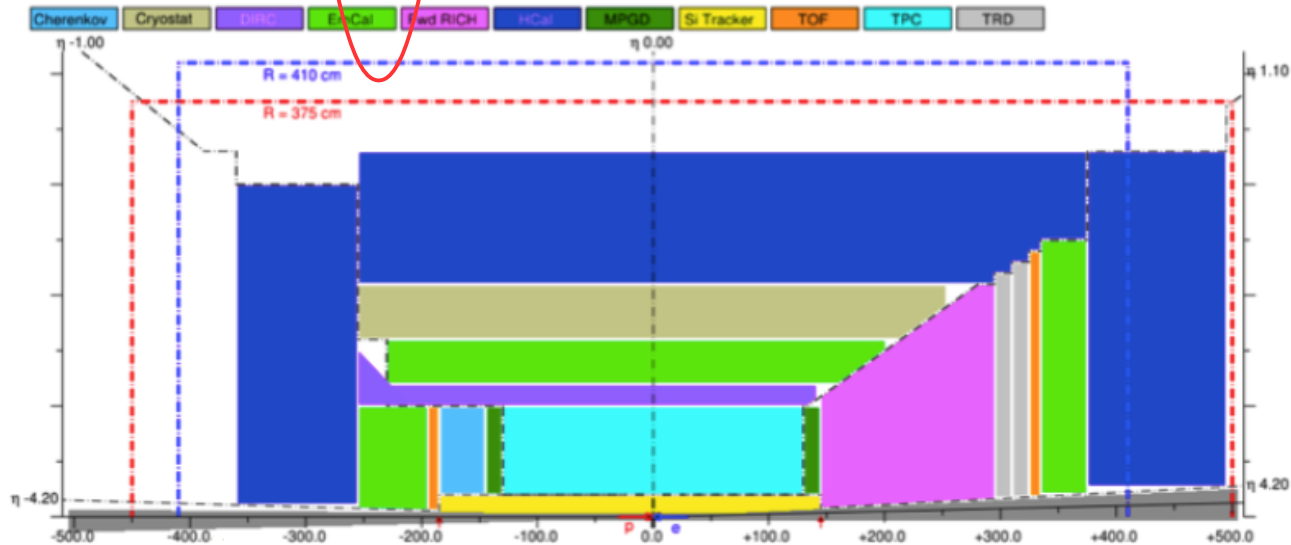
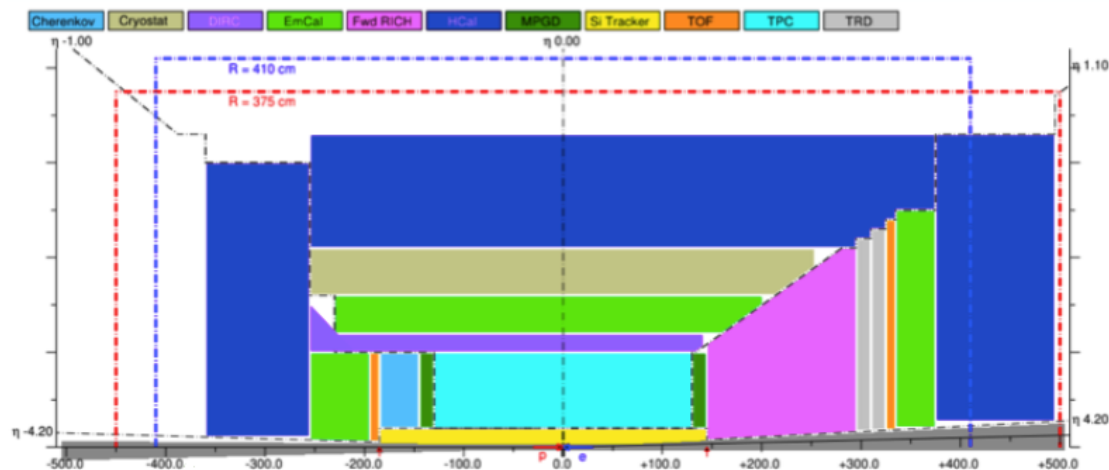
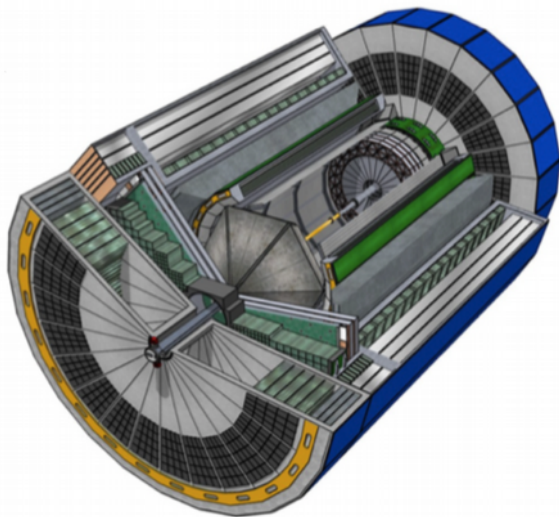


