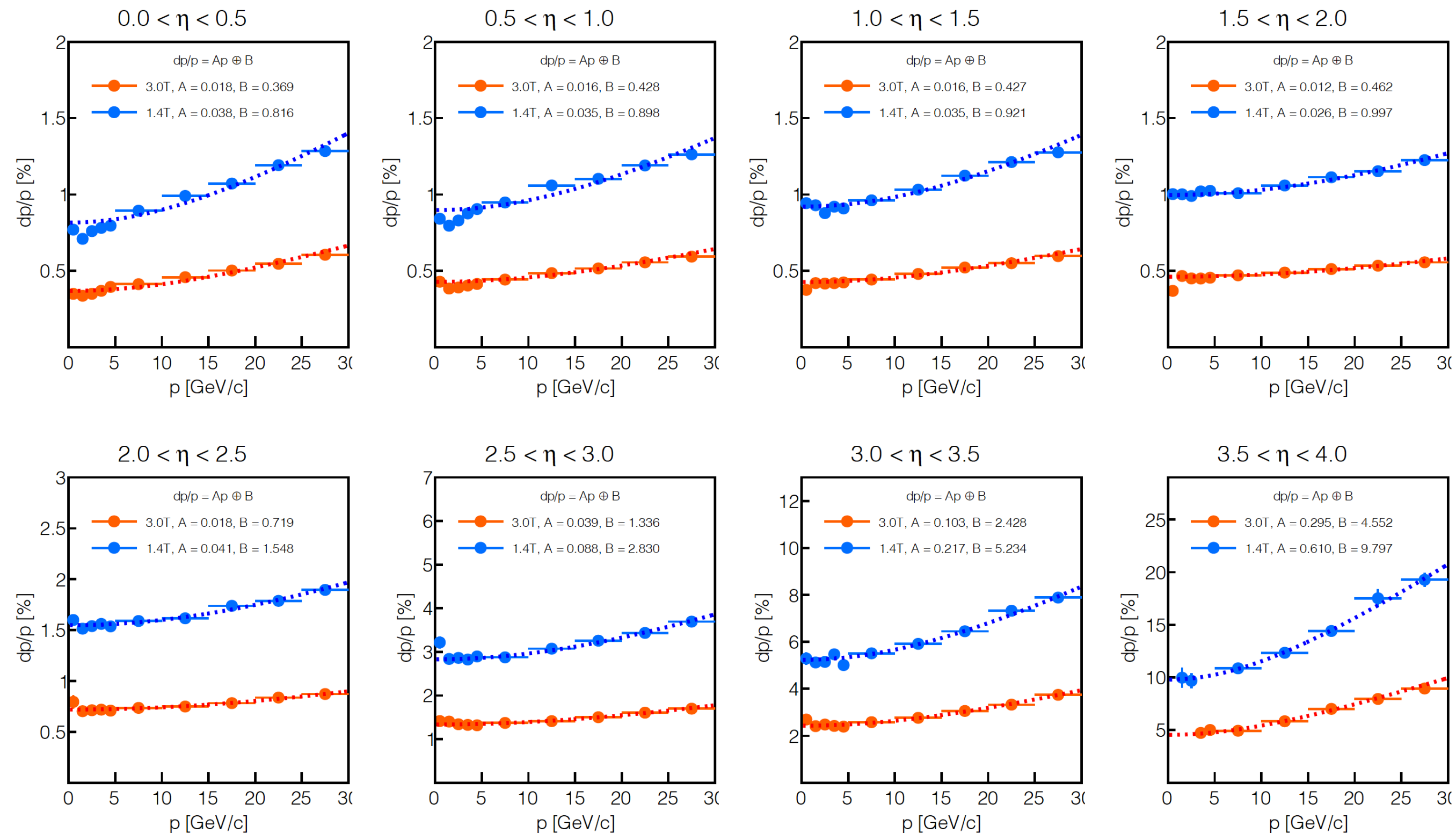


Top-down view



Momentum resolution parametrization

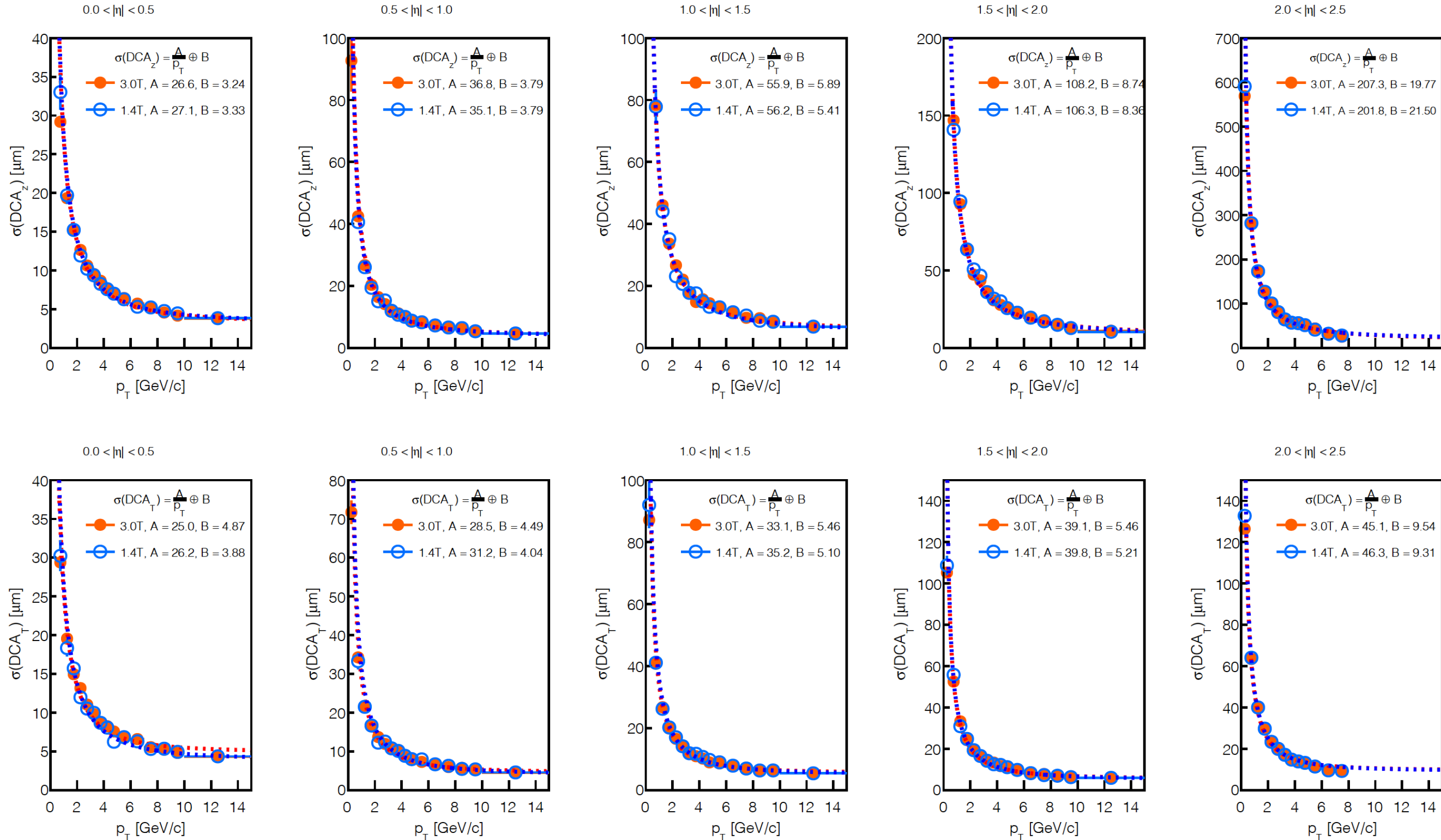
π^- , 10 μm pixel



$$\sigma(dp/p) = Ap \oplus B$$

Vertex resolution parametrization

π^- , 10 μm pixel



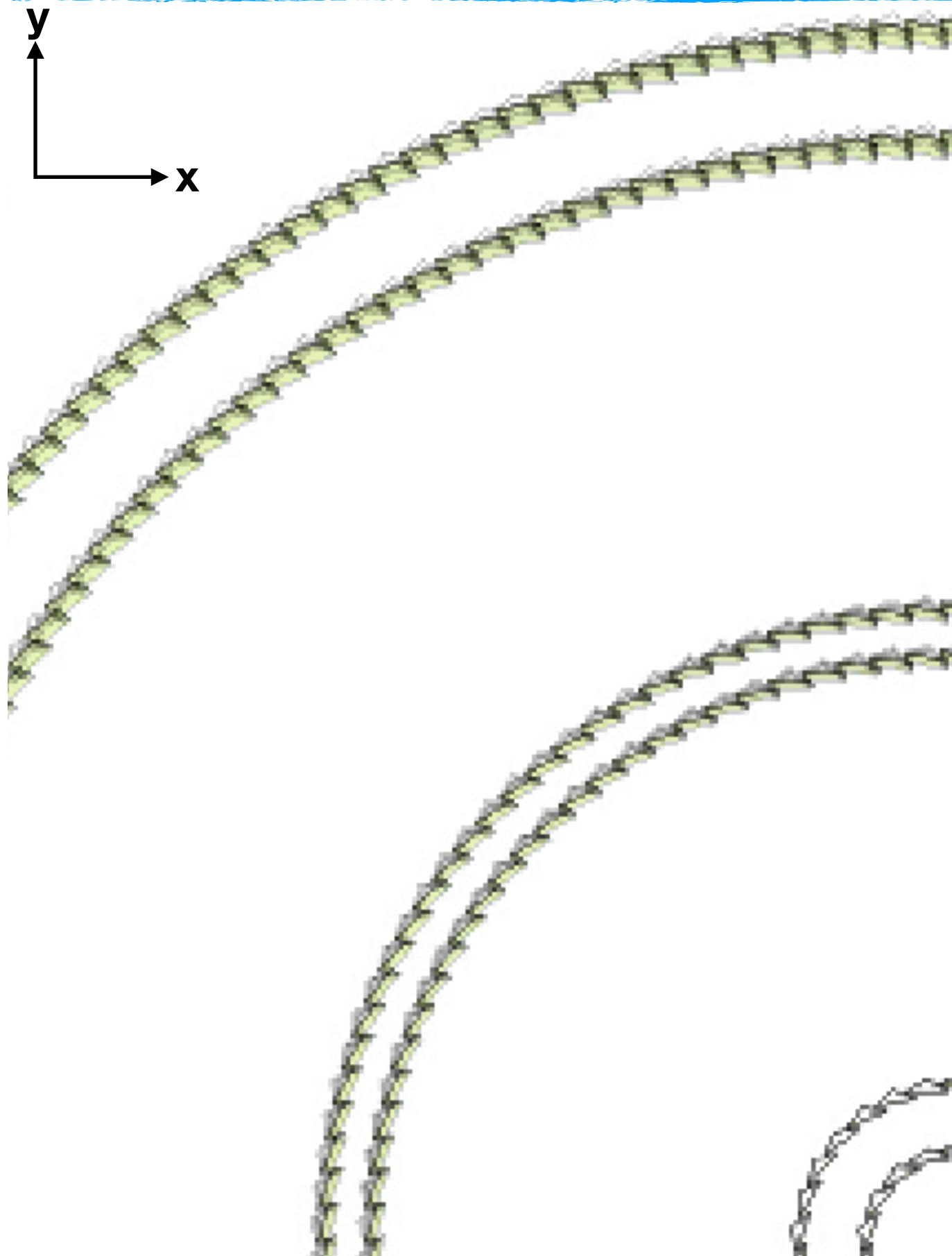
$$\sigma(\text{DCA}) = \frac{A}{p_T} \oplus B$$

Summary Table

		$\delta p/p = Ap \oplus B$		$\text{DCA}_z = A/p_T \oplus B$		$\text{DCA}_T = A/p_T \oplus B$	
		A [%/GeV]	B [%]	A [$\mu\text{m GeV}$]	B [μm]	A [$\mu\text{m GeV}$]	B [μm]
$0.0 < \eta < 0.5$	B = 3.0T	0.018	0.369	26.6	3.24	25.0	4.87
	B=1.4T	0.038	0.816	27.1	3.33	26.2	3.88
$0.5 < \eta < 1.0$	B = 3.0T	0.016	0.428	36.8	3.79	28.5	4.49
