



Far Forward Detectors and IR integration Working Groups

Far-forward detectors and IR integration WG

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34 registered members

With 8 pending on the user side (please, check your emails and accept invitation!)

Share point:

<https://brookhavenlab.sharepoint.com/:f:/s/eRHIC/bnl&slac/EhyBseTUBq9CvfM58YAZpyIBRzbV3mL2SemtHy3wkhMb7Q>

Many thanks to Elke and Holger for collecting this information!!!

Indico:

<https://indico.bnl.gov/event/7587/>

Overleaf doc:

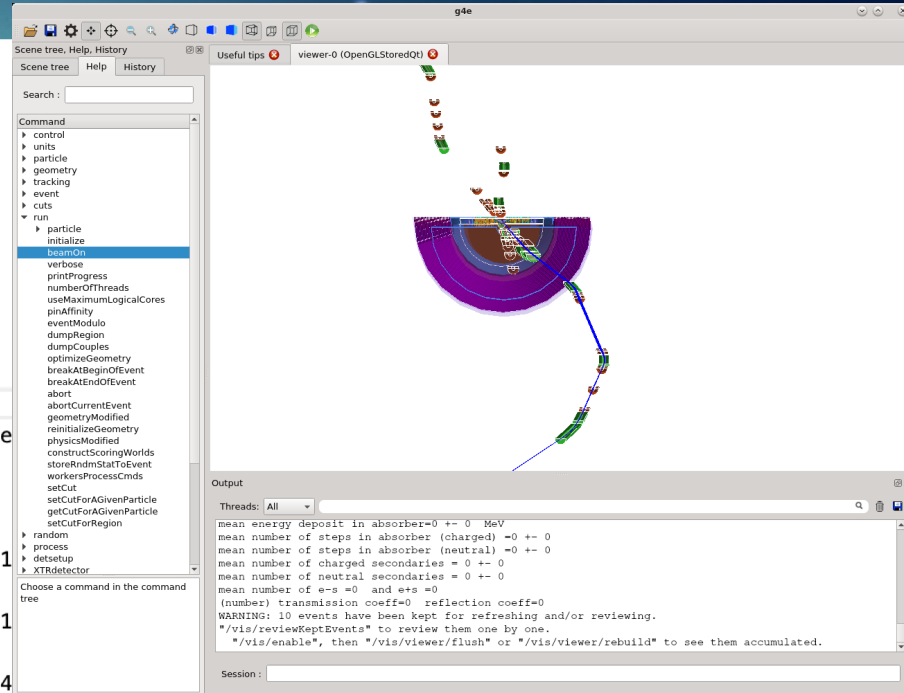
<https://www.overleaf.com/9427291469grxccpnrscvj>

Accelerator optics

preCDR_pRear_optics.275GeV.txt

1 # Values shown are for the Exit End of each Element:

