

Events for Detector Optimization

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The copy of this talk one can find at the <http://www.desy.de/~morgunov>

Processes

no ISR, no Luminosity curve

$$Z_{pole} e^+ e^- \rightarrow q\bar{q} \text{ — 10K events.}$$

Energies: 0.36, 0.5, 1.0 TeV for all reactions

Initial	Final	Condition	N events	at least
e^+e^-	$q\bar{q}(u, d, s)$	mixture	20 K	10 K
e^+e^-	$q\bar{q}(c, b)$	mixture	20 K	10 K
e^+e^-	$t\bar{t}$	excluding W semilept	10 K	10 K
e^+e^-	W^+W^-	all decay channels $\cos(W) < 0.85$	20 K	10 K
e^+e^-	$Zh(120GeV)$	all decay channels	20 K	10 K
			sum = 90 K	sum = 50 K
		by 3 energies	270 K	150 K

Optimization Variables

Variable	conf. 1	conf. 2	conf. 3	Num. Remark
B field	convent. 4 Tesla	- 2 Tesla	+ 2 Tesla	3
TPC radius	conventional	- 40 cm	+ 40 cm	3
TPC length	conventional	- 40 cm	—	2
				overall = 18 conf.
Material before TPC volume	conventional	- ? X_0	+ ? X_0	3, for conventional B, R, L
TPC endpalte	conventional	- ? X_0	+ ? X_0	3, for conventional B, R, L
				18 + 6 = 24 conf.

GRID speed: run 100 events had taken 500 minutes for $t\bar{t}$ 500 GeV.

24 conf. \times 150 K (at least) = 3 600 K events

Time is 3 600 K \times 10 \times 500 = 18 000 000 minutes = 300 000 hours = 12 500 days

12500/100(CPU) = **120 days of GRID**

All set of events will “cost” 225 days