

Sheet1

Topic	Observable	ECM	Lumi	P(e-)	P(e+)	luminosity fraction				absolute luminosities				limited by	systematic limit	reference
						-+	+-	++	--	L-+	L+-	L++	L--			
Higgs	couplings	250	1150	80	30	1	0	0	0	1150	0	0	0	statistics	?	Higgs WP
	couplings	500	1600	80	30	1	0	0	0	1600	0	0	0	statistics	?	Higgs WP
	couplings	1000	2500	80	20	1	0	0	0	2500	0	0	0	statistics	?	Higgs WP
															beam energy? Detector scales with control	
Higgs	mass	250	1000	80	30	1	0	0	0	1000	0	0	0	statistics	sample size...	Hengne
Higgs	couplings	250	1920	80	30	1	0	0	0	1920	0	0	0	statistics?	?	Tomohiko
	couplings	500	2670	80	30	1	0	0	0	2670	0	0	0	statistics?	?	Tomohiko
	couplings	1000	4170	80	20	1	0	0	0	4170	0	0	0	statistics?	?	Tomohiko
Top	couplings	500	500	80	30	0.25	0.75	0	0	125	375	0	0	statistics	few permille beam energy? Detector scales with control	Roman, <b>1307.8102</b>
Top	mass	350	100	80	30	1	0	0	0	100	0	0	0	statistics	sample size...	Frank
TGCs	WW pairs	500	1000	80	30	0.4	0.4	0.1	0.1	400	400	100	100	statistics	polarimeter?	Aura/Ivan
		1000	2000	80	20	0.4	0.4	0.1	0.1	800	800	200	200			
Higgs	Self-coupling	500	2000	80	30	1	0	0	0	2000	0	0	0	statistics	Infinite ;-)	Claude
		1000	4000	80	20	1	0	0	0	4000	0	0	0	statistics	systematic limit	Junping
W	mass	160	500	80	60	0.675	0.225	0.05	0.05	337.5	112.5	25	25	syst.	Ebeam	Graham
Z	A_LR etc	90	100	80	60	0.4	0.4	0.1	0.1	40	40	10	10			Graham
BSM	WIMPs	500	4000	80	30/60	0	0.5	0.5	0	0	2000	2000	0	syst?	Right-handed e- suppresses background, positron helicity gives access to coupling structure	Andrii
BSM	WIMPs	1000	6000	80	30/60	0	0.5	0.5	0	0	3000	3000	0	syst?		Andrii
BSM	SUSY masses, couplings	500	4000	80	30/60	0.3	0.3	0.2	0.2	1200	1200	800	800	statistics	Like-sign: selectrons	Mikael
BSM	SUSY masses, couplings	1000	5000	80	30/60	0.3	0.3	0.2	0.2	1500	1500	1000	1000	statistics		Mikael
Higgs	ttH, CP mixing	1000														

Maximum

250	1920	0	0	0	need other helicities for background systematics and polarisation, Dark Matter searches, new physics
350	100	0	0	0	need other helicities for background systematics and polarisation, Dark Matter searches, new physics
500	2670	2000	2000	800	
1000	4170	3000	3000	1000	
160	380	110	25	25	need „other“ helicities for background determination
90	40	40	10	10	

Consistent

250	2000	80	30	0.675	0.225	0.05	0.05	1350	450	100	100	„driver“ ZH
350	200	80	30	0.675	0.225	0.05	0.05	135	45	10	10	m_t
500	5000	80	30/60	0.4	0.4	0.1	0.1	2000	2000	500	500	ZHH / TGC / DM
1000	8000	80	20	0.4	0.4	0.1	0.1	3200	3200	800	800	nunuHH/ttH/TGC / DM
160	500	80	60	0.675	0.225	0.05	0.05	338	113	25	25	m_W
90	100	80	60	0.4	0.4	0.1	0.1	40	40	10	10	A_LR

ECM

	base	10 Hz	Lup					
250	125	250	500					
500	250		500					
1000	500		1000	does this exist?				
	lumi		sum	years			sum	
250	100	900	1000	2000	1	4	4	9
350	200			200	1			1
500	1000		4000	5000	4		8	12
1000	2000		6000	8000	4		6	10
1000 alternative	5000			5000	10			10
160	500			500	?			
90	100			100	?			