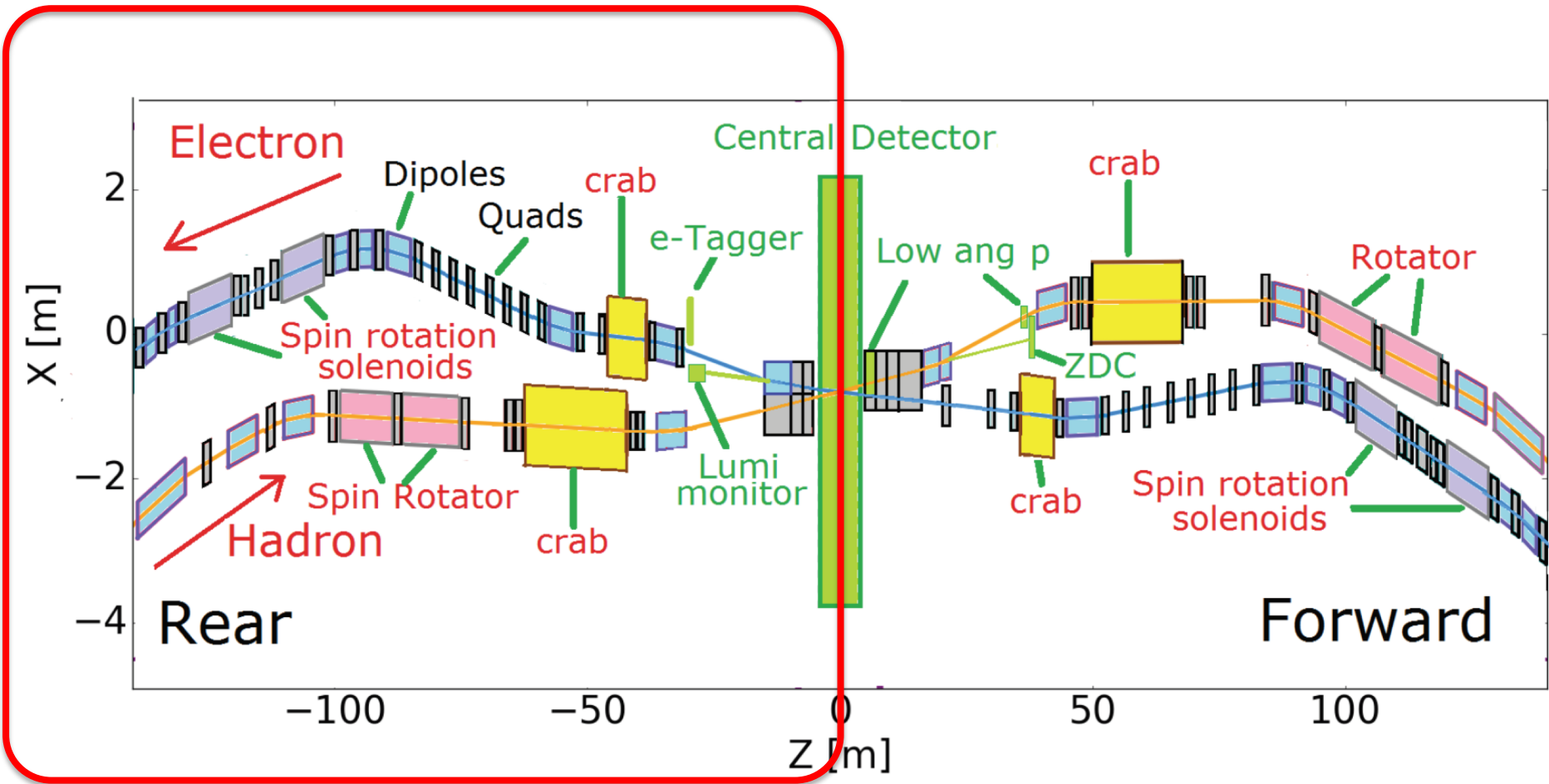
2	#Index name	key	s	l	be		
3	alpha	phi	eta	etap			
4	#	b	a	x			
4	0 BEGINNING	Beginning_Ele	0.000	---	0.90348701		
	0.0096864373	0.0000000000	-0.0002440433	-0.0012828422			
5	1 FSR	Floor_Shift	0.000	0.000	0.90348701		
	0.0096864373	0.0000000000	-0.0002440433	-0.0012828422			
6	2 D_Q1APR	Drift	5.300	5.300	32.00577994		
	-101.5568071081	1.4008865132	-0.0070431069	-0.0012828422	---	---	
7	3 Q1APR	Quadrupole	7.100	1.800	71.9891639815	-18.5003188568	747.3831365023
	-2.9027719213	1.4402781750	-0.0105403661	-0.0026986983	---	-0.0915735020	
8	4 D_Q1BPR	Drift	7.600	0.500	91.6815434864	-20.8844401525	750.2890614533
	-2.9090779807	1.4464327522	-0.0118897153	-0.0026986983	---	---	
9	5 Q1BPR	Quadrupole	9.000	1.400	181.8019758536	-46.8672673042	644.3900723086
	74.4942574427	1.4575669373	-0.0167290119	-0.0043061397	---	-0.0812169750	
10	6 D_Q2PR	Drift	10.500	1.500	349.6007686297	-64.9985945433	440.2874672384
	61.5741459361	1.4635168190	-0.0231882214	-0.0043061397	---	---	
11	7 Q2PR	Quadrupole	15.000	4.500	738.5558598461	-2.5114155644	176.9425367445
	8.7276409623	1.4714734952	-0.0336730801	-0.0001067714	---	0.0310515477	
12	8 D_B2APR	Drift	30.498	15.498	818.7771620272	-2.6647534218	11.1753845807
	1.9682561202	1.4914047885	-0.0353278451	-0.0001067714	---	---	
13	9 B2APR	Sbend	36.198	5.700	849.1202882828	-2.6578490675	2.9074524309
	-0.5177415189	1.4982404407	-0.0946750574	-0.0207160772	-0.0206134242	0.0000000000	
14	10 D_B4PR#1	Drift	38.698	2.500	862.4688903582	-2.6815917627	8.2220349765
	-1.6080914993	1.5011617955	-0.1464652504	-0.0207160772	---	---	
15	11 Q3APR	Quadrupole	40.198	1.500	1015.6215159922	-104.7628776713	12.2457901998
	-0.9310425988	1.5028072128	-0.1901420373	-0.0382875143	---	-0.0705044066	
16	12 D_B4PR#2	Drift	40.698	0.500	1123.0862516823	-110.1665937039	13.2149446781
	-1.0072663577	1.5032753762	-0.2092857944	-0.0382875143	---	---	