η	Nomenclature		Tracking				Electrons and Photons			$\pi/K/p$ PID		HCAL		Muons		
			Min p_T	Resolution	Allowed X/X_0	Si-Vertex	Min E	Resolution $\sigma_{E/E}$	PID	p-Range (GeV/c)	Separation	Min E	Resolution $\sigma_{E/E}$			
-6.9 — -5.8	↓ p/A	Auxiliary Detectors	low- Q^2 tagger	$\delta\theta/\theta < 1.5\%$; $10^{-6} < Q^2 < 10^{-2} \text{ GeV}^2$												
...																
-4.5 — -4.0			Instrumentation to separate charged particles from γ													
-4.0 — -3.5																
-3.5 — -3.0	Central Detector	Backwards Detectors		$\sigma_{p/p} \sim 0.1\% \times p + 2.0\%$		$\sigma_{xy} \sim 30 \mu\text{m}/p_T + 40 \mu\text{m}$		$2\%/\sqrt{E} + (1-3)\%$								
-3.0 — -2.5																
-2.5 — -2.0																
-2.0 — -1.5																
-1.5 — -1.0																
-1.0 — -0.5																
-0.5 — 0.0																
0.0 — 0.5																
0.5 — 1.0				Barrel		$\sigma_{p/p} \sim 0.05\% \times p + 0.5\%$	$\sim 5\%$ or less	$\sigma_{xyz} \sim 20 \mu\text{m}$, $d_0(z) \sim d_0(r\phi)$ $\sim 20/p_T \text{ GeV}$ $\mu\text{m} + 5 \mu\text{m}$		$7\%/\sqrt{E} + (1-3)\%$	π suppression up to $1:10^4$	$\leq 7 \text{ GeV}/c$				
1.0 — 1.5																
1.5 — 2.0																
2.0 — 2.5		Forward Detectors		$\sigma_{p/p} \sim 0.05\% \times p + 1.0\%$		$\sigma_{xy} \sim 30 \mu\text{m}/p_T + 20 \mu\text{m}$										
2.5 — 3.0																
3.0 — 3.5																
3.5 — 4.0																
4.0 — 4.5	↑ e	Auxiliary Detectors	Instrumentation to separate charged particles from γ													
...																
> 6.2			Proton Spectrometer		$\sigma_{\text{intrinsic}}(\eta / \eta) \cdot \text{Acceptance}$ $0.2 < p_T < 1.2 \text{ GeV}$											

Figure 8.126: Summary of tl





system	system components	reference detectors	detectors, alternative options considered by the community		
tracking	vertex	MAPS, 20 um pitch	MAPS, 10 um pitch		
	barrel	TPC	TPC ^a	MAPS, 20 um pitch	MICROMEAS ^b
	forward & backward	MAPS, 20 um pitch & sTGCs ^c	GEMs	GEMs with Cr electrodes	
	very far forward & far backward	MAPS, 20 um pitch & AC-LGAD ^d	TimePix (very far backward)		
ECal	barrel	W powder/ScFi or Pb/Sc Shashlyk	SciGlass	W/Sc Shashlyk	
	forward	W powder/ScFi	SciGlass	PbGI	Pb/Sc Shashlyk or W/Sc Shashlyk
	backward, inner	PbWO ₄	SciGlass		
	backward, outer	SciGlass	PbWO ₄	PbGI	W powder/ScFi or W/Sc Shashlyk ^e
	very far forward	Si/W	W powder/ScFi	crystals ^f	SciGlass
h-PID	barrel	High performance DIRC & dE/dx (TPC)	reuse of BABAR DIRC bars	fine resolution TOF	
	forward, high p	double radiator RICH (fluorocarbon gas, aerogel)	fluorocarbon gaseous RICH	high pressure Ar RICH	
	forward, medium p		aerogel		
	forward, low p	TOF	dE/dx		
backward	modular RICH (aerogel)	proximity focusing aerogel			
e/h separation at low p	barrel	hpDIRC & dE/dx (TPC)	very fine resolution TOF		
	forward	TOF & aerogel			
	backward	modular RICH	adding TRD	Hadron Blind Detector	
HCal	barrel	Fe/Sc	RPC/DHCAL	Pb/Sc	
	forward	Fe/Sc	RPC/DHCAL	Pb/Sc	
	backward	Fe/Sc	RPC/DHCAL	Pb/Sc	
	very far forward	quartz fibers/ scintillators			

^a TPC surrounded by a micro-RWELL tracker

^b set of coaxial cylindrical MICROMEAS

^c Small-Strip Thin Gas Chamber (sTGC)

^d MAPS for B0 and off-momentum particles, LGAD for Roman Pots

^e also Pb/Sc Shashlyk

^f alternative options: PbWO₄, LYSO, GSO, LSO