Original															
	installed [GeV]	250		500		500 LumiUP		1000		1000 LumiUP		total before			
	operation [GeV]	250	350	500	250	500	250	1000	500	1000	LumiUP	1TeV	total		
	rep rate [Hz]	5	5	5	10	5	10	5	10	<b>does this exist?</b>					
	fb-1/y	125	200	250	250	500	500	500	1000	1000					
<b>Scenario</b>															
<b>a)</b>	int. Lumi [fb-1]	250			750						[fb-1]	1000	<b>1000</b>	<b>1000</b>	[fb-1] @ 250 GeV
	int. Lumi [fb-1]		200								[fb-1]	200	<b>200</b>	<b>200</b>	[fb-1] @ 350 GeV
	int. Lumi [fb-1]			500							[fb-1]	500	<b>500</b>	<b>500</b>	[fb-1] @ 500 GeV
	int. Lumi [fb-1]										[fb-1]	0	<b>0</b>	<b>0</b>	[fb-1] @ 1TeV
	naive years	2	1	2	3						[years]	8	<b>8</b>	<b>8</b>	
<b>g)</b>	int. Lumi [fb-1]	500			500						[fb-1]	1000	<b>1000</b>	<b>1000</b>	[fb-1] @ 250 GeV
	int. Lumi [fb-1]		200								[fb-1]	200	<b>200</b>	<b>200</b>	[fb-1] @ 350 GeV
	int. Lumi [fb-1]			500							[fb-1]	500	<b>500</b>	<b>500</b>	[fb-1] @ 500 GeV
	int. Lumi [fb-1]										[fb-1]	0	<b>0</b>	<b>0</b>	[fb-1] @ 1TeV
	naive years	4	1	2	2						[years]	9	<b>9</b>	<b>9</b>	
<b>h)</b>	int. Lumi [fb-1]	50									[fb-1]	50	<b>50</b>	<b>50</b>	[fb-1] @ 250 GeV
	int. Lumi [fb-1]		200								[fb-1]	200	<b>200</b>	<b>200</b>	[fb-1] @ 350 GeV
	int. Lumi [fb-1]			500							[fb-1]	500	<b>500</b>	<b>500</b>	[fb-1] @ 500 GeV
	int. Lumi [fb-1]				1000						[fb-1]	1000	<b>1000</b>	<b>1000</b>	[fb-1] @ 1TeV
	naive years	0.4	1	2	4						[years]	7.4	<b>7.4</b>	<b>7.4</b>	

**Original + LumiUP: Equal final luminosity**

	installed [GeV]	250		500		500 LumiUP		1000		1000 LumiUP		total before			
	operation [GeV]	250	350	500	250	500	250	1000	500	1000	LumiUP	1TeV	total		
	rep rate [Hz]	5	5	5	10	5	10	5	10	<b>does this exist?</b>					
	fb-1/y	125	200	250	250	500	500	500	1000	1000					
<b>Scenario</b>															
<b>a) A1</b>	int. Lumi [fb-1]	<b>250</b>			750		1000				[fb-1]	1000	<b>2000</b>	<b>2000</b>	[fb-1] @ 250 GeV
	int. Lumi [fb-1]		200								[fb-1]	200	<b>200</b>	<b>200</b>	[fb-1] @ 350 GeV
	int. Lumi [fb-1]			1000		4000					[fb-1]	1000	<b>5000</b>	<b>5000</b>	[fb-1] @ 500 GeV
	int. Lumi [fb-1]						5000		0		[fb-1]	0	<b>0</b>	<b>5000</b>	[fb-1] @ 1TeV
	naive years	2	1	4	3	8	2	10		0 [years]	10	<b>20</b>	<b>30</b>		
<b>g) B1</b>	int. Lumi [fb-1]	<b>500</b>			500		1000				[fb-1]	1000	<b>2000</b>	<b>2000</b>	[fb-1] @ 250 GeV
	int. Lumi [fb-1]		200								[fb-1]	200	<b>200</b>	<b>200</b>	[fb-1] @ 350 GeV
	int. Lumi [fb-1]			1000		4000					[fb-1]	1000	<b>5000</b>	<b>5000</b>	[fb-1] @ 500 GeV
	int. Lumi [fb-1]						5000		0		[fb-1]	0	<b>0</b>	<b>5000</b>	[fb-1] @ 1TeV
	naive years	4	1	4	2	8	2	10		0 [years]	11	<b>21</b>	<b>31</b>		
<b>h) C1</b>	int. Lumi [fb-1]	<b>50</b>			950		1000				[fb-1]	1000	<b>2000</b>	<b>2000</b>	[fb-1] @ 250 GeV
	int. Lumi [fb-1]		200								[fb-1]	200	<b>200</b>	<b>200</b>	[fb-1] @ 350 GeV
	int. Lumi [fb-1]			1000		4000					[fb-1]	1000	<b>5000</b>	<b>5000</b>	[fb-1] @ 500 GeV
	int. Lumi [fb-1]						5000		0		[fb-1]	0	<b>0</b>	<b>5000</b>	[fb-1] @ 1TeV
	naive years	0.4	1	4	3.8	8	2	10		0 [years]	9.2	<b>19.2</b>	<b>29.2</b>		
<b>k) D1</b>	int. Lumi [fb-1]	<b>1250</b>					750				[fb-1]	1250	<b>2000</b>	<b>2000</b>	[fb-1] @ 250 GeV
	int. Lumi [fb-1]		200								[fb-1]	200	<b>200</b>	<b>200</b>	[fb-1] @ 350 GeV
	int. Lumi [fb-1]			1000		4000					[fb-1]	1000	<b>5000</b>	<b>5000</b>	[fb-1] @ 500 GeV
	int. Lumi [fb-1]						5000		0		[fb-1]	0	<b>0</b>	<b>5000</b>	[fb-1] @ 1TeV
	naive years	10	1	4	0	8	1.5	10		0 [years]	15	<b>24.5</b>	<b>34.5</b>		

