

Summary table of POWER report: Tab 4.1

Comparison with (80%,0): estimated gain factor when

most (80%, 60%) (80%, 30%)

Case	Effects for $P(e^-) \rightarrow P(e^-)$ and $P(e^+)$	Gain& Requirement	
Standard Model:			
top threshold	Electroweak coupling measurement	factor 3	gain factor 2
$t\bar{q}$	Limits for FCN top couplings improved	factor 1.8	gain factor 1.4
CPV in $t\bar{t}$	Azimuthal CP-odd asymmetries give access to S- and T-currents up to 10 TeV	$P_{e^-}^T P_{e^+}^T$ required	$P_{e^-}^T P_{e^+}^T$ required
			factor 1.3 worse
W^+W^-	Enhancement of $\frac{S}{B}, \frac{S}{\sqrt{B}}$	up to a factor 2	
	TGC: error reduction of $\Delta\kappa_\gamma, \Delta\lambda_\gamma, \Delta\kappa_Z, \Delta\lambda_Z$	factor 1.8	
	Specific TGC $\tilde{h}_+ = \text{Im}(g_1^R + \kappa^R)/\sqrt{2}$	$P_{e^-}^T P_{e^+}^T$ required	$P_{e^-}^T P_{e^+}^T$ required
CPV in γZ	Anomalous TGC $\gamma\gamma Z, \gamma ZZ$	$P_{e^-}^T P_{e^+}^T$ required	
HZ	Separation: $HZ \leftrightarrow H\nu\nu$	factor 4	gain factor 2
	Suppression of $B = W^+\ell^-\nu$	factor 1.7	
$t\bar{t}H$	Top Yukawa coupling measurement at $\sqrt{s} = 500$ GeV	factor 2.5	gain factor 1.6

Question of the parameter group – our answers ?

- At which lumi become systematics dominant?
- Impact of reducing beamstrahlung by factor 2? (lumi vs background?)
- Any benefit from (80%,60%) versus (90%,0)?
- Influence from any other accelerator parameters?

→ **Top** mass measurement: precision at a) threshold, b) 500 GeV? *P(e+) needed*

→ **Higgs (120 GeV)**: Precision for mass measurement at a) threshold,
b) maximum of ZH cross section, c) 500 GeV ? *factor 4 vs 2 in sep.*

Precision for top Higgs coupling at a) 500 GeV, b) 1 TeV ? *gain factor 2.4 vs. 1.1*

Precision of BR(H → tau-pairs) ?

→ **Precision of Z'** couplings at a) 500 GeV, b) 1 TeV ? *systematics under control*

→ **Precision of SUSY** particle properties (e.g. masses) a) in the light stau
coannihilation region, b) light neutralino $\chi_{1,2}^0$ production ? *more observables*
properties more general: P(e+) needed

Discussion (thanks to Mike Woods, Eric Torrence, Peter Schmid, Tom Rizzo,)

- **Physics: shall we also write / answer to the questions of the parameter group?**
 - even higher e- pol. can not compensate effects from pol. e+
- **Physics: shall we write-up the physics case for pol. e+ with $P(e+)=30\%$?**
- **Machine: what is needed to exploit 30% polarization?**
 - how much low dc polarization without spin rotators? (Mike: $\sim 0.05\%$ but has to be measured)
 - spin rotator for LTR
 - already flipping needed ? which scheme useful? kickers?
 - costs for add. polarimeter? but anyway needed to measure low dc polarization?
- **Machine: change request useful to exploit 30%?**
- **What else? Did we overlook something?**