	B=1.4T	0.035	0.898	35.1	3.79	31.2	4.04
$1.0 < \eta < 1.5$	B = 3.0T	0.016	0.427	55.9	5.89	33.1	5.46
	B=1.4T	0.035	0.921	56.2	5.41	35.2	5.10
$1.5 < \eta < 2.0$	B = 3.0T	0.012	0.462	108.2	8.74	39.1	5.46
	B=1.4T	0.026	0.997	106.3	8.36	39.8	5.21
$2.0 < \eta < 2.5$	B = 3.0T	0.018	0.719	207.3	19.77	45.1	9.54
	B=1.4T	0.041	1.548	201.8	21.50	46.3	9.31
$2.5 < \eta < 3.0$	B = 3.0T	0.039	1.336				
	B=1.4T	0.088	2.830				
$3.0 < \eta < 3.5$	B = 3.0T	0.103	2.428				
	B=1.4T	0.217	5.234				
$3.5 < \eta < 4.0$	B = 3.0T	0.295	4.552				
	B=1.4T	0.610	9.797				

More detector geometry details

Barrel



$r = 43.23$ cm, 220 staves, length 114 cm

$r = 39.30$ cm, 200 staves, length 105 cm

$r = 22.68$ cm, 115 staves, length 60 cm

$r = 21.00$ cm, 107 staves, length 54 cm

$r = 5.7$ cm, 30 staves, length 30 cm

$r = 3.3$ cm, 18 staves, length 30 cm

Disks

	Disk number	z position (“Z”) [cm]	axis rotation (“R”) [deg]	outer radius [cm]	inner radius [cm]	stave width [cm]	stave separation [cm]
Backward	-5	-121	0	43.23	4.41	3.00	2.60
	-4	-97	45	43.23	3.70	2.60	2.20
	-3	-73	0	43.23	3.18	2.50	1.80
	-2	-49	45	36.26	3.18	2.50	1.80
	-1	-25	0	18.50	3.18	2.50	1.80
Forward	1	25	0	18.50	3.18	2.50	1.80
	2	49	45	36.26	3.18	2.50	1.90
	3	73	0	43.23	3.50	2.60	2.00
	4	97	45	43.23	4.70	3.20	2.60
	5	121	0	43.23	5.91	3.80	3.30

Backward

ElCroot event display

Forward