Original + LumiUP: Equal run time															
	installed [GeV]	250	500	500 LumiUP			1000	1000 LumiUP			total before				
	operation [GeV]	250	350	500	250	500	250	1000	500	1000	LumiUP	1TeV	total		
	rep rate [Hz]	5	5	5	10	5	10	5	10	<b>does this exist?</b>					
	fb-1/y	125	200	250	250	500	500	500	1000	1000					
<b>Scenario</b>															
<b>a) A2</b>	int. Lumi [fb-1]	<b>250</b>			750		1000				[fb-1]	1000	<b>2000</b>	<b>2000</b>	[fb-1] @ 250 GeV
	int. Lumi [fb-1]		200								[fb-1]	200	<b>200</b>	<b>200</b>	[fb-1] @ 350 GeV
	int. Lumi [fb-1]			1000		4000					[fb-1]	1000	<b>5000</b>	<b>5000</b>	[fb-1] @ 500 GeV
	int. Lumi [fb-1]						5000		0		[fb-1]	0	<b>0</b>	<b>5000</b>	[fb-1] @ 1TeV
	naive years	2	1	4	3	8	2	10		0	0 [years]	10	<b>20</b>	<b>30</b>	
<b>g) B2</b>	int. Lumi [fb-1]	<b>500</b>			250		1000				[fb-1]	750	<b>1750</b>	<b>1750</b>	[fb-1] @ 250 GeV
	int. Lumi [fb-1]		200								[fb-1]	200	<b>200</b>	<b>200</b>	[fb-1] @ 350 GeV
	int. Lumi [fb-1]			1000		4000					[fb-1]	1000	<b>5000</b>	<b>5000</b>	[fb-1] @ 500 GeV
	int. Lumi [fb-1]						5000		0		[fb-1]	0	<b>0</b>	<b>5000</b>	[fb-1] @ 1TeV
	naive years	4	1	4	1	8	2	10		0	0 [years]	10	<b>20</b>	<b>30</b>	
<b>h) C2</b>	int. Lumi [fb-1]	<b>50</b>			1150		1000				[fb-1]	1200	<b>2200</b>	<b>2200</b>	[fb-1] @ 250 GeV
	int. Lumi [fb-1]		200								[fb-1]	200	<b>200</b>	<b>200</b>	[fb-1] @ 350 GeV
	int. Lumi [fb-1]			1000		4000					[fb-1]	1000	<b>5000</b>	<b>5000</b>	[fb-1] @ 500 GeV
	int. Lumi [fb-1]						5000		0		[fb-1]	0	<b>0</b>	<b>5000</b>	[fb-1] @ 1TeV
	naive years	0.4	1	4	4.6	8	2	10		0	0 [years]	10	<b>20</b>	<b>30</b>	
<b>k) D2s</b>	int. Lumi [fb-1]	<b>1250</b>									[fb-1]	1250	<b>1250</b>	<b>1250</b>	[fb-1] @ 250 GeV
	int. Lumi [fb-1]		200								[fb-1]	200	<b>200</b>	<b>200</b>	[fb-1] @ 350 GeV
	int. Lumi [fb-1]			1000		2500					[fb-1]	1000	<b>3500</b>	<b>3500</b>	[fb-1] @ 500 GeV
	int. Lumi [fb-1]						5000		0		[fb-1]	0	<b>0</b>	<b>5000</b>	[fb-1] @ 1TeV
	naive years	<b>10</b>	1	4	0	5	0	10		0	0 [years]	15	<b>20</b>	<b>30</b>	