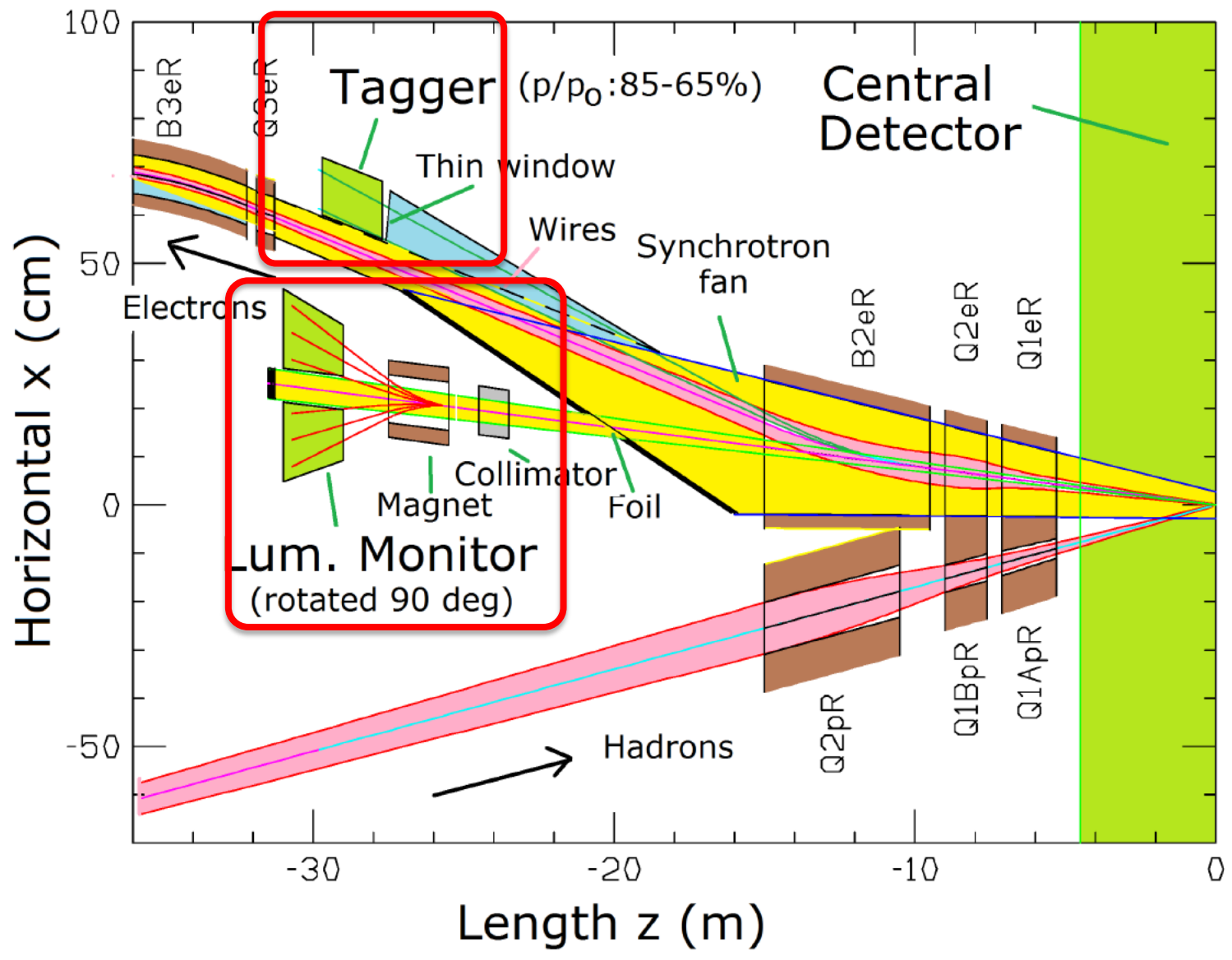


Accelerator parameters table

Table 3.3: eRHIC beam parameters for different center-of-mass energies \sqrt{s} , with strong hadron cooling. High divergence configuration.

Species	proton	electron	proton	electron	proton	electron	proton	electron	proton	electron
Energy [GeV]	275	18	275	10	100	10	100	5	41	5
CM energy [GeV]	140.7		104.9		63.2		44.7		28.6	
Bunch intensity [10^{10}]	20.5	6.2	6.9	17.2	6.9	17.2	4.7	17.2	2.6	13.3
No. of bunches	290		1160		1160		1160		1160	
Beam current [A]	0.74	0.227	1	2.5	1	2.5	0.68	2.5	0.38	1.93
RMS norm. emit., h/v [μm]	4.6/0.75	845/72	2.8/0.45	391/24	4.0/0.22	391/25	2.7/0.27	196/20	1.9/0.45	196/34
RMS emittance, h/v [nm]	16/2.6	24/2.0	9.6/1.5	20/1.2	37/2.1	20/1.3	25/2.6	20/2.0	44/10	20/3.5
β^* , h/v [cm]]	90/4.0	59/5.0	90/4.0	43/5.0	90/4.0	167/6.4	90/4.0	113/5.0	90/7.1	196/21.0
IP RMS beam size, h/v [μm]	119/10		93/7.8		183/9.1		150/10		198/27	
K_x	11.8		11.9		20.0		14.9		7.3	
RMS $\Delta\theta$, h/v [μrad]	132/253	202/202	103/195	215/156	203/227	109/143	167/253	133/202	220/380	101/129
BB parameter, h/v [10^{-3}]	3/2	100/100	14/7	73/100	10/9	75/57	15/10	100/66	15/9	53/42
RMS long. emittance [10^{-3} , eV·sec]	36		36		21		21		11	
RMS bunch length [cm]	6	0.9	6	2	7	2	7	2	7.5	2
RMS $\Delta p/p$ [10^{-4}]	6.8	10.9	6.8	5.8	9.7	5.8	9.7	6.8	10.3	6.8
Max. space charge	0.006	neglig.	0.003	neglig.	0.028	neglig.	0.019	neglig.	0.05	neglig.
Piwinski angle [rad]	5.6	0.8	7.1	2.4	4.2	1.2	5.1	1.5	4.2	1.1
Long. IBS time [h]	2.1		3.4		2		2.6		3.8	
Transv. IBS time [h]	2		2		2.3/2.4		2/4.8		3.4/2.1	
Hourglass factor H	0.86		0.86		0.85		0.83		0.93	
Luminosity [$10^{33}\text{cm}^{-2}\text{sec}^{-1}$]	1.65									





Agenda:

- Introduction (Yulia)
- Accelerator rear direction (Holger) -> next meeting
- Luminosity and low-Q² tagger (Yaroslav)
- ZEUS Beam pipe calorimeter (BPC) and low-Q² tagger (Bernd)
- Electron Polarimeter (Alexandre/Dave) ??
- Discussions

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